Day 2: Poverty

New Climate Economy Training Course

World Resources Institute

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Motivation

Yesterday we started with the questions on why some people/countries are poor and some rich; today's lecture takes one step behind to focus on the **conceptualization and measurement of poverty and inequality.**

Having a comprehensive knowledge of these concepts is crucial to achieving a complete understanding of the main policy issues related to them.

Motivation

This presentation is organized as follows.

1. Motivation
2. Poverty
3. Absolute and relative approaches
4. Poverty measures
5. Multidimensional poverty
6. Global Multidimensional Poverty Index
7. Trends in multidimensional poverty

Poverty

In a broad manner, poverty is a situation in which inequalities leave some people so far away from the social mainstream that the deprivations they experience push them below what are considered as social basic standards.

Although poverty is interlinked with inequality, it cannot be reduced to inequalities of income alone. On the whole, **poverty is about exclusion.**

The importance of poverty measurement

Why do we need to measure poverty? By identifying *who* the poor are, *where* they are located, and *what kind* of poverty the suffer, poverty measurements can help direct resources and focus efforts more efficiently according to the needs of the population.

The measurements, in any socio-economic issue, create a picture of the magnitude of the problem, and that picture, that varies over space and time, is the main input for any policy design.

Different approaches to the measurement of poverty

Since the 19th century different approaches and theoretical frameworks to the measurement of poverty have evolved. They can be distinguished by their focus on:

- Physical subsistence
- Basic needs
- Relative deprivation
- Wealth
- Time poverty

Recently, the analysis has tried to extend dimensions of welfare or combine multiple aspects of poverty into one single measure.

Different approaches to the measurement of poverty

Example: Time poverty

A Gendered Model of the Peasant Household: Time poverty and Farm Production in Rural Mozambique.

Diksha Arora and Codrina Rada

ABSTRACT

Using insights from a case study on the allocation of labor in subsistence households in Mozambique, this study develops a conceptual framework for examining linkages between time poverty and farm production. An unexpected event such as a health crisis increases the demand for labor provided by women, thus making them more time poor. The model and numerical simulations show that a deterioration in a woman's time constraint will have an adverse effect on agricultural output of the household. This occurs because most women respond to an increase in household work by reducing their work hours on the farm and by reducing their leisure time. The latter outcome is expected to have a negative effect on women's physical and mental health, which will then cause a decline in their productivity on the farm.

Different approaches to the measurement of poverty

Example: Time poverty

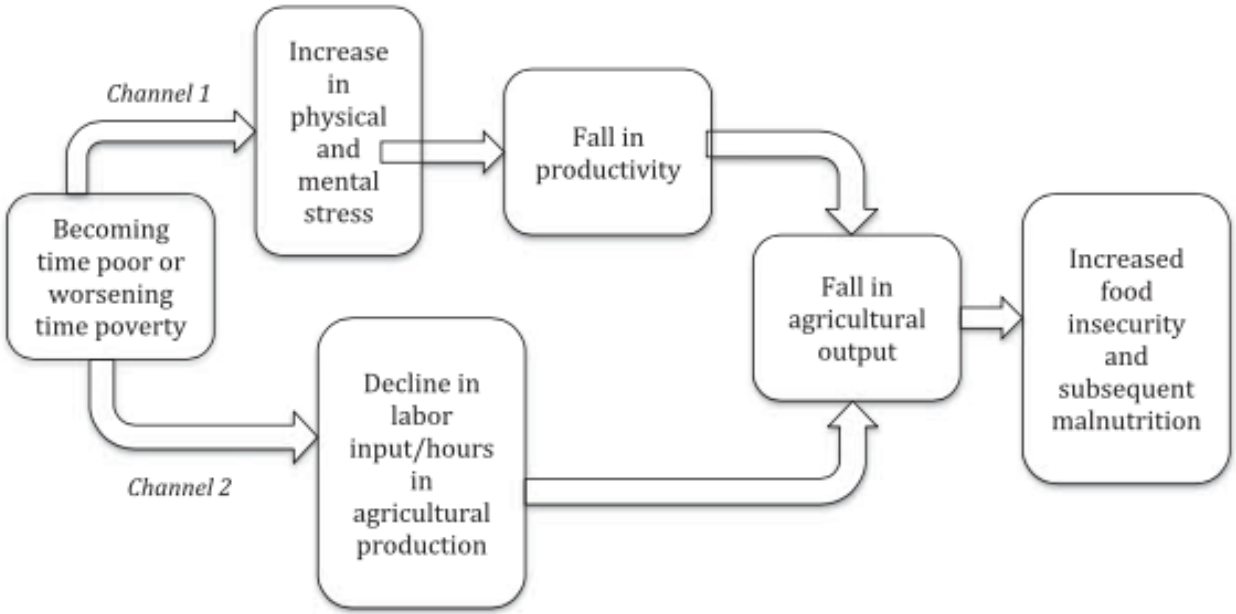

Figure: Impact of time poverty on agricultural production and food security[1]

[1] Arora and Rada, 2017

Different approaches to the measurement of poverty

Example: Time poverty

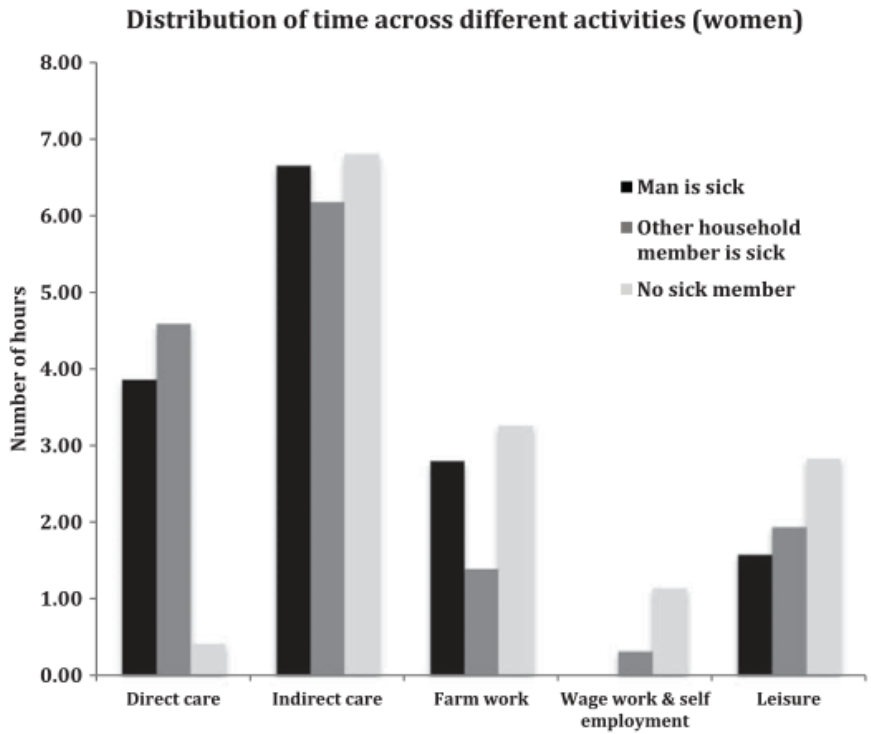

Figure: Impact of time poverty on agricultural production and food security[2]

[2] Arora and Rada, 2017

Different approaches to the measurement of poverty

Example: Time poverty

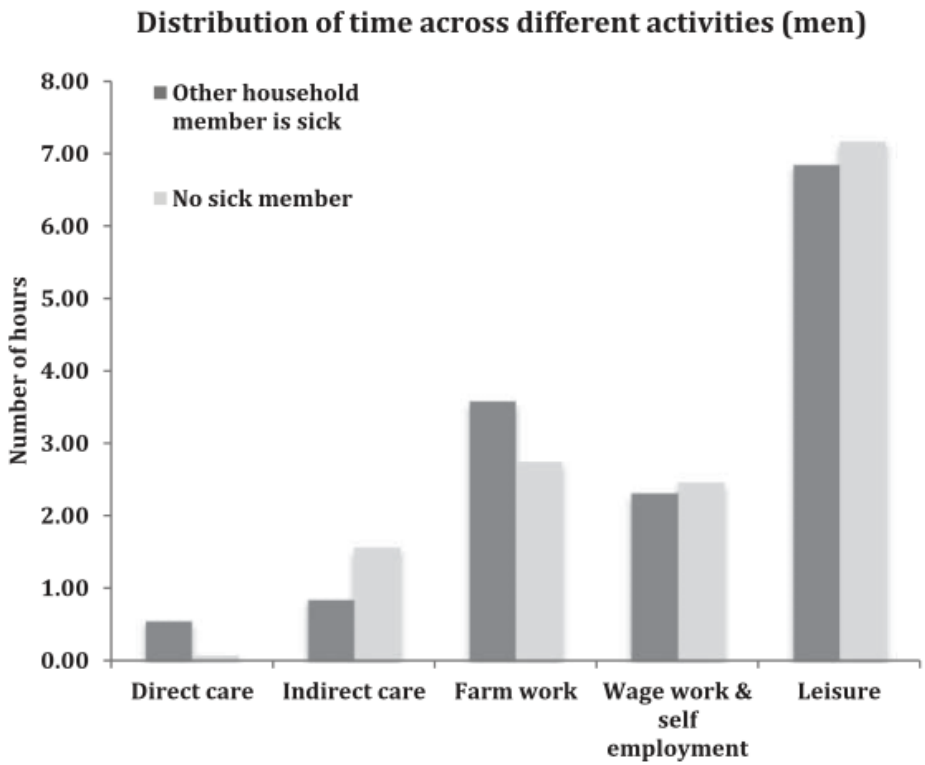

Figure: Impact of time poverty on agricultural production and food security[3]

[3] Arora and Rada, 2017

Different approaches to the measurement of poverty

The overall idea of poverty measurement can be summarized in three main steps[4]:

1. **Choose** the *space* in which poverty will be assessed.
2. **Identify** the poor.
3. **Aggregate** the data into an overall poverty measure.

[4] Foster, Suman, and Sajaia, 2013

Different approaches to the measurement of poverty

Poverty measurement has direct implications for policymaking, as different perspectives on poverty can produce different empirical conclusions.

Once the basic conceptual questions are answered, **the definition of poverty should be operationalized in statistical terms**. This seemingly technical issue can have serious implications for policy design. For instance, the use of different equivalence scales can produce different results for man versus woman poverty, which can, in turn, create mixed signals for social protection policies that can result in severe bias against some groups.

Absolute and relative approaches

As we now know, the evaluation of poverty begins with an identification step in which the people considered poor are specified and continues with an aggregation step in which the data of the poor are combined to obtain a numerical measure. **These two steps make up a methodology for measuring poverty in an income distribution.**

Absolute and relative approaches

The identification step involves selecting a level of income to define the **poverty line**, below which a person in a given distribution is considered poor. There are two main approaches to evaluate poverty:

1. *Absolute* approach: poverty line as a constant.
2. *Relative* approach: poverty line as a constant fraction of an income standard.

Absolute and relative approaches

Absolute poverty line

An absolute poverty line is a **fixed cutoff that does not change as the distribution being evaluated changes**. An example of an absolute poverty line is the US $1.90 per day standard of the World Bank used to compare poverty across poor and middle-income countries overt time.

There might be a huge gap between the current level of poverty and the historical standard when the poverty line was built, so the use of this approach may be harder to justify over longer periods of time or in a comparison of countries with very different levels of development.

Absolute and relative approaches

Relative poverty line

Where there is less concern about achieving a minimum absolute level of living - countries with higher incomes -, a relative approach would be more suitable. A relative poverty line is defined as a **function of the income distribution**. For example, the 70% of a country's median (disposable) income. Here, poverty is measured as a constant fraction of an income standard.

The nature of a relative poverty line dictates that the cutoff below which one is considered to be poor varies proportionally with its income standard.

Poverty measures

A poverty measure is a way of combining information on income distribution to obtain a number that represents the poverty level in the distribution given the poverty line and the chosen approach (absolute or relative).

The most popular measures are counting measures, which evaluate poverty by numbers of people. The best-known counting measure is the **headcount ratio**, defined as the percentage of the total population that is poor.

Poverty measures

Applications

Through the identification and aggregation steps, a poverty methodology can be used to identify and evaluate the extent of poverty.

Several practical applications can be conducted, given appropriately rich data:

- Who are the poor and how do they differ from the non-poor?
- Is a given poverty program reaching its intended recipients?
- What affects and is affected by the condition of being poor?
- How do different policies affect poverty?

Poverty measures

Basic poverty measures: The headcount ratio (H)

The headcount ratio (H) is the most commonly and widely used measure of poverty. It reports the **proportion** of the population that is poor, ranging between 0 and 1.

If q is the number of poor in vector x with population size n, then:

$$H = q/n$$

Poverty measures

Basic poverty measures: Income Gap Ratio (I)

It reports the average normalized income shortfall of the poor from the poverty line. As with the headcount ratio, it ranges between 0 and 1.

From the policy perspective, the income gap ratio appears to be counter intuitive because if a poor person's income increases and the person's becomes non-poor, poverty - measured with I - increases.

Poverty measures

Basic poverty measures: Poverty Gap Ratio (PG)

It reports the average normalized income shortfall of the poor from the poverty line using the *censored* distribution of the population.

By using the censored distribution of x, the poverty gap ratio repairs some of the problems of the headcount ratio and income gap ratio.

Multidimensional poverty

All monetary approaches lead at best to indirect representations of welfare. A person who is poor can suffer multiple disadvantages at the same time – for example they may have poor health or malnutrition, a lack of clean water, a lack of electricity or poor quality of work or little schooling. **Focusing on one factor, such as income, is not enough to capture the true reality of poverty.**

Multidimensional poverty

Measures of poverty that go beyond monetary indicators appear in various conceptual frameworks such as social exclusion, basic needs, social cohesion, multidimensional poverty, among others. Each concept is distinct, yet each talks about different aspects of human well-being, and suggests that these **non-monetary aspects should be measured.**

Multidimensional poverty

In the 2030 Agenda for Sustainable Development, the worldwide consensus shifted to view **poverty as multidimensional**. However, it's important to recognize that monetary and multidimensional poverty measures are complementary. Both are valuable for identifying poor people and policy design.

Multidimensional poverty

An interesting finding when the multidimensional approach emerges is the common finding that **people who are multidimensionally poor, are not necessarily income poor.**

Divergences between monetary poverty and multidimensional poverty indicators mean that neither is a sufficient proxy for the other; both need to be measured.

Multidimensional poverty

Unidimensional	Monetary	Income based	Absolute poverty lines	National thresholds specific for individual countries, in the national currency	1. Cost of basic needs
					2. Subsistence minimum
				Internationally comparable thresholds	3. Severely poor with income below 1.9 PPP$
					4. "Just poor" with income below 3.1 PPP$
			Relative poverty lines	Share of the median (or mean) income	5. Relative low income (example: below 50% or 60% of the contemporary median equivalised income in each country)
					6. Relative low income anchored at a fixed point in time
					7. Weakly relative poverty line
		Expenditure based	Absolute poverty lines	National thresholds specific for individual countries, in national currency	8. Cost of basic needs
					9. Subsistence minimum
				Internationally comparable thresholds	10. Severely poor with expenditures below PPP$1.90/day
					11. "Just poor" with expenditures below PPP$3.10/day
			Relative poverty lines	Share of the median (or mean) expenditure	12. Relative low expenditure (example: below 50% or 60% of the current median equivalised expenditure in each country)
					13. Relative low expenditure anchored at a fixed point in time
					14. Weakly relative poverty line
	Food energy intake (FEI)				15. Nationally specific FEI-based poverty rates (varies by climate conditions, rural/ urban distribution, type of occupation, etc.)
Multidimensional	Deprivations				16. Indicator dashboards
					17. Indices of multiple deprivation, including material deprivation
	Multidimensional poverty estimates – internationally comparable (following the methodology developed by OPHI and used for international comparisons and in the Global HDRs published by UNDP)				18. Multidimensional poverty index (thresholds for the various dimensions)
	Official national multidimensional poverty indices, following the methodology developed by OPHI				19. Severely poor
					20. Moderately poor

Figure: Different approaches to poverty measurement[5]

[5] UNECE, 2017

Global Multidimensional Poverty Index

The Global Multidimensional Poverty Index (MPI) is a measure of multidimensional poverty which covers over 100 countries. It complements traditional monetary poverty measures by capturing the acute deprivations in **health**, **education**, and **living standards** that a person faces simultaneously.

Global Multidimensional Poverty Index

The global MPI examines each person's deprivations across 10 indicators in the three equally weighted dimensions: **people are counted as multidimensionally poor if they are deprived in one-third or more of 10 indicators.**

This approach offers a high-resolution lens to identify both *who* is poor and *how* they are poor.

Global Multidimensional Poverty Index

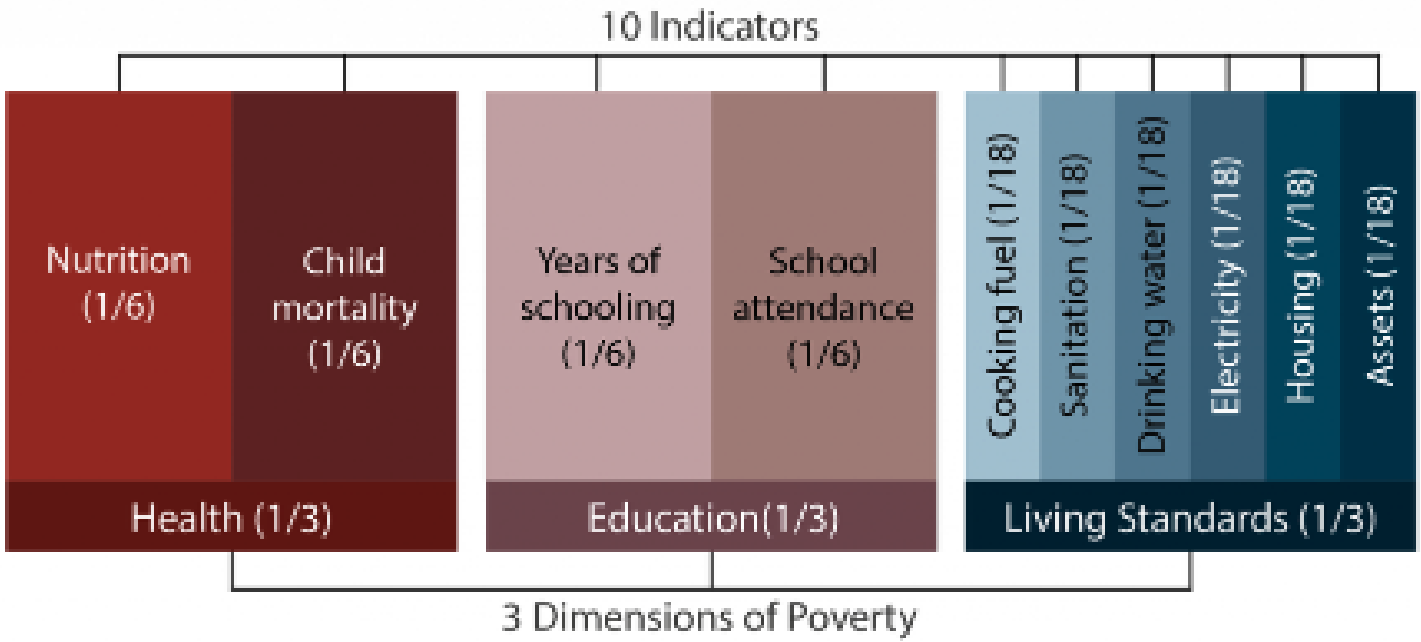

Figure: Structure of the Global Multidimensional Poverty Index[6]

[6] OPHI, 2017

Global Multidimensional Poverty Index

Each indicator is equally weighted within its dimension. For example, the *Nutrition* and *School attendance* indicators are weighted $1/6$ each and the *Drinking water* or the *Housing* indicators are weighted $1/18$ each.

The **intensity** of multidimensionally poor people is measured by the average number of weighted deprivations they experience.

Global Multidimensional Poverty Index

DIMENSIONS OF POVERTY	INDICATOR	DEPRIVED IF LIVING IN A HOUSEHOLD WHERE...	WEIGHT	SDG AREA
Health (1/3)	Nutrition	Any person under 70 years of age for whom there is nutritional information is **undernourished**.	1/6	SDG 2: Zero Hunger
	Child mortality	A child **under 18** has **died** in the household in the five-year period preceding the survey.	1/6	SDG 3: Health and Well-being
Education (1/3)	Years of schooling	**No** eligible household member has completed **six years of schooling**.	1/6	SDG 4: Quality Education
	School attendance	Any school-aged child is **not attending** school **up to** the age at which he/she would complete **class 8**.	1/6	SDG 4: Quality Education
Living Standards (1/3)	Cooking fuel	A household cooks using **solid fuel**, such as dung, agricultural crop, shrubs, wood, charcoal, or coal.	1/18	SDG 7: Affordable and Clean Energy
	Sanitation	The household has **unimproved** or **no** sanitation **facility** or it is improved but **shared** with other households.	1/18	SDG 6: Clean Water and Sanitation
	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.	1/18	SDG 6: Clean Water and Sanitation
	Electricity	The household has **no electricity**.	1/18	SDG 7: Affordable and Clean Energy
	Housing	The household has **inadequate** housing materials in **any** of the three components: **floor**, **roof**, or **walls**.	1/18	SDG 11: Sustainable Cities and Communities
	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.	1/18	SDG 1: No Poverty

Figure: Structure of the Global Multidimensional Poverty Index[7]

[7] OPHI, 2017

Global Multidimensional Poverty Index

Definitions

Multidimensional poverty headcount:

Population with a deprivation score of at least 33%. It is expressed as a share of the population in the survey year and the number of poor people in the survey year.[8]

[8] UNDP and OPHI, 2020

Global Multidimensional Poverty Index

Definitions

Intensity of deprivation of multidimensional poverty:

Average deprivation score experienced by people in multidimensional poverty.

People who are multidimensionally poor and deprived in each indicator:

Percentage of the population that is multidimensionally poor and deprived in the given indicator.

Global Multidimensional Poverty Index

Definitions

Absolute change:

The difference in a poverty measure between two years, divided by the number of years between surveys.

Relative change:

The compound rate of change per year (the geometric progression ratio that provides a constant rate of return over the time period). It shows the percentage by which the previous year's poverty has changed.

Global Multidimensional Poverty Index

Definitions

Number of multidimensionally poor people:

The product of the incidence of multidimensional poverty and the population size. It shows how the overall number of multidimensionally poor people in a country has changed and reflects both demographic change and population growth (but not the MPIT or the intensity of poverty).

Trends in multidimensional poverty

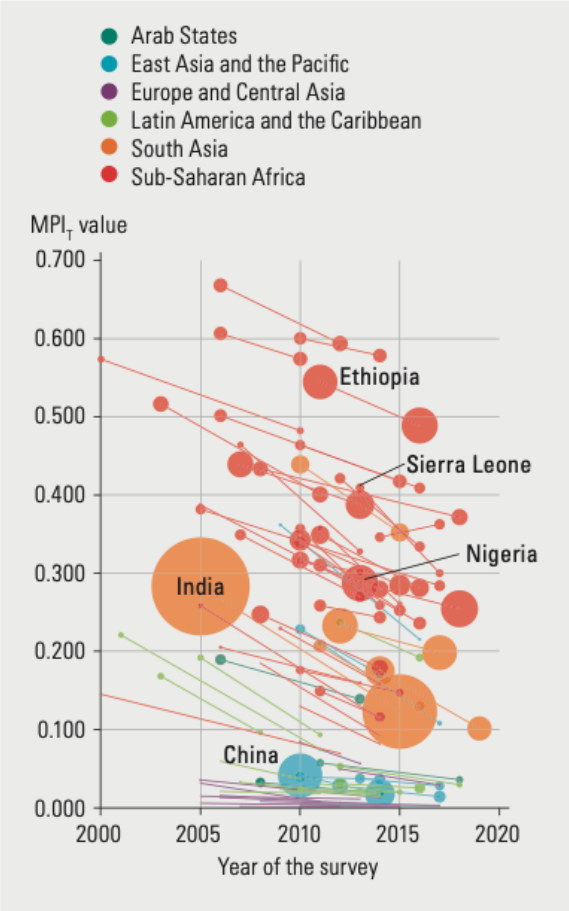

Figure: Poorer countries with the highest initial Multidimensional Poverty Index values and countries with low values tend to have slower absolute reduction rates.[9]

[9] UNDP and OPHI, 2020

Trends in multidimensional poverty

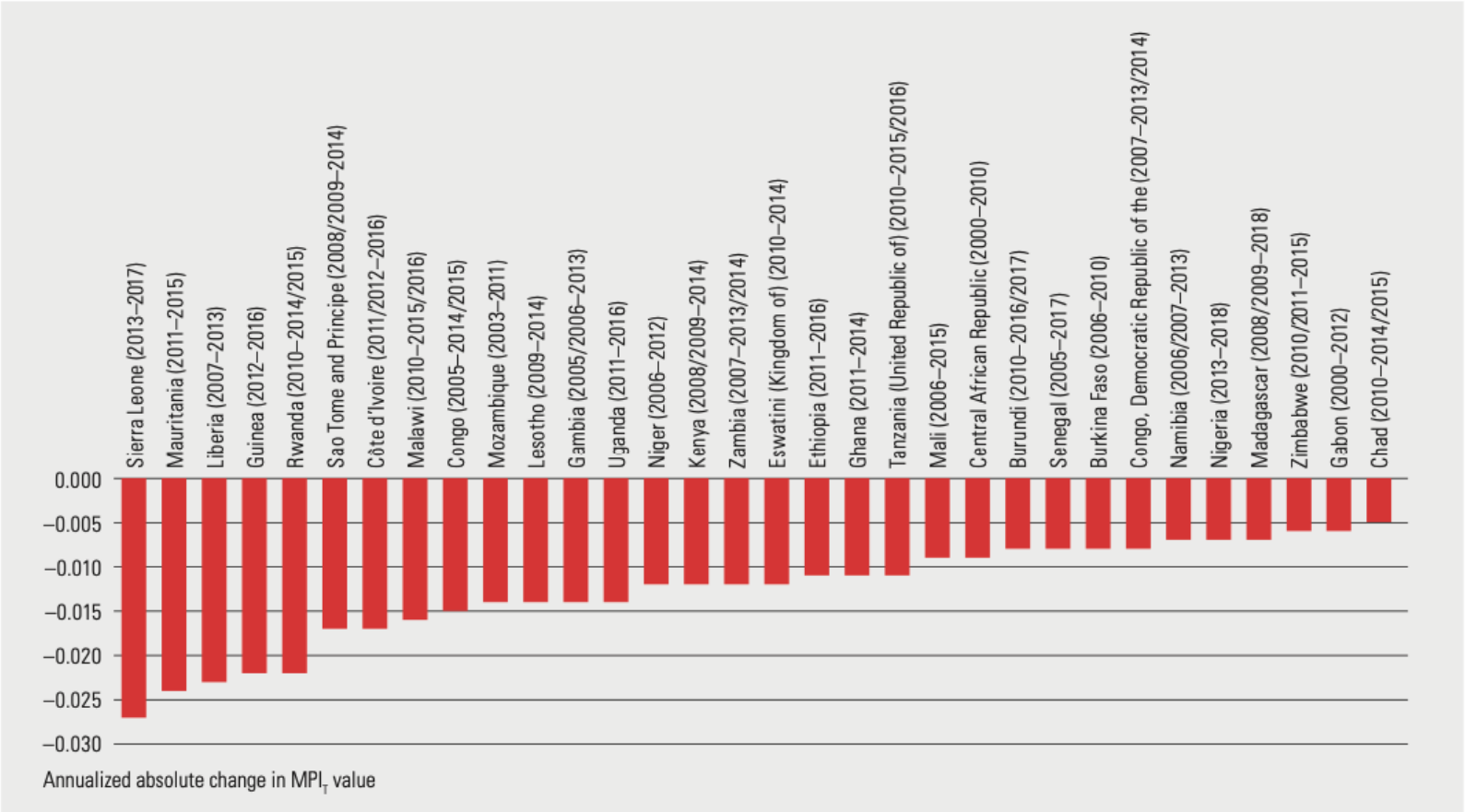

Figure: Some of the poorest countries in Sub-Saharan Africa achieved the fastest absolute reductions in multidimensional poverty.[10]

[10] UNDP and OPHI, 2020

Trends in multidimensional poverty

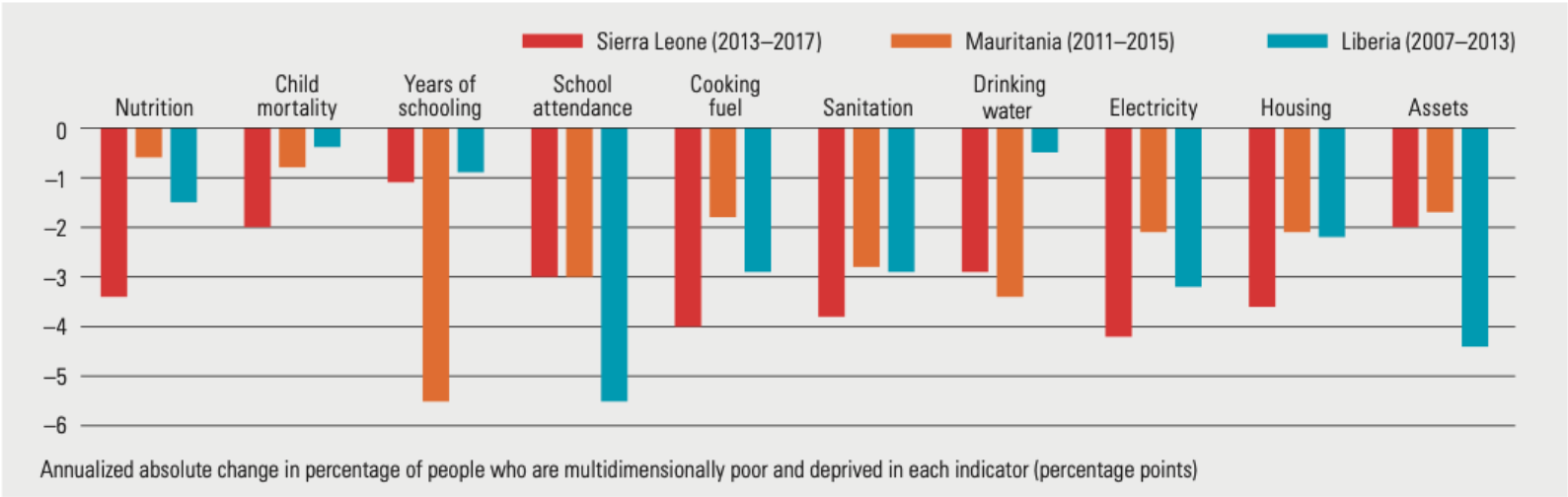

Figure: Reductions in multidimensional poverty can be driven by improvements in different indicators.[11]

[11] UNDP and OPHI, 2020

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