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Multidimensional Poverty and Vulnerability to COVID-19: A Rapid Overview of Disaggregated and Interlinked Vulnerabilities in Sub-Saharan Africa

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The COVID-19 pandemic is disrupting lives all around the world. At present, the highest numbers of diagnosed cases are in Europe and the United States.[1] But the virus is spreading swiftly across sub-Saharan Africa, from well-connected and densely populated urban centres to remote and disadvantaged rural areas. Rapid, large-scale policy responses are required to protect those who are most vulnerable to COVID-19, while mitigating additional human costs from other existing deprivations.

Why does context matter? For some, COVID-19 is the biggest immediate threat to their life and livelihood. But the survival and livelihoods of many in sub-Saharan Africa are, at the same time, gravely threatened by other conditions – ranging from abject poverty and food insecurity, to natural disasters or production shocks, conflict, or unmet health needs. Throughout the policy planning process there is also a need to assess the impact that new deprivations, such as job loss during lockdown, will have on the lives of all members of a household, even if they do not contract the virus. How can policy actors access evidence on the multiple vulnerabilities people face, and so respond decisively to COVID-19 without unintentionally creating even worse situations for many people?

This briefing provides a first cut of evidence on the situation within 467 subnational regions across 40 countries of sub-Saharan Africa. It maps some simultaneous deprivations that people are already facing, so policy actors can adjust COVID-19 responses using evidence on differing levels of vulnerability. *Maps on OPHI website* cover each of the 467 regions in greater depth.

KEY MESSAGES

1. Information on overlapping vulnerabilities can be used a) to reduce direct fatalities from COVID-19 and b) to reduce the collateral human cost of COVID-19 policies.
2. The scale of existing vulnerabilities in sub-Saharan Africa is the highest in the world (see Alkire et al. 2020). The collateral impact of COVID-19 on lives and livelihoods needs strong policies of mitigation in this region.
3. Plans need to consider the number of vulnerable people (for targeting and allocation) and the percentage of the population that is vulnerable (to understand coping strategies). Some clusters of high-risk areas also span national boundaries and require a regional approach.
4. Virtually all MPI poor are at risk, while the most vulnerable subnational regions are in Chad, Ethiopia and the Democratic Republic of Congo (DRC).

1. Information on multidimensional overlapping vulnerabilities can be used a) to reduce direct fatalities due to COVID-19 and b) to reduce the collateral human cost of COVID-19 policies.

This rapid overview provides information on where in sub-Saharan Africa people are likely to be at increased risk of COVID-19. They already have overlapping deprivations in key indicators that can lead to a more critical or even lethal course of this disease. Details of the indicators are found on pages 10–11; a brief introduction is below.

Our analysis builds on the **global Multidimensional Poverty Index (MPI)** and its ten indicators: nutrition, child mortality, years of schooling, school attendance (these first four weighted at 1/6th), cooking fuel, sanitation, drinking water, electricity, housing, and assets (weighted at 1/18th). A person who is deprived in at least one-third of the weighted indicators is identified as being multidimensionally poor, or MPI poor.

This overview focusses on the joint distribution of **three COVID-19 risk indicators** from the global MPI. These are nutrition, drinking water, and cooking fuel. Persons are at **risk** if they suffer from **at least one** of these COVID-19 risk indicators. At **high risk** are those suffering **simultaneously from all three** COVID-19 risk indicators. We also identify those who suffer from two out of three COVID-19-related deprivations.

This analysis uniquely covers the joint distribution of deprivations in the COVID-19 risk indicators of the global MPI. But these indicators do not cover other important risk indicators related to the COVID-19 pandemic, such as, for example, handwashing, informal work, overcrowding, or underlying health conditions. Subsequent analyses will include additional indicators.

Table 1. MPI and COVID-19 risk indicators across world regions

	Population*	One risk indicator	Two risk indicators	Three risk indicators	MPI poor and at risk	MPI poor and at high risk
Sub-Saharan Africa	**995.3**	**882.1** (88.6%)**	**391.5** (39.3%)	**218.2** (21.9%)	**569.9** (57.3%)	**215.6** (21.7%)
... of which aged 65+	**59.8**	**52.2** (87.3%)	**25.8** (43.1%)	**5.9** (9.8%)	**32.4** (54.3%)	**5.8** (9.7%)
Arab States	**332.5**	**110.9** (33.3%)	**25.8** (7.8%)	**12.3** (3.7%)	**47.3** (14.2%)	**11.6** (3.5%)
East Asia and the Pacific	**2,023.90**	**1,135.10** (56.1%)	**372.4** (18.4%)	**136.8** (6.8%)	**108.6** (5.4%)	**36.1** (1.8%)
Europe and Central Asia	**108.1**	**23** (21.3%)	**2.8** (2.5%)	**0.4** (0.3%)	**1.1** (1.0%)	**0.2** (0.2%)
Latin America and the Caribbean	**521.1**	**141.9** (27.2%)	**36.1** (6.9%)	**13.6** (2.6%)	**35.5** (6.8%)	**8** (1.5%)
South Asia	**1,766.90**	**1,305.50** (73.9%)	**504.5** (28.6%)	**90.7** (5.1%)	**540.1** (30.6%)	**83** (4.7%)
Developing World	**5,747.80**	**3,598.50** (62.6%)	**1,333.10** (23.2%)	**472.1** (8.2%)	**1,302.50** (22.7%)	**354.5** (6.2%)

* All population figures are computed based on 2017 UN DESA population estimates.

** Percentage values indicate the proportion of people in the given region (row) affected by the given statistic (column).

Source: Authors' computations based on global MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

2. The scale of existing vulnerabilities in sub-Saharan Africa is the highest in the world (see Alkire et al. 2020). The collateral impact of COVID-19 on lives and livelihoods needs strong policies of mitigation in this region.

The region of sub-Saharan Africa is home to the largest number and proportion of people in the world who are most vulnerable to COVID-19. 882 million out of 995 million people (or 89%) in sub-Saharan Africa are **at risk** to COVID-19. Almost two in five (39%) are affected by two COVID-19 risk indicators, and more than one in five people (22%) are **at high risk.** This suggests a disproportionate prevalence of vulnerability to COVID-19 in sub-Saharan Africa.[2] The region accounts for about half (46%) of all people globally that are at high risk to COVID-19 according to these indicators.[3]

Among the **elderly** (age 65 and above), COVID-19 can be particularly harmful. In sub-Saharan Africa, 43% of the elderly live in households that suffer from two COVID-19 risk indicators – a proportion that is much higher than in any other world region.

More than 84% of people in sub-Saharan Africa use **unclean cooking fuel** (Table 2). In the absence of adequate ventilation, 830 million people are likely to be exposed to indoor air pollution, increasing their likelihood of experiencing respiratory or other diseases, and of a more severe coronavirus disease course. Among the elderly, more than 50 million people (84%) are likely to be affected by indoor air pollution. They require special protection in order to prevent high fatality rates. Other COVID-19 risk indicators are widespread too. More than 380 million people (38%) live in households where at least one person is malnourished and almost half of the population (49% or 492 million) does not use safe drinking water (Table 2, first row).

Table 2. Deprivations in COVID-19 risk indicators in sub-Saharan Africa

	Nutrition	Drinking Water	Cooking Fuel
Among the total population*	**380.6** (38.2%)	**491.7** (49.4%)	**837.9** (84.2%)
Among MPI poor population	**335.2** (33.7%)	**381.7** (38.4%)	**560.7** (56.3%)
Among the elderly popultion (65+)	**10.9** (18.2%)	**28.7** (47.9%)	**50.2** (83.9%)

* All population figures are computed based on 2017 UN DESA population estimates.

Source: Authors' computations based on global MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

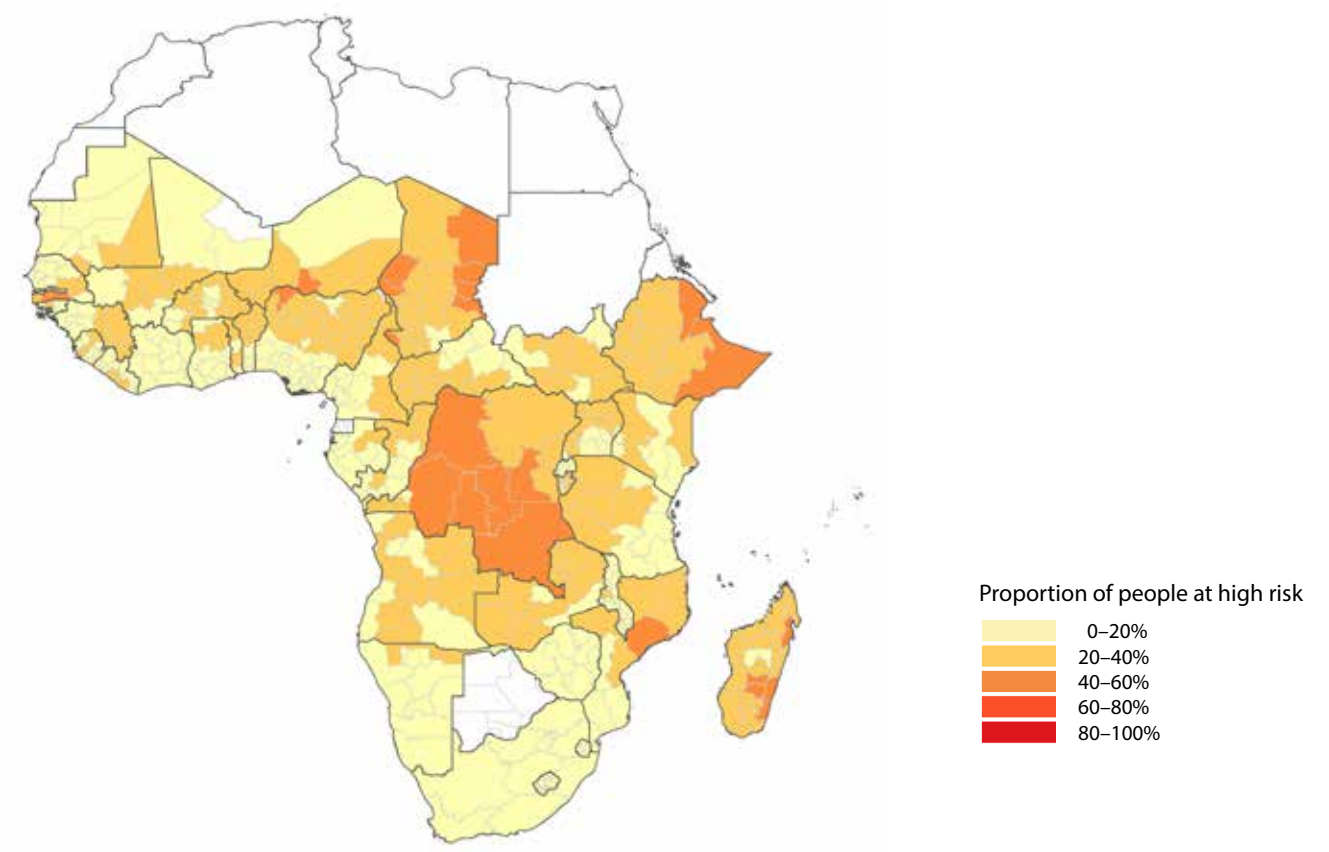
3. Plans need to consider the number of vulnerable people (for targeting and allocation) and the percentage of the population that is vulnerable (to understand coping strategies).

The maps visualise the number and percentage of people who are at high risk of COVID-19 in 467 subnational regions within sub-Saharan Africa. The map showing the **proportion of vulnerable people** (Figure 1a) indicates the density of people at high risk in each subnational region. This can be a guide for policy makers for deciding between the type of policy interventions, such as universal or targeted programmes. The map showing the **number of vulnerable people** (Figure 1b) is useful to estimate the budget of any universal or targeted interventions that may be needed in high-risk areas.

3.1 Some clusters of high-risk areas also span national boundaries and require a regional approach.

Clusters of areas at high risk to COVID-19 are visibly spread across national borders. Given that many borders are porous, there is a high potential benefit from coordinated multi-country preventive policies. For example, if one zooms into West Africa in the map of Figure 1b, clusters of high-risk areas span the Sahel region from Mali and Burkina Faso to Niger, Northern Nigeria and the extreme North of Cameroon. Most subnational regions within this zone are home to one million or more people who are at high risk. In Central and East Africa, subnational regions with at least one million people at high risk include all the regions in the DRC outside Kinshasa and many parts of Tanzania, Kenya and Ethiopia.

Figure 1a. Proportion of people at high risk



Notes: Underlying shp–files are from The Demographic and Health Surveys Program and Global Administrative Areas (2020).
Population figures are computed based on 2017 UN DESA population estimates.
Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.
No MPI data for Botswana and Equatorial Guinea.
Subnational regions for South Africa and South Sudan are included for illustrative purposes, while data do not allow for regional disaggregations as outlined in Alkire, Kanagaratnam and Suppa (2019).
The mapping style is inspired by Ayush Patel.

Source: Christian Oldiges using MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

3.2 The level of vulnerabilities varies tremendously across regions within every country. Subnational regions in the Sahel, Ethiopia, DRC and Tanzania are most at risk.

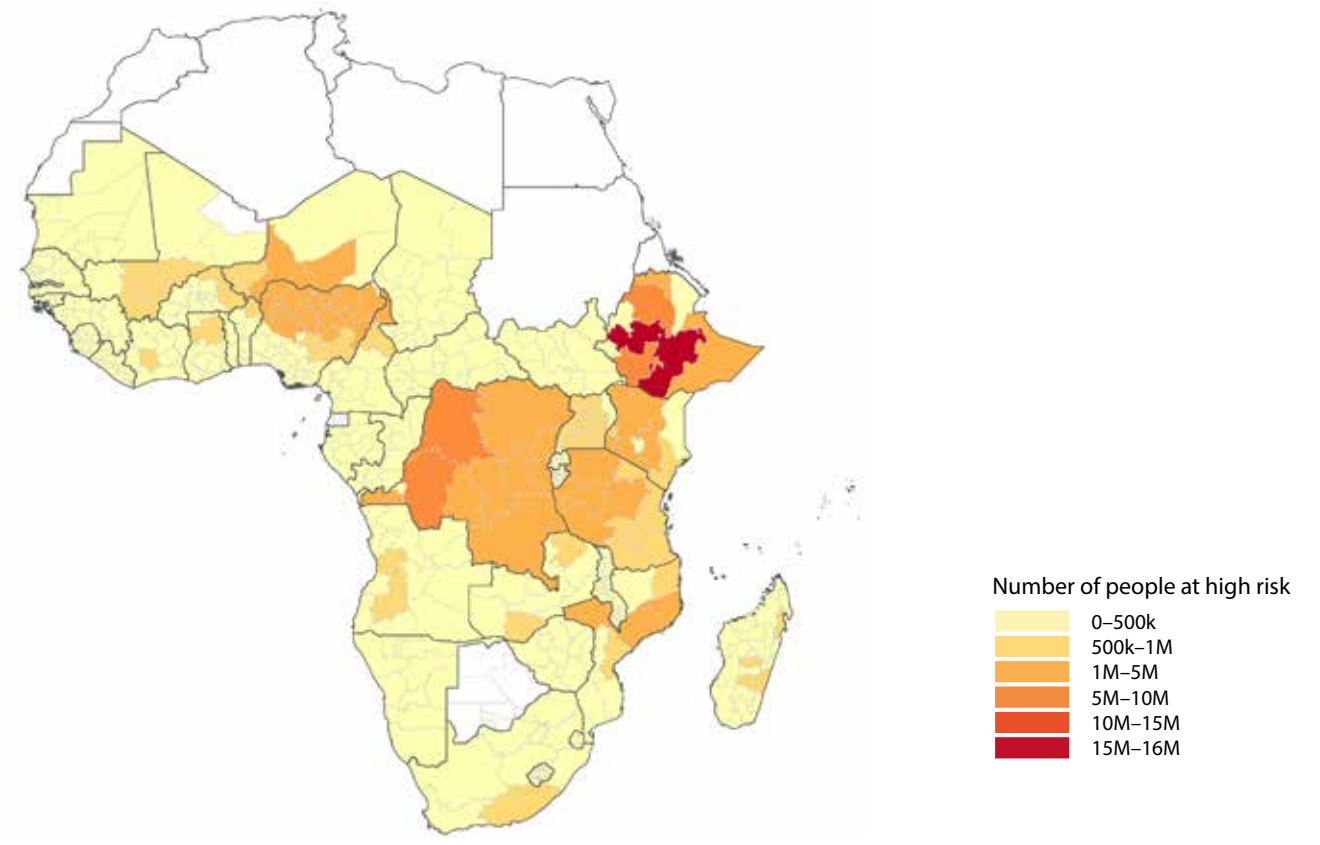
National averages often hide the uneven distributions of COVID-19 vulnerability and multidimensional poverty across subnational regions. The maps and Figure 2 (next page) reveal these within-country differences; online maps showing these statistics for all subnational regions are also available.

MOST VULNERABLE COUNTRIES

Country rankings by absolute numbers and proportions of people at **high risk differ.**

1. The total number of people at high risk per country ranges from 5,000 in São Tomé and Príncipe and 66,000 in Gabon to 41 million in Nigeria.
2. The countries with the five highest absolute numbers of people at high risk are Nigeria (41 million), Ethiopia (40 million), DRC (32 million), Tanzania (12 million), and Uganda (9 million). These five countries alone are home to 61% of all who are at high risk in sub-Saharan Africa.
3. The countries with the five highest proportions of people at high risk are DRC (40%), Ethiopia (37%), Niger (35%), Chad (32%), and Madagascar (29%).

Figure 1b. Number of people at high risk



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Source: Christian Oldiges using MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

People in these five countries are disproportionately at high risk compared to the population-weighted average for sub-Saharan Africa of 22%.

3.3 Subnational regions vs national averages.

The proportion of people who are at high risk at the subnational level can vary substantially from national averages. Figure 2 shows differences in high risk incidence within each of the 40 countries in sub-Saharan Africa. While the blue dots represent national averages, the red dots show the percentage of people who are at high risk in each subnational region within the countries. In nearly all countries, there is a large range of risk levels.

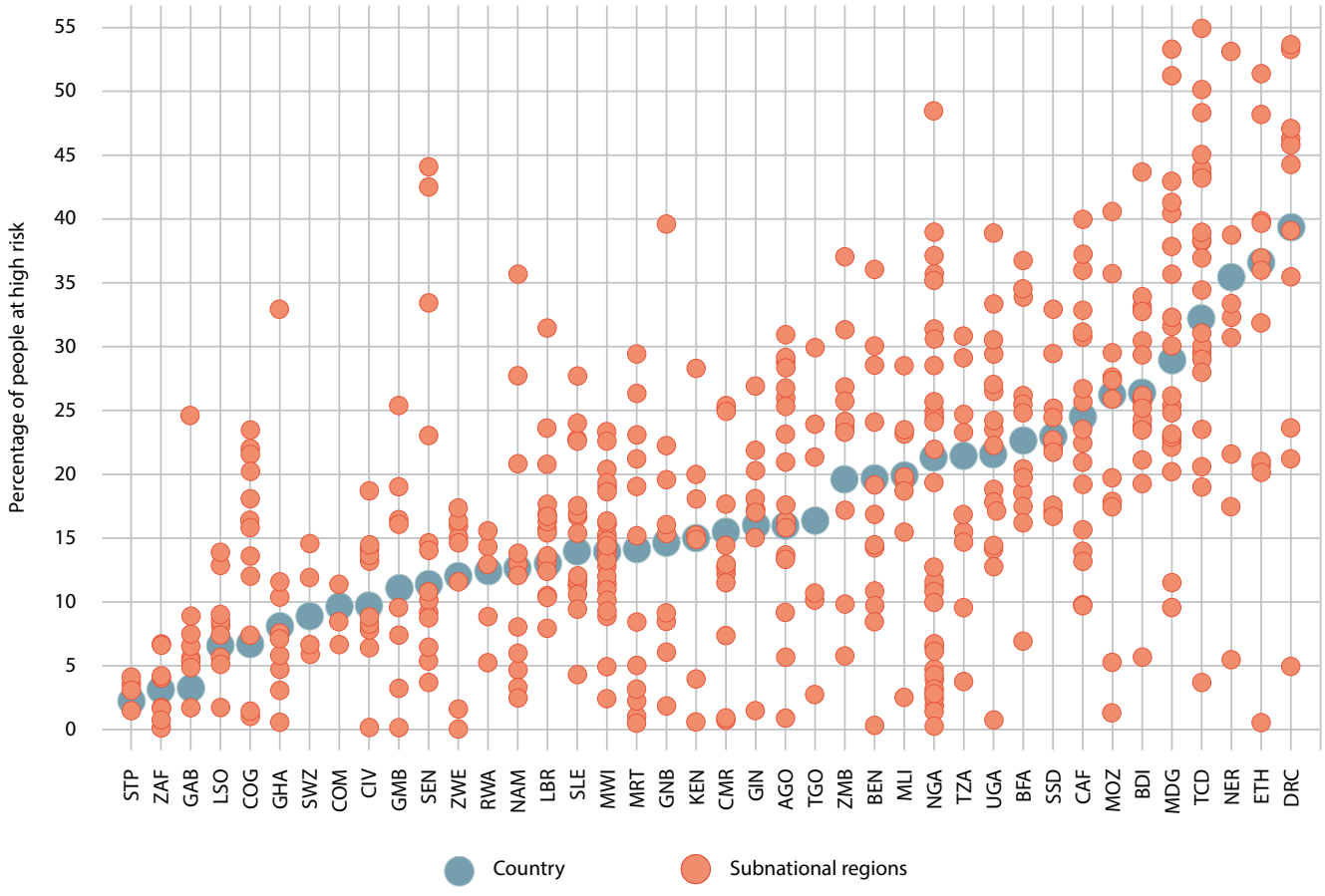
In Senegal, for example, 11% of the population is at high risk. But within the country, risk rates range from 4% in Thiès to 43% in Kolda and 44% in Sédhiou. Across countries, the DRC accounts for the highest proportion of people at risk (39%). Subnational risk rates, however, range from as low as 5% in Kinshasa to as high as 54% in Bandundu. Variation in the second most at-risk country, Ethiopia, is between 1% (Addis Ababa) and 51% (Afar), with a national average of 37%. The poorest of all 467 subnational regions is Wadi Fira in Chad where 55% of the population is at high risk.

This evidence suggests that any national-level COVID-19 response needs to consider substantial differences across subnational regions.

4. Virtually all MPI poor are at risk, while the most vulnerable subnational regions are in Chad, Ethiopia and the Democratic Republic of Congo (DRC).

Zooming into the subset of the MPI poor population of sub-Saharan Africa (Table 2, and Figure 3), 560 million people (or 56%) are MPI poor and deprived of clean

Figure 2. Percentage of people at high risk, country level and subnational level



Note: Population figures are computed based on 2017 UN DESA population estimates.

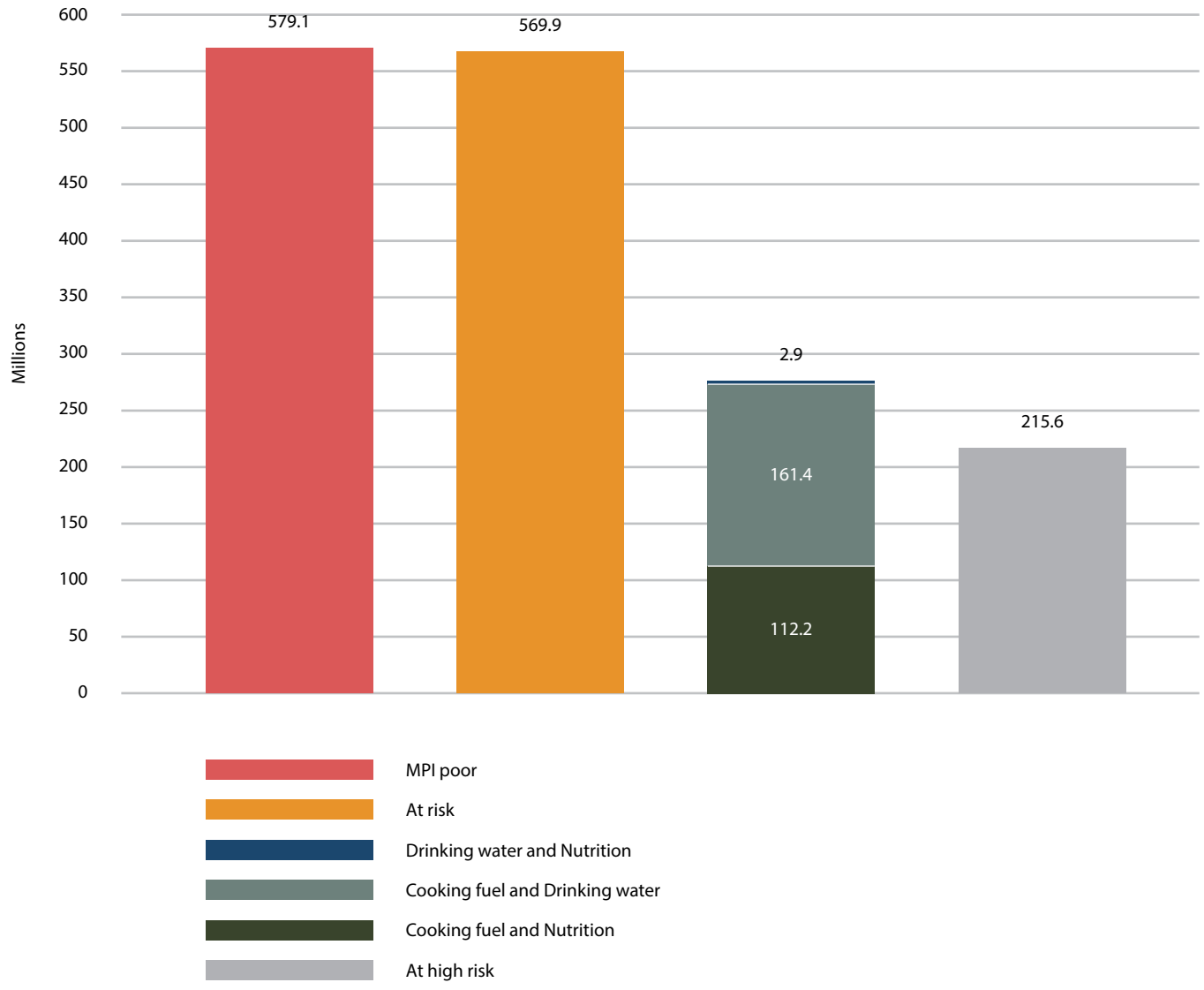
Source: Authors' computations based on global MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

cooking fuel. More than one in three are both MPI poor and deprived of safe drinking water (34%, or 335 million), while almost 40% are MPI poor and deprived in nutrition (382 million).

Virtually all MPI poor people (99%) in sub-Saharan Africa are affected by at least one COVID-19 risk indicator (Figure 3). While 216 million people are MPI poor and **at high risk,** 277 million are MPI poor and affected by two out of three COVID-19 risk indicators. Among the MPI poor who have two COVID-19 risk indicators, 112 million lack clean cooking fuel and drinking water, while 161 million are deprived of clean cooking fuel and good nutrition. To achieve high impact on MPI reduction and COVID-19 prevention, these two combinations of unclean cooking fuel and unsafe drinking water, and unclean cooking fuel and malnutrition need to be reduced.

In what follows, this briefing focuses on the 216 million people who are MPI poor and at high risk in sub-Saharan Africa. These people account for 60% of the MPI poor and the COVID-19-high-risk population globally.

Figure 3. MPI poor people and overlapping COVID-19 vulnerabilities in sub-Saharan Africa



Note: Population figures are computed based on 2017 UN DESA population estimates.

Source: Authors' computations based on global MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

4.1 MPI and the most vulnerable subnational regions.

Ordering subnational regions either by the absolute number of people, or by the percentage of people that are MPI poor and at high risk, provides useful information for budgeting and the type of interventions that may be needed, respectively. For example, as Table 3 shows, with more than 15 million people who are MPI poor and at high risk, Oromia in Ethiopia leads the ranking of subnational regions at high risk in terms of absolute numbers. Thus, it may require special attention by governments and the global community. At the same time, since just over one third of Oromia's population (37%) is MPI-poor and at high risk, a universal roll-out of policy interventions across all 41.1 million people in the Oromia region may either be inefficient or not feasible. In contrast, the number of MPI poor people at high risk in Wadi Fira in Chad seems small: 359,000. Yet, with 55% of its population being MPI poor and at high risk, Wadi Fira leads the subnational ranking in terms of proportion. A swift emergency response through universal provision may be both more effective and efficient than a targeted one in this region.

In the ten most vulnerable subnational regions according to the proportion of the population MPI poor and at high risk, between 50% and 55% of all people are at high risk (Table 3). These include three subnational regions from Chad, two from the DRC, two from Madagascar, two from Ethiopia and one from Niger.

The regions with the highest number of high-risk people range from around 4 million (Kano, Nigeria) to 15 million (Oromia, Ethiopia). All are large regions by geographic size, population density, or both. Effective targeted responses should consider both statistics (absolute number and proportion) to design and appropriately budget for programmes and interventions.

Table 3. Ten most vulnerable subnational regions

Rank	Subnational region (country)	Number of MPI poor and at high risk (thousands)*	Rank	Subnational region (country)	MPI poor and at high risk (%)
1	Oromia (Ethiopia)	15,195.5	1	Wadi Fira (Chad)	54.9
2	Amhara (Ethiopia)	9,543.4	2	Bandundu (DRC)	53.7
3	SNNPR (Ethiopia)	8,273.5	3	Atsimo Atsinanana (Madagascar)	53.3
4	Bandundu (DRC)	7,166.7	4	Kasaï Occidental (DRC)	53.3
5	Équateur (DRC)	5,727.8	5	Maradi (Niger)	53.1
6	Lake (Tanzania)	4,742.9	6	Afar (Ethiopia)	51.4
7	Borno (Nigeria)	4,162.0	7	Anamoroni'i Mania (Madagascar)	51.2
8	Katsina (Nigeria)	4,045.3	8	Mayo Kebbi Ouest (Chad)	50.2
9	Kasaï Oriental (DRC)	3,997.1	9	Ennedi Est & Ennedi Ouest (Chad)	48.3
10	Kano (Nigeria)	3,819.4	10	Somali (Ethiopia)	47.8

Note: Population figures are computed based on 2017 UN DESA population estimates.

Source: Authors' computations based on global MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

CONCLUDING REMARKS

1. The COVID-19 pandemic requires a clear, empirical focus on overlapping deprivations for three reasons:
   - Overlapping deprivations amplify the risk of fatality if a person contracts COVID-19.
   - Lives may also be put at risk if poor people's existing deprivation load is augmented by job loss or restrictions on movement.
   - Evidence on overlapping deprivations can be used to manage the risks from the COVID-19 pandemic and its policy responses for the poorest and most at risk.
2. This briefing draws on the global MPI database for sub-Saharan Africa and provides information on people's joint deprivations across 40 countries, 467 subnational regions, and 995 million people.

   With its associated online data tables this briefing provides detailed data on two groups of people:
   - The 571 million people who live in acute multidimensional poverty, experiencing deprivations in at least one-third of the ten weighted global MPI indicators spanning health, education and living standards.
   - Persons who are simultaneously deprived in one (882m), two (281m), or three (216m) COVID-19 risk indicators: nutrition, drinking water, and cooking fuel.
3. Maps visually depict both the percentage as well as the number of people at high risk to COVID-19 across 467 subnational regions. This information can inform preventive policy interventions and decisions between targeting and universal coverage of policies in subnational regions. These maps are also available online.
4. Nearly all countries have high variations in the percentage of people at risk to COVID-19. A uniform set of preventive policies within countries risks being inefficient. Close coordination between the central and subnational actors may deliver better results.
5. High-risk regions span national boundaries, which are often porous. There may be a great need for regional or global actors to adopt a coordinating role for highly vulnerable people in these areas.

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WHAT WE MEASURE

THE GLOBAL MPI

The global Multidimensional Poverty Index (global MPI) is a measure of acute multidimensional poverty, based on household surveys covering 101 countries and 5.7 billion people in developing countries – 91% of the population in the developing world. Complementing traditional monetary poverty metrics, it captures the overlapping deprivations that poor people experience across ten indicators in the dimensions of education, health and living standards.

THE GLOBAL MPI IN SUB-SAHARAN AFRICA

The 2019 global MPI database covers almost 1 billion people or 99% of the regional population in sub-Saharan Africa, spanning 40 countries and 467 subnational regions. It offers readily available data that can be used now to shed light on how people across the continent suffer from poverty indicators that may make them more vulnerable to COVID-19.[4] The joint distribution of vulnerabilities makes visible how the same person may be simultaneously affected by multiple COVID-19 risk indicators. The global MPI data help to identify subgroups that are both MPI poor and simultaneously affected by COVID-19 risk indicators – which ultimately helps policymakers to ensure that no one is left behind.[5]

THREE COVID-19 RISK INDICATORS: NUTRITION, DRINKING WATER AND COOKING FUEL

Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2), the virus that causes Coronavirus Disease 19 (COVID-19), is at the root of the pandemic. Certain population subgroups are expected to be particularly vulnerable to suffering from more severe coronavirus disease courses.[6]

Among its poverty indicators and associated information platform, the global MPI includes three indicators that can be readily deployed to indicate whether or not a household may include members who are more vulnerable to COVID-19.[7] Based on currently available information and clinical expertise, the World Health Organization and the Centers for Disease Control and Prevention identify those with compromised immune systems as a possible COVID-19 high-risk group.[8] Malnutrition is strongly associated with immunodeficiency, morbidity and mortality – particularly among children, the elderly, and people with acute respiratory infections.[9] Through the nutrition indicator, the global MPI captures households with at least one undernourished member, i.e. a child under five years of age who is stunted or underweight, or any other person with a low body mass index.[10] Unsafe drinking water is also associated with immunodeficiency, undernutrition, morbidity and mortality – particularly in sub-Saharan Africa.[11] The drinking water indicator in the global MPI captures individuals who do not have access to safe drinking water according to SDG standards. The Centers of Disease Control and Prevention identify those with pre-existing respiratory infections as another possible COVID-19 high-risk group, based on currently available information and clinical expertise.[12] Solid or unclean cooking fuel is associated with indoor air pollution which increases the chance of respiratory infection and is related to much of the global disease burden. The cooking fuel indicator in the global MPI captures those who are affected by indoor air pollution in their homes.[13]

STRUCTURE OF THE GLOBAL MPI

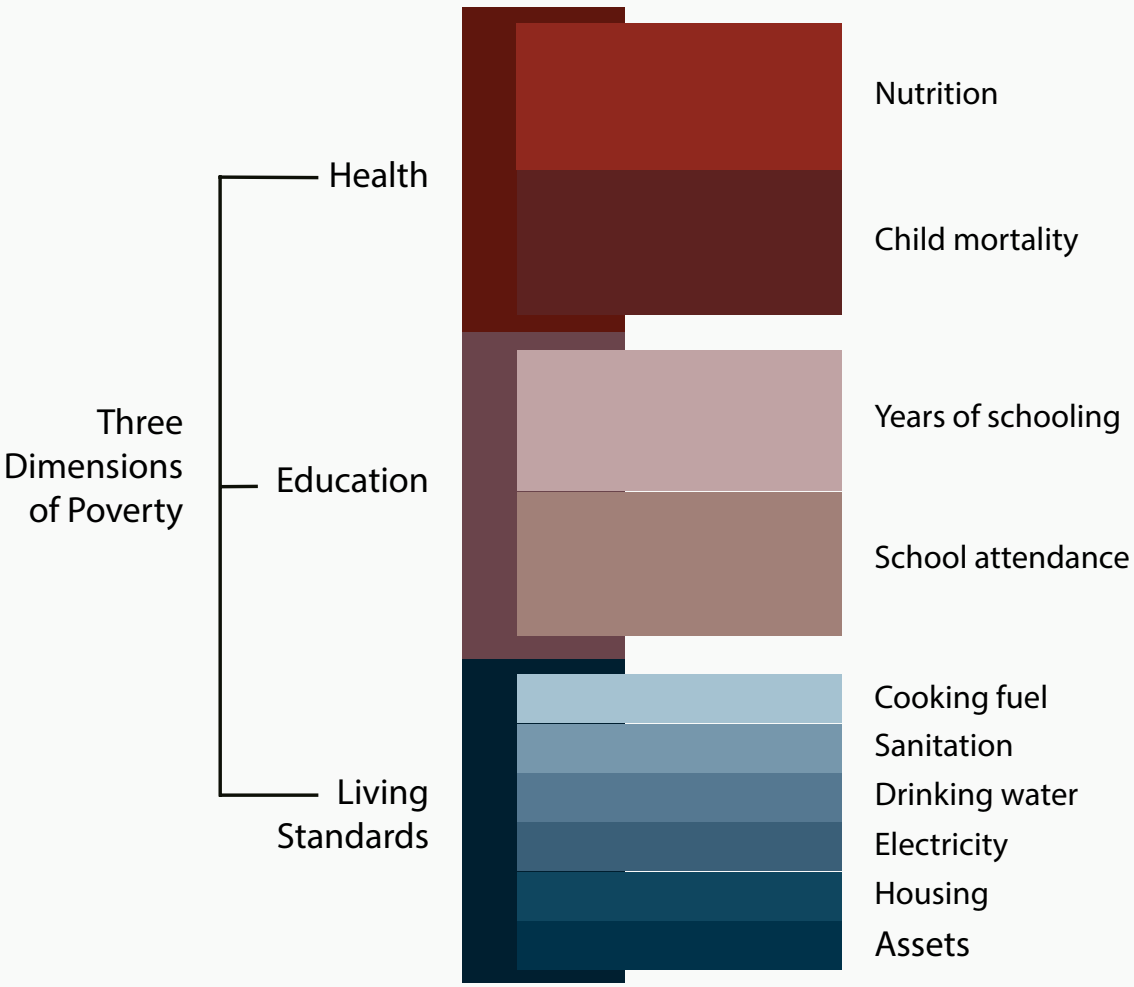

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Table 4. Number and levels of multidimensional poverty and COVID-19 risk by country (millions)

Country	Population*	One risk indicator (at risk)	Two risk indicators	Three risk indicators (at high risk)	MPI poor and at risk	MPI poor and at high risk
Angola	29.8	22.8	9.0	4.8	14.8	4.8
		(76.4%)**	(30.1%)	(16.0%)	(49.8%)	(16.0%)
Burundi	10.9	10.8	5.2	2.9	8.1	2.9
		(99.7%)	(47.6%)	(26.3%)	(74.2%)	(26.3%)
Benin	11.2	10.8	4.9	2.2	7.5	2.2
		(96.7%)	(43.8%)	(19.6%)	(66.7%)	(19.5%)
Burkina Faso	19.2	18.6	8.6	4.3	16.1	4.3
		(97.1%)	(44.6%)	(22.6%)	(83.7%)	(22.6%)
Central African Republic	4.7	4.7	2.4	1.1	3.7	1.1
		(99.8%)	(52.0%)	(24.5%)	(79.3%)	(24.4%)
Côte d'Ivoire	24.3	18.4	7.4	2.4	10.9	2.3
		(75.9%)	(30.6%)	(9.7%)	(45.1%)	(9.6%)
Cameroon	24.1	20.6	9.0	3.7	10.8	3.6
		(85.5%)	(37.5%)	(15.5%)	(45.0%)	(14.8%)
Chad	14.9	14.6	7.2	4.8	12.7	4.8
		(97.9%)	(48.3%)	(32.2%)	(85.4%)	(32.2%)
Congo, DR	81.3	80.0	34.3	32.0	60.2	32.0
		(98.4%)	(42.1%)	(39.4%)	(74.0%)	(39.3%)
Congo	5.3	3.7	1.3	0.4	1.3	0.4
		(69.9%)	(25.2%)	(6.8%)	(24.1%)	(6.7%)
Comoros	0.8	0.7	0.3	0.1	0.3	0.1
		(87.7%)	(39.4%)	(9.7%)	(37.0%)	(9.1%)
Eswatini, Kingdom of	1.4	0.9	0.4	0.1	0.3	0.1
		(68.9%)	(31.2%)	(8.9%)	(18.8%)	(7.3%)
Ethiopia	105.0	101.8	44.8	38.5	87.6	38.4
		(97.0%)	(42.6%)	(36.6%)	(83.4%)	(36.6%)
Gabon	2.0	0.8	0.2	0.1	0.3	0.1
		(39.7%)	(10.6%)	(3.3%)	(14.4%)	(3.2%)
Ghana	28.8	23.4	7.8	2.3	8.6	2.3
		(81.2%)	(27.2%)	(8.1%)	(29.9%)	(8.0%)
Guinea	12.7	12.6	5.6	2.0	7.9	2.0
		(98.8%)	(44.0%)	(16.0%)	(61.8%)	(15.8%)
Gambia	2.1	2.1	0.9	0.2	1.2	0.2
		(98.0%)	(44.5%)	(11.1%)	(55.0%)	(10.9%)
Guinea-Bissau	1.9	1.8	0.8	0.3	1.2	0.3
		(98.5%)	(40.5%)	(14.7%)	(66.9%)	(14.7%)
Kenya	49.7	43.6	19.6	7.4	19.1	7.4
		(87.8%)	(39.4%)	(15.0%)	(38.5%)	(14.9%)
Liberia	4.7	4.7	2.2	0.6	3.0	0.6
		(99.5%)	(47.0%)	(13.0%)	(62.9%)	(12.8%)

Table 4. continue

Country	Population*	One risk indicator (at risk)	Two risk indicators	Three risk indicators (at high risk)	MPI poor and at risk	MPI poor and at high risk
Lesotho	2.2	1.7	0.7	0.1	0.7	0.1
		(74.1%)	(32.9%)	(6.6%)	(33.0%)	(6.5%)
Madagascar	25.6	25.4	12.1	7.4	19.9	7.4
		(99.5%)	(47.3%)	(28.9%)	(77.8%)	(28.9%)
Mali	18.5	18.4	8.0	3.7	14.5	3.7
		(99.4%)	(43.0%)	(19.9%)	(77.9%)	(19.8%)
Mozambique	29.7	28.8	13.7	7.8	21.5	7.7
		(97.1%)	(46.3%)	(26.2%)	(72.4%)	(26.1%)
Mauritania	4.4	3.5	1.5	0.6	2.2	0.6
		(78.4%)	(33.0%)	(14.1%)	(49.1%)	(14.0%)
Malawi	18.6	18.3	8.9	2.6	9.8	2.6
		(98.1%)	(48.0%)	(14.0%)	(52.6%)	(13.9%)
Namibia	2.5	1.8	0.7	0.3	1.0	0.3
		(71.0%)	(29.3%)	(12.6%)	(37.8%)	(12.6%)
Niger	21.5	21.3	9.5	7.6	19.4	7.6
		(99.2%)	(44.4%)	(35.4%)	(90.3%)	(35.4%)
Nigeria	190.9	163.7	71.3	40.6	98.0	39.1
		(85.7%)	(37.4%)	(21.3%)	(51.3%)	(20.5%)
Rwanda	12.2	12.1	6.6	1.5	6.6	1.5
		(99.5%)	(54.1%)	(12.4%)	(54.4%)	(12.3%)
Senegal	15.9	12.5	4.9	1.8	8.3	1.8
		(78.8%)	(31.1%)	(11.4%)	(52.1%)	(11.1%)
Sierra Leone	7.6	7.5	3.3	1.1	4.4	1.0
		(98.7%)	(43.9%)	(13.9%)	(57.8%)	(13.8%)
South Sudan	12.6	12.5	6.5	2.9	11.5	2.9
		(99.6%)	(51.6%)	(22.9%)	(91.7%)	(22.9%)
Sao Tome and Principe	0.2	0.1	0.0	0.0	0.0	0.0
		(59.8%)	(17.7%)	(2.3%)	(19.8%)	(2.2%)
Togo	7.8	7.5	3.4	1.3	3.7	1.3
		(96.1%)	(43.4%)	(16.4%)	(48.1%)	(16.1%)
Tanzania	57.3	55.7	26.9	12.3	31.8	12.2
		(97.2%)	(47.0%)	(21.5%)	(55.4%)	(21.4%)
Uganda	42.9	42.3	21.6	9.3	23.6	9.2
		(98.7%)	(50.4%)	(21.6%)	(55.0%)	(21.4%)
South Africa	56.7	22.7	6.1	1.8	3.3	1.4
		(40.1%)	(10.8%)	(3.1%)	(5.9%)	(2.4%)
Zambia	17.1	15.7	7.2	3.4	9.1	3.3
		(92.1%)	(42.4%)	(19.6%)	(53.2%)	(19.5%)
Zimbabwe	16.5	13.1	6.4	2.0	5.2	2.0
		(79.2%)	(38.6%)	(11.9%)	(31.7%)	(11.9%)

* All population figures are computed based on 2017 UN DESA population estimates.

** Percentage values indicate the proportion of people in the given region (row) affected by the given statistic (column).

Source: Authors' computations based on global MPI data computed by Alkire, Kanagaratnam and Suppa (2019).

NOTES

1 As of 29 April 2020 according to official counts of confirmed cases by the European Centre for Disease Prevention and Control.

2 See also Alkire et al. (2020).

3 This is in line with the results of the Infectious Disease Vulnerability Index, according to which 22 of the 25 most-vulnerable countries are in sub-Saharan Africa. See Moore et al. (2016).

4 All population aggregates use 2017 data. The data sources and years as well as country briefings, data tables including standard errors, do-files, and an interactive databank are online *here*. The next update is in July 2020. Data used to compute the global MPI are from 2007–2018, though 5.2 billion of the 5.7 billion people covered and 1.2 billion of the 1.3 billion multidimensionally poor people identified are captured by surveys from 2013 or later.

5 For a general overview and the latest information on the COVID-19 pandemic, please refer to the WHO COVID-19 Coronavirus website (WHO 2020a, b). On Leaving No One Behind and protecting those most vulnerable during this pandemic, see also the United Nations Department of Global Communications (2020).

6 See CDC (2020) and WHO (2020a).

7 This briefing considers risk indicators within the global MPI that are readily available for rapid analysis. See Alkire, Kanagaratnam, and Suppa (2019) for a detailed description of the indicator definitions. Additional analyses based on wider sets of indicators will shortly be available at the *OPHI website.* There are other important risk factors – including old-age, non-communicable diseases such as diabetes, which are less strongly associated with unsafe drinking water and undernutrition, or infectious diseases such as HIV/AIDS and access to quality health infrastructure, such as intensive care beds with ventilators – which we cannot consider here. And apart from the most immediate risks to critical or lethal coronavirus disease courses analysed here, there are also risk-gradients of contracting the virus in the first place – where indicators such as access to handwashing facilities and soap as well as overcrowded households, access to information, and the availability of personal protective equipment such as facemasks that can prevent virus transmission are key vulnerability indicators. Lastly, this pandemic also brings with it a multiplicity of socio-economic shocks and associated vulnerable population groups – from home-schooling and social isolation through domestic violence to unemployment and loss of livelihoods and homes. Many who are already poor will face new or exacerbated deprivations. Others will fall into poverty due to this pandemic and its implications. On COVID-19 risk indicators, see also: *The Lancet* (2020); DHS Program (2020); Unicef MICS (2020); as well as Misra et al. (2020), which compare statistical systems and capacity and emphasise the importance of publicly available data and COVID-19 advice; and, particularly for low-income contexts and sub-Saharan Africa, Ayebare et al. (2020).

8 See CDC (2020) and WHO (2020a).

9 See, *inter alia,* Bourke, Berkley, and Prendergast (2016). See also WHO (2018b) and WHO (2019a), which report that 45% of deaths among children under the age of 5 are related to undernutrition and to pneumonia, or other acute respiratory infections, particularly in low- and middle-income countries. Furthermore, the *Global Burden of Disease Study* reports that the death rate from pneumonia (most frequently affecting children younger than five years and adults older than 70 years) is highest in sub-Saharan Africa. See GBD 2017 Causes of Death Collaborators (2018). See also Our World in Data (2019b) and Ginsburg, et al. (2015), who report pneumonia as the leading infectious cause of death in children younger than five years, about half of which is associated with undernutrition. An additional respiratory disease, such as COVID-19, may disproportionately affect populations who are already at increased risk due to immunodeficiency or respiratory infection.

10 The global MPI captures deprivations at the household level. In the case of undernutrition, it considers a household and *all of its members* deprived if at least one household member is evidently undernourished. Thus, the number of people deprived in nutrition indicates the number of people who live in a household where **at least one** person is undernourished. Deprivations of clean cooking fuel and safe **drinking water**, on the other hand, affect all household members equally. A person is deprived in water if they lack safe drinking water within a 30-minute walk from home and in **cooking fuel** if they cook with wood, charcoal, or dung. For details see Alkire, Kanagaratnam, and Suppa (2019).

11 See, *inter alia,* Clasen et al. (2014); Bain et al. (2014), Prüss-Ustün et al. (2014); WHO (2019b). We also know that of the 492 million people in sub-Saharan Africa who are deprived of access to a clean source of drinking water, 81.6%, or 401 million, are at the same time deprived of access to improved sanitation – another key indicator of morbidity and risk of mortality, associated with immunodeficiency. According to the *Global Burden of Disease Study*, the mortality rate related to unsafe sanitation is particularly high in sub-Saharan Africa and 6% of deaths in low-income countries are attributed to unsafe drinking water, with the cause-specific mortality ratio being highest in sub-Saharan Africa, *link*. WHO, UNICEF, and USAID (2015) summarised evidence on the link between water, sanitation and hygiene (WASH) and, via undernutrition, disease and mortality.

12 CDC (2020).

13 See, *inter alia,* Gordon et al. (2014); WHO Europe (2006); WHO (2018a). The disease burden and immunodeficiences associated with indoor air pollution are not only related to respiratory diseases. See also Schraufnagel et al. (2019a, b). Where immunodeficiency and respiratory infections due to indoor air pollution overlap, severe vulnerability to lethal coronavirus disease courses may be further exacerbated. According to the *Global Burden of Disease* (GBD) Study, mortality rates related to indoor air pollution are particularly high in sub-Saharan Africa. See GBD 2017 Causes of Death Collaborators (2018). See also Our World in Data (2019a). There is also some preliminary evidence on the association between COVID-19 fatalities and public health burden and air pollution. See, for example, Conticini, Frediani, and Caro (2020); Ogen (2020); Travaglio et al. (2020); and Wu et al. (2020). Preliminary study results also suggest the potential of airborne transmission of SARS-CoV-2 via particular matter, especially where levels of air pollution are high. See, for example Gormley, Aspray, and Kelly (2020); Setti et al. (2020a, b); Coccia (2020); Frontera et al. (2020); and Martelletti and Martelletti (2020). See also Qin et al. (2020); Liu et al. (2020); Doremalen et al. (2020); the response by Rubens, Karakousis, and Jain (2020); Yu et al. (2004) and Yan et al. (2018). Previous studies on SARS-CoV found that high fatality rates might be partially explainable through its association with air pollution. See, for example, Cui et al. (2003). SARS-CoV and SARS-CoV-2 are estimated to share about 80% homology. See Cai et al. (2020).

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