

Composition of Multidimensional Deprivation in sub-Saharan Africa

MODA In Brief 5

Innocenti Working Paper No. 2014-19

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The MODA methodology has been developed by UNICEF to define and measure child poverty both at a national and international level, taking into consideration the complex, multifaceted realities of poverty children experience at different stages of their lives. The Cross-Country Multiple Deprivation Overlapping Deprivation Analysis (CC-MODA) is a specific application of the general MODA methodology, designed as a child poverty measure to analyse multidimensional child deprivation in low- and middle-income countries. The dimensions, indicators and thresholds defining deprivation are standardised to be comparable across countries. This Brief shows how the dimensional deprivations contribute to the overall multidimensional deprivation experienced by children in sub-Saharan Africa.

Multidimensional child deprivation measurement

Within the CC-MODA study, multidimensional child deprivation is measured as the non-fulfilment of basic rights covering aspects of survival, development, protection and participation. The MODA methodology seeks to analyse dimensions of deprivation, which are relevant to the child at a particular stage in life, making the analysis not only child- but also age-specific. For CC-MODA two age groups are distinguished as shown in Figure 1, with dimensions on water, sanitation and housing being available to all children; nutrition and health specifically to children under the age of five; and education and information are selected as age-specific dimensions for children of five years and older. The inclusion of ‘Protection from violence’ depends on data availability. Based on these dimensions, deprivation analyses are carried out by country using the most recent MICS or DHS household survey data for the period 2008-2012. The results by country can be found on the interactive MODA web portal¹. The outcomes of 30 selected sub-Saharan African countries² have been used as part of a specific study on multidimensional child deprivation analysing deprivation incidence and intensity within the selected sub-Saharan African countries and across the region as a whole (see de Milliano & Plavgo, 2014).

Figure 1: CC-MODA dimensions by age group

Nutrition	Education
Health	Information
Water	Water
Sanitation	Sanitation
Housing	Housing
Protection from violence	Protection from violence
Age 0-4	Age 5-17

The composition of children’s multidimensional deprivation

The aim of the MODA methodology and the CC-MODA application is to go beyond the knowledge that can be obtained by single-sector analyses, and to provide with a holistic picture of child poverty and deprivation. As described in Brief 1 of this series, the MODA methodology uses various methods of analysis such as counting, overlap analysis and analysis of indices. This Brief addresses some of the further analysis of the multidimensional deprivation indices. While indices are useful to present multidimensional deprivation³ at a glance, with a single

¹ www.unicef-irc.org/MODA

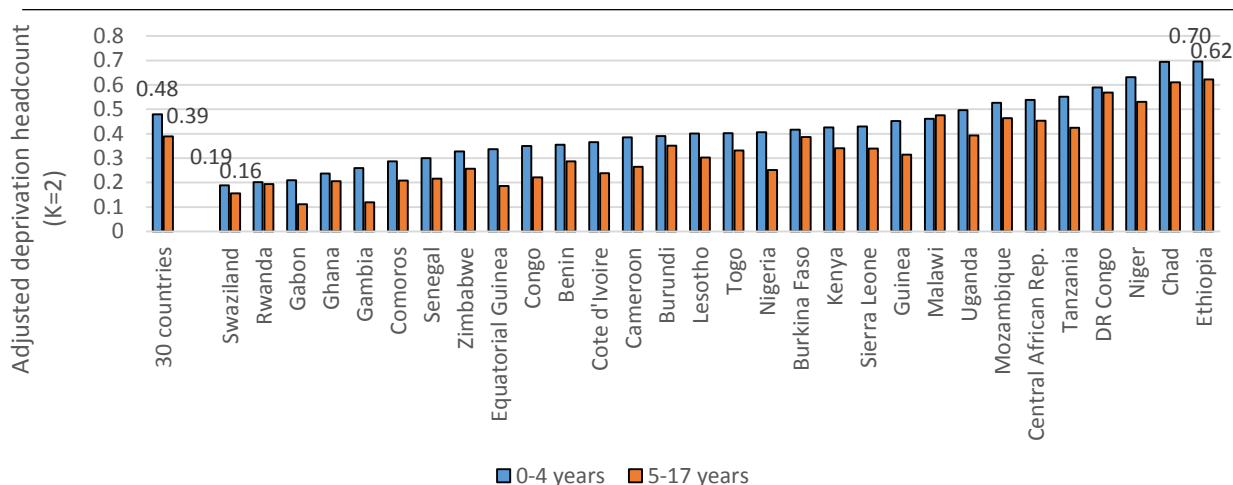
² Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, DR Congo, Eq. Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Malawi, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Swaziland, Tanzania, Togo, Uganda, Zimbabwe.

³ See Brief 4 on the results of deprivation incidence and intensity in sub-Saharan Africa.

figure, they mask the actual deprivations comprised in the multidimensional deprivation ratios, if not further analysed. The adjusted multidimensional deprivation ratio, as created by Alkire and Foster (2011), includes both deprivation incidence and deprivation intensity, and its special feature is that it can be decomposed to show the contribution of each of the dimensions included. The decomposition of the adjusted multidimensional deprivation ratio is a useful way to identify which dimensions contribute to overall child deprivation among the children who are identified as multidimensionally deprived.

The adjusted deprivation headcount is a rate between 0 (no deprivation) and 1 (total deprivation), obtained by multiplying the deprivation headcount ratio with the average deprivation intensity. Figure 2 ranks the countries included in the study using the adjusted deprivation ratio for children younger than five, who are deprived in at least 2 dimensions (blue bars). The adjusted deprivation headcount ratio for children aged 5 to 17 are presented by the orange bars, and show a slightly different ranking of countries. **For children under the age of five the countries with the highest multidimensional deprivation rate are Niger (0.63), Chad (0.69) and Ethiopia (0.70), while for children aged 5 and older, these are the Democratic Republic of Congo (0.57), Chad (0.61) and Ethiopia (0.62).**

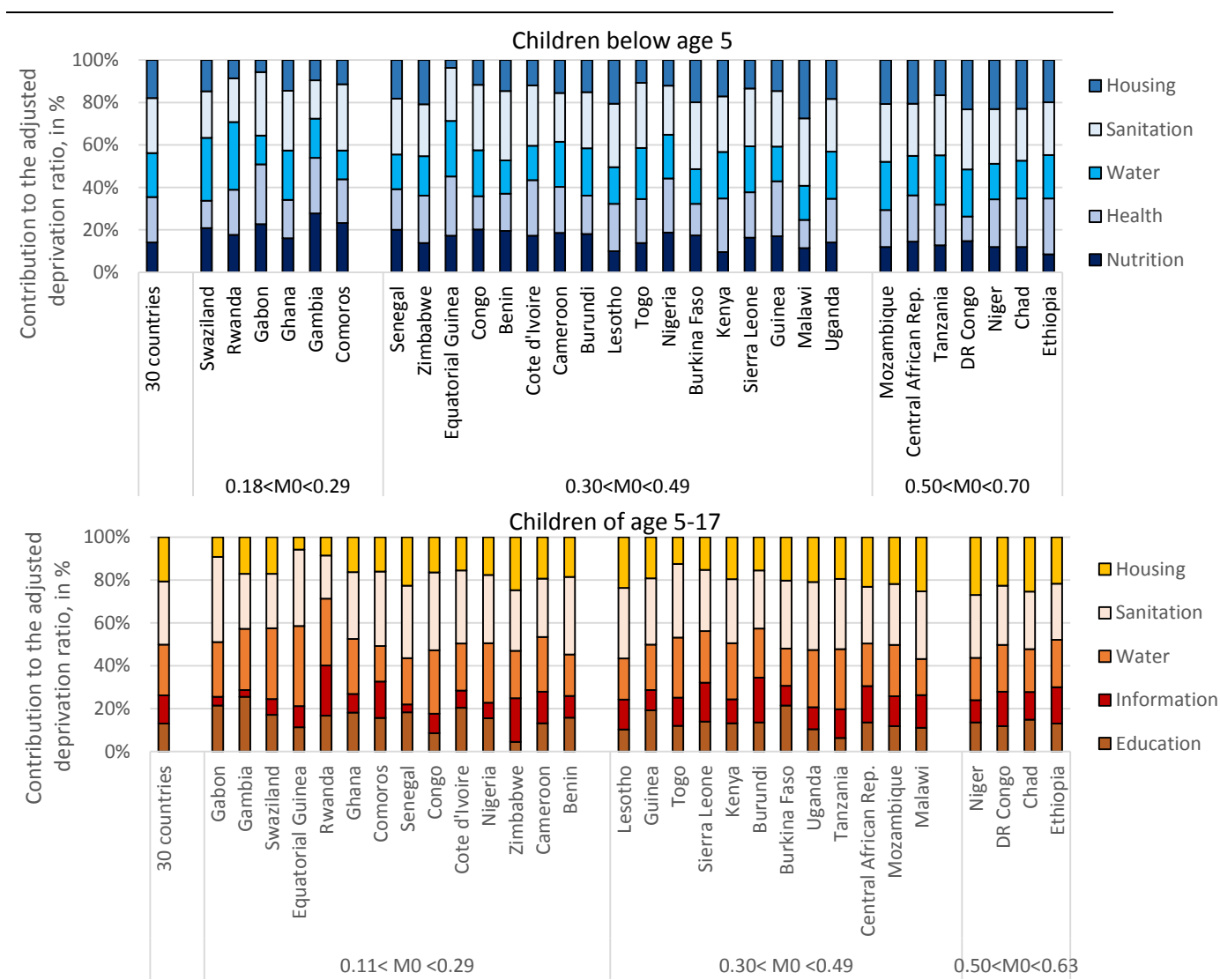
Figure 2: Adjusted multidimensional deprivation ratio for children experiencing 2-5 deprivations (K=2)



Subsequently, Figure 3 shows how the five selected dimensions contribute to the levels of the adjusted deprivation ratio as presented in Figure 2. As an example, the adjusted deprivation ratio for children under the age of five across the 30 selected countries (0.48) is composed of the following deprivations: 14% derives from nutrition deprivation, 21% from health, 21% from water, 26% from sanitation and 18% from deprivations in housing. For the older children, the total adjusted deprivation headcount (0.39) consists of: 13% education, 13% information, 24% water, 29% sanitation, and 21% of housing deprivations. **These findings suggest that deprivation in sanitation, in combination with health and water deprivations for the younger children, and in water and housing for older children, are the main contributors of multidimensional deprivation for children in sub-Saharan Africa.** Moreover, Figure 3 shows there are some noteworthy differences between countries in the relative dimensional contributions to the total multidimensional deprivation level. The upper panel of Figure 3 highlights that the relative contribution is most similar for the countries with a higher adjusted deprivation ratio, while there is more heterogeneity in the contribution pattern for countries with a lower adjusted deprivation ratio. Gabon and Equatorial Guinea have for instance a low contribution of housing to their overall multidimensional deprivation ratio

(between 4% and 6%) and a larger relative contribution from health deprivations (28%), while in Malawi housing is a relatively larger issue than health (contributing 28% and 13%, respectively). The lower panel in Figure 3 for children aged five years and older shows that the relative contribution of housing and information deprivations differs the most across the 30 countries. Interestingly, the contribution to the adjusted multidimensional deprivation ratio by the information and housing dimensions in Rwanda, and water and sanitation dimensions in Togo, are larger compared to the average contributions of each of the dimensions across the 30 countries.

Figure 3: Contribution of each dimension to the total adjusted multidimensional deprivation ratio: children experiencing 2-5 deprivations



Concluding remarks

This Brief has highlighted how the adjusted multidimensional deprivation ratio for children can be decomposed showing the extent of the contribution of each dimensional deprivation. Even though the decomposition does not indicate the differences in magnitude of the deprivations between countries, it demonstrates the relative importance of dimensional deprivations to multidimensional deprivation for

each of the countries in the study. **The findings on the decompositions show that among children across sub-Saharan Africa, sanitation together with health and water for younger children, and sanitation with water and housing for older children, are the main contributors to the overall multidimensional deprivation experienced by children.**

SOURCES

MODA web portal:

<http://www.unicef-irc.org/MODA/>

CC-MODA Technical Note:

De Neubourg, C., J. Chai, M. de Milliano, I. Plavgo, Z. Wei (2012). 'Cross-country MODA Study: Multiple Overlapping Deprivation Analysis (MODA) - Technical note', *Innocenti Working Paper* 2012-05, UNICEF Office of Research, Florence. [\[EN pdf\]](#) [\[FR pdf\]](#)

CC-MODA results of sub-Saharan Africa:

de Milliano, M. and I. Plavgo (2014). Analysing Child poverty and deprivation in sub-Saharan Africa: CC-MODA – Cross Country Multiple Overlapping Deprivation Analysis, *Innocenti Working Paper* No.2014-19, UNICEF Office of Research, Florence.

[\[EN pdf\]](#)

MODA guidelines:

De Neubourg, C., J. Chai, M. de Milliano, I. Plavgo, Z. Wei (2012), 'Step-by-Step Guidelines to the Multiple Overlapping Deprivation Analysis (MODA)', *Innocenti Working Paper* 2012-10, UNICEF Office of Research, Florence. [\[EN pdf\]](#) [\[FR pdf\]](#)

Background on MODA and multidimensional poverty analysis:

De Neubourg, C., M. de Milliano, I. Plavgo (2014). Lost (in) Dimensions: Consolidating progress in multidimensional poverty research, *Innocenti Working Paper* No. 2014-04, UNICEF Office of Research, Florence. [\[EN pdf\]](#)

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Alkire, S., Foster, J. (2011). 'Counting and Multidimensional Poverty Measurements', *Journal of Public Economics*, no. 95, pp. 476-487.

BRIEFS RELATED TO CC-MODA:

- [BRIEF 1: THE BASICS OF THE CROSS-COUNTRY MULTIPLE OVERLAPPING DEPRIVATION ANALYSIS \(MODA\)](#)
- [BRIEF 2: DISTRIBUTION OF DEPRIVATIONS AMONG CHILDREN IN SUB-SAHARAN AFRICA](#)
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- [BRIEF 5: COMPOSITION OF MULTIDIMENSIONAL CHILD DEPRIVATION IN SUB-SAHARAN AFRICA BY DIMENSION](#)
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