



# All Hands on Deck

## Reducing Stunting through Multisectoral Efforts in Sub-Saharan Africa

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# Background and Motivation

- Increases in real GDP and income are necessary but not sufficient for reductions in child malnutrition.
- Faster progress towards reducing stunting in SSA, will require recruiting more sectors in the drive to improve nutrition (sectors such as agriculture, education, social protection, and water, sanitation, and hygiene)
- Key to a successful multi-sectoral approach is having a more holistic/systemic view of gaps in access to adequate levels of the underlying determinants of nutrition: adequate level of Food & Care, Health, and Environment

# Study Objective

Inform broad policy design and choices by:

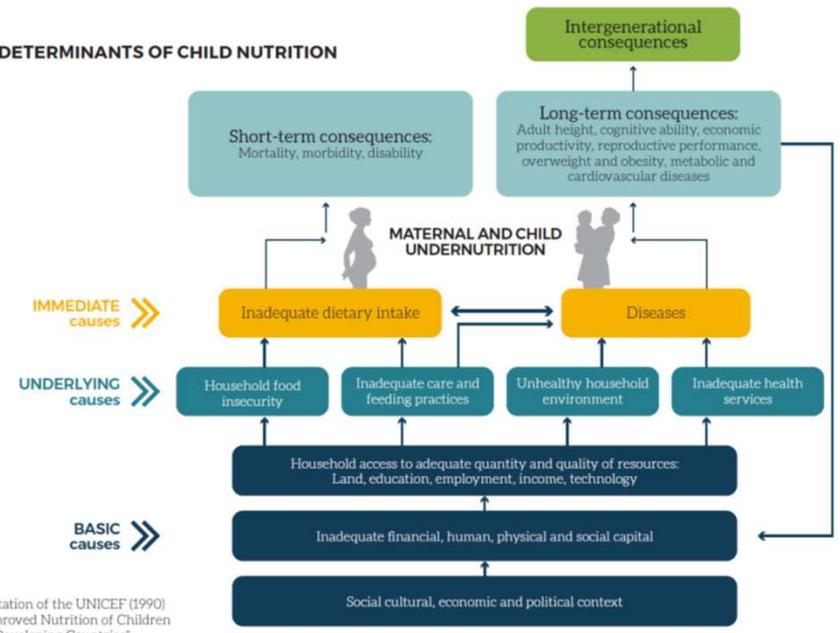
1. Summarizing the extent to which children have access to adequate levels of the three underlying determinants of nutrition— Food & Care, Health, and Environment.
2. Identifying whether access to adequate levels of the main underlying determinants of nutrition— Food & Care, Health, and Environment are -- on their own and interactively are correlated with lower stunting rates
3. What is the role of income growth and income stability on child stunting and how does income interact with the underlying drivers of nutrition?

# Methodology and Data

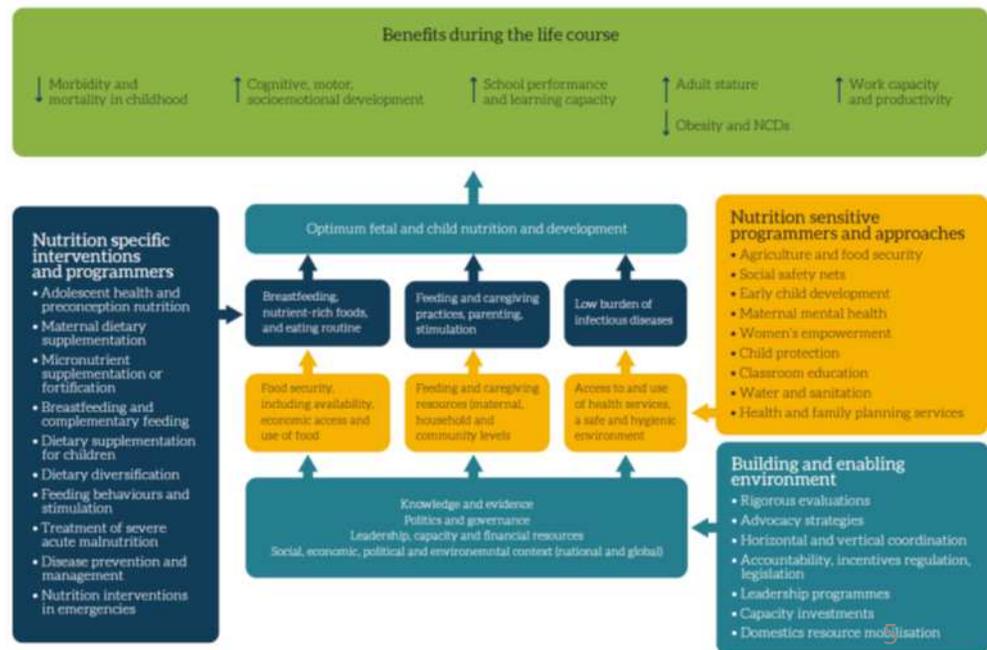
# Conceptual Framework (CF)

## Adapted From the Original UNICEF CF and Updated CF

FIGURE 5. DETERMINANTS OF CHILD NUTRITION



Source: An adaptation of the UNICEF (1990) "Strategy for Improved Nutrition of Children and Women in Developing Countries"

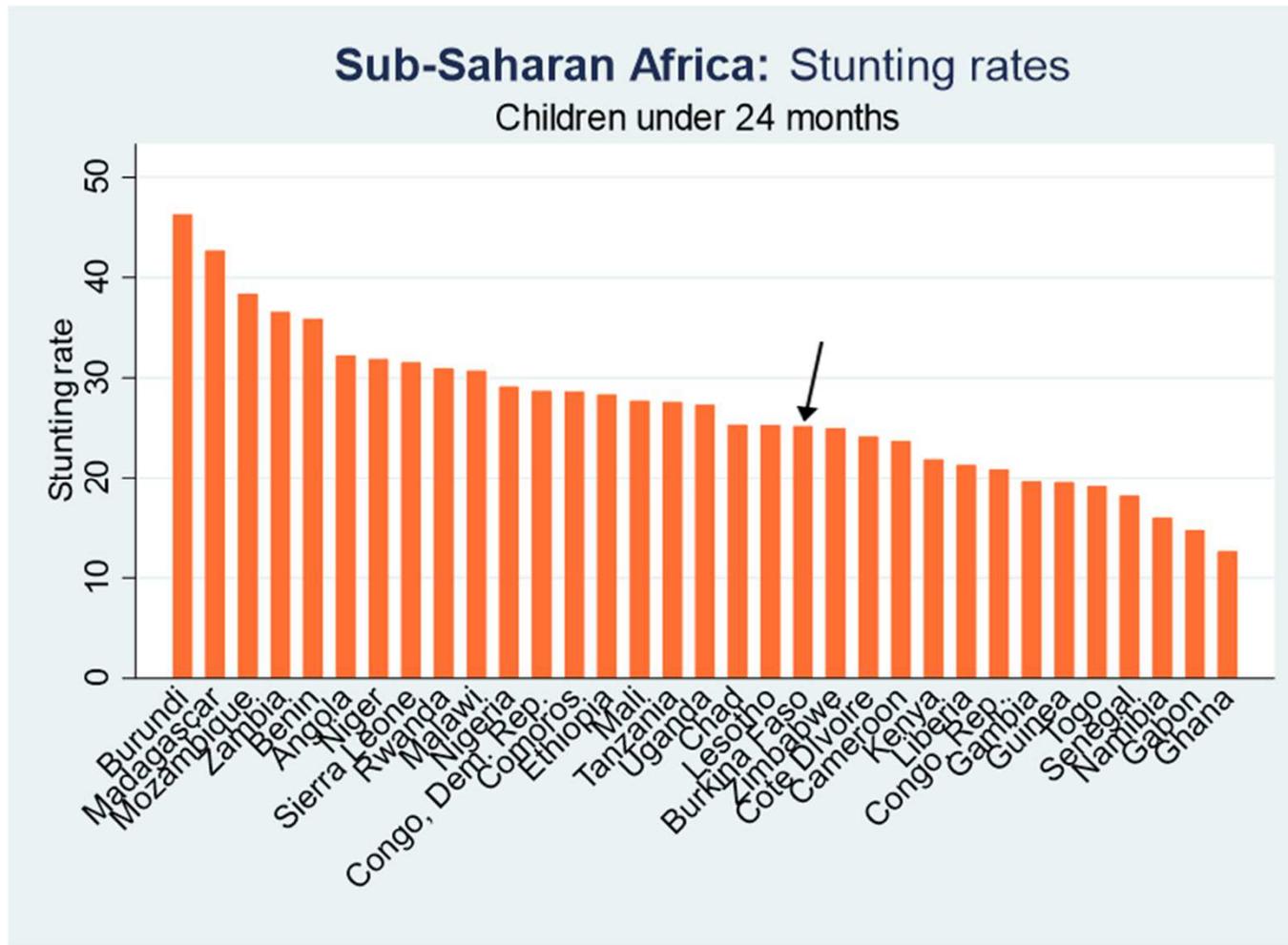


| Country          | DHS year | GNI (latest) | Gini (latest) | Tariff (latest) | Starch in diet | Landlocked | Sahel <sup>a</sup> | 1st Wave | Fragile |
|------------------|----------|--------------|---------------|-----------------|----------------|------------|--------------------|----------|---------|
| Angola           | 2015–16  | High         | Low           | High            | Low            |            |                    |          |         |
| Benin            | 2011–12  | High         | High          | High            | High           |            |                    |          |         |
| Burkina Faso     | 2010     | Low          | Low           | High            | Low            | √          | √                  | √        |         |
| Burundi          | 2016–17  | Low          | Low           | Low             |                | √          |                    |          | High    |
| Cameroon         | 2011     | High         | High          | Low             | Low            |            | √ <sup>a</sup>     | √        |         |
| Chad             | 2014–15  | High         | High          | High            | Low            | √          | √                  |          | Low     |
| Comoros          | 2012     | Low          | High          | Low             |                |            |                    |          | Low     |
| Congo, Rep.      | 2011–12  | High         | High          | High            | Low            |            |                    |          |         |
| Côte d'Ivoire    | 2011–12  | High         | High          | High            | High           |            |                    | √        | High    |
| Congo, Dem. Rep. | 2013     | Low          | Low           | High            |                |            |                    |          | High    |
| Ethiopia         | 2016     | Low          | Low           | Low             | High           | √          | √ <sup>a</sup>     | √        |         |
| Gabon            | 2012     | High         | Low           | High            | Low            |            |                    |          |         |
| Gambia, The      | 2013     | Low          | High          | High            | Low            |            |                    |          | Low     |
| Ghana            | 2014     | High         | Low           | High            | Low            |            |                    |          |         |
| Guinea           | 2012     | Low          | Low           | High            | Low            |            |                    |          |         |
| Kenya            | 2014     | High         | High          | Low             | Low            |            |                    |          |         |
| Lesotho          | 2014     | High         | High          | High            | High           | √          |                    |          |         |
| Liberia          | 2013     | Low          | Low           | Low             | High           |            |                    |          | High    |
| Madagascar       | 2008–09  | Low          | Low           | Low             | High           |            |                    | √        | High    |
| Malawi           | 2015–16  | Low          | High          | Low             | High           | √          |                    | √        |         |
| Mali             | 2012–13  | High         | Low           | High            | High           | √          | √                  | √        | High    |
| Mozambique       | 2011     | Low          | High          | Low             | High           |            |                    | √        |         |
| Namibia          | 2013     | High         | High          | Low             | Low            |            |                    |          |         |
| Niger            | 2012     | Low          | Low           | High            | Low            | √          | √                  | √        |         |
| Nigeria          | 2013     | High         | High          | Low             | Low            |            | √ <sup>a</sup>     | √        |         |
| Rwanda           | 2014–15  | Low          | High          | Low             | Low            | √          |                    | √        |         |
| Senegal          | 2015     | High         | Low           | High            | Low            |            | √                  |          |         |
| Sierra Leone     | 2013     | Low          | Low           | High            | Low            |            |                    |          | High    |
| Tanzania         | 2015–16  | High         | Low           | Low             | Low            |            |                    | √        |         |
| Togo             | 2013–14  | Low          | High          | Low             | High           |            |                    |          | Low     |
| Uganda           | 2011     | Low          | Low           | Low             | Low            | √          |                    |          |         |
| Zambia           | 2013–14  | High         | High          | Low             | High           | √          |                    |          |         |
| Zimbabwe         | 2015     | Low          | High          | Low             | Low            | √          |                    |          | Low     |

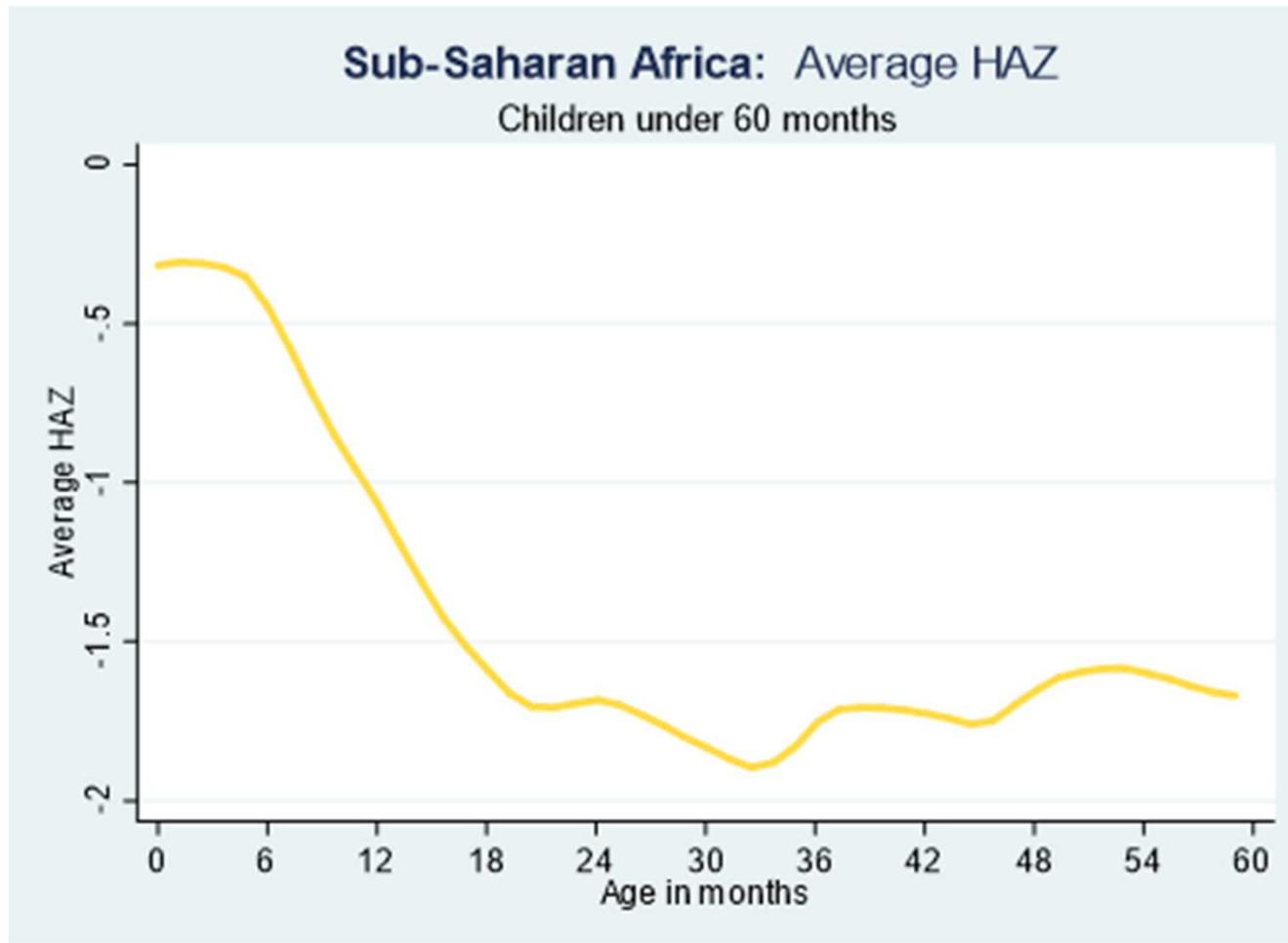
Note: The data, except for diet composition, were downloaded from <http://wdi.worldbank.org/tables>, in January 2018. The GNI measure (in PPP) is from Table 1.1, the Gini measure is from Table 2.9, and tariff rates (weighted) from Table 6.6. The degree of fragility is found in Table 5.8. The share of diet from cereals and starchy roots in the national diet come from FAO (<http://www.fao.org/3/a-i4175e.pdf>). If above 66 percent, the share is considered high.

a. The Sahel region includes the following subnational regions: Centre-Nord, Est, Nord, and Sahel from Burkina Faso; Extrême-Nord, and Nord from Cameroon; Batha, Guéra, Hadjer-Lamis, Kanem, Lac, Ouaddaï, Wadi Fira, Bahr el Gazel, and Sila from Chad; Affar, Amhara, and Tigray from Ethiopia; Kayes, Koulikoro, Sikasso, Segou, Mopti, and Bamako from Mali; all regions except Agadez from Niger; North regions from Nigeria; and all regions except Ziguinchor, Kolda, Kedougou, or Sedhiou from Senegal.

# Stunting Rates in SSA countries



# Growth Faltering → Emphasis on 1,000 day window



# Operationalizing the UNICEF Framework

- DHS surveys are used to construct indicators for **basic** and **underlying** determinants of nutrition (actually an indicator for each component of the underlying determinants of nutrition):
  - **Basic:** Income/assets, human capital, Variability due to Shocks→
    - Wealth index, Mother's education, and mother's autonomy in decision making, Rainfall deviation from historic mean during growing period (Standardized Precipitation Index, SPI)
  - **Underlying:** Food & Care (F&C), Health (H), Environment/WASH (E)
    - Definition of "adequate" level based on international thresholds
- Mean HAZ scores are compared for groups of children with access to adequate level of each one of F&C, H and E separately as well as all simultaneously
  - Complementarities with simultaneous access to adequate levels of two or more underlying determinants → higher mean HAZ scores.

# Adequate Care & Food (grouped together)

- Adequate Care
  - Initiation of breastfeeding:
    - Early initiation of breastfeeding is measured as breastfeeding initiated within one hour of birth (WHO, 2008).
  - Age appropriate breast feeding:
    - defined as children under six months of age being exclusively breastfed and all children six to 24 months of age being breastfed (WHO, 2008).
- Adequate Food:
  - Age appropriate criteria for **minimum acceptable diet (MAD)**
    - 0-6 mo old: breastfed
    - 7-24 mo old: DDS: at least 4 of the 7 categories
      - The 7 food groups considered are (1) grains, roots and tubers; (2) legumes and nuts; (3) dairy products; (4) flesh foods including organ meats; (5) eggs; (6) Vitamin A rich fruits and vegetables including orange and yellow vegetables; (7) and other fruits.

Furthermore, child needs to receive the appropriate number of feedings based on age and breastfeeding status.

Adequate in the food/care determinant they must meet **the age-appropriate criteria for minimum acceptable diet (MAD) and at least 1 of the 2 care practice** measures.

# Adequate Environment & Health

- Adequate Environment (WASH)

- Improved water source
- Improved sanitation
- Community level sanitation:
  - =1 Not OD if  $\geq 75\%$  of the households in the community use some sort of a sanitation facility.
- Handwashing facilities
- Disposal of stools

Adequate if meet 3 of 5 components

- Adequate Health

- **adequate**  $\geq 4$  ***prenatal visits*** by a pregnant woman
- ***birth assisted by a health care professional***
- ***post-natal growth control visit***
- ***vaccination status*** (**adequate** if on schedule)
- whether ***mosquito nets*** are used when sleeping

Adequate: if meet 3 of 5 components

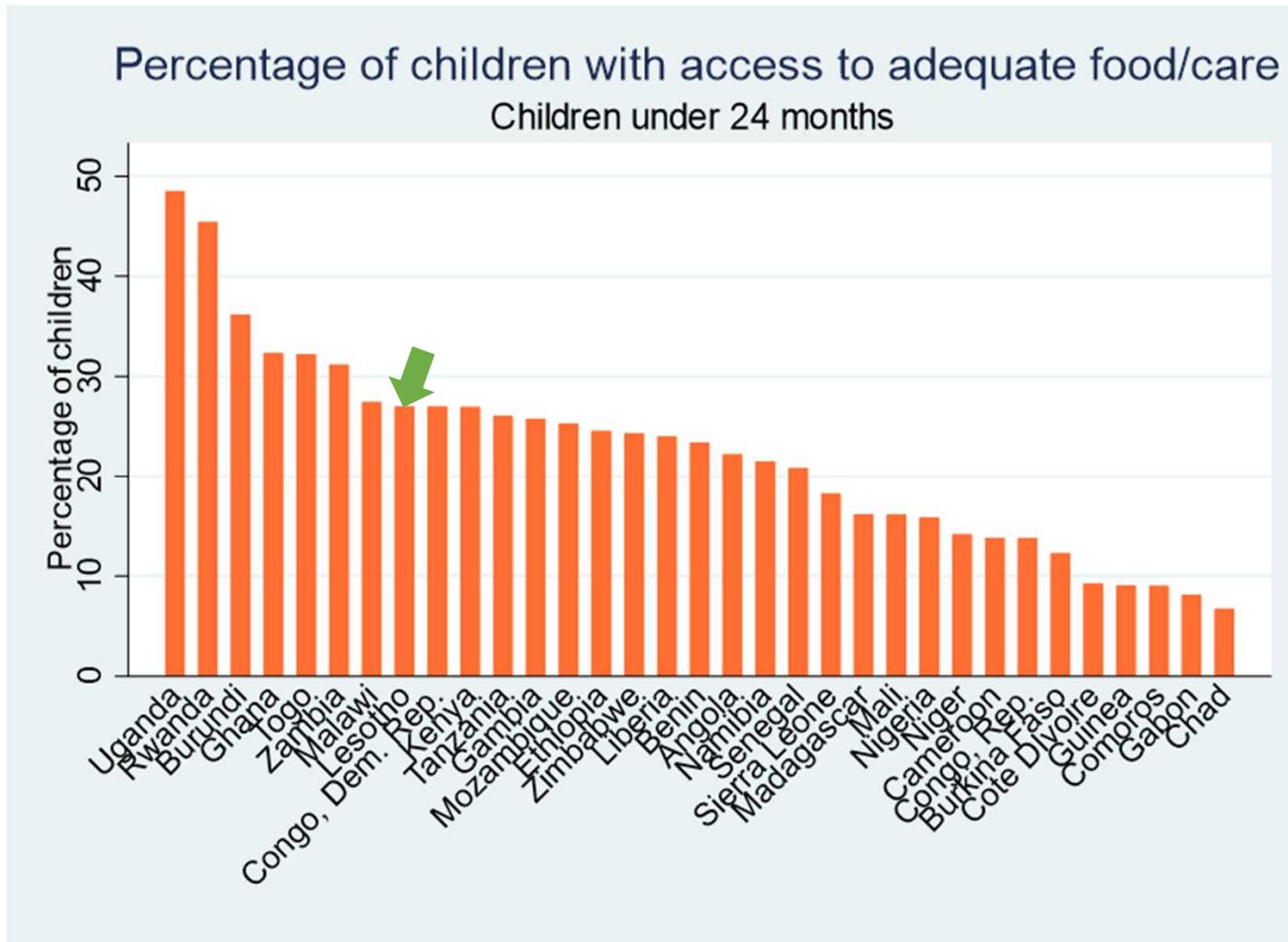
# Thresholds for “Adequate” F&C, H, and E

1. USAID (2012) “Maternal Dietary diversity and the implications for children’s diets in the context of food security.” **USAID’s Infant and Young Child Nutrition project** [www.iycn.org](http://www.iycn.org)
2. WHO (2013) “Table 2, Summary of WHO Position papers-recommended routine immunizations for children”
3. WHO and UNICEF (2006) “Core questions on drinking-water and sanitation for household surveys”
4. WHO (2008) “Indicators for assessing infant and young child feeding practices – part I: definition”
5. UNICEF (1990) “UNICEF Strategy of improved nutrition of children and women in developing countries A UNICEF Policy Review”, New York

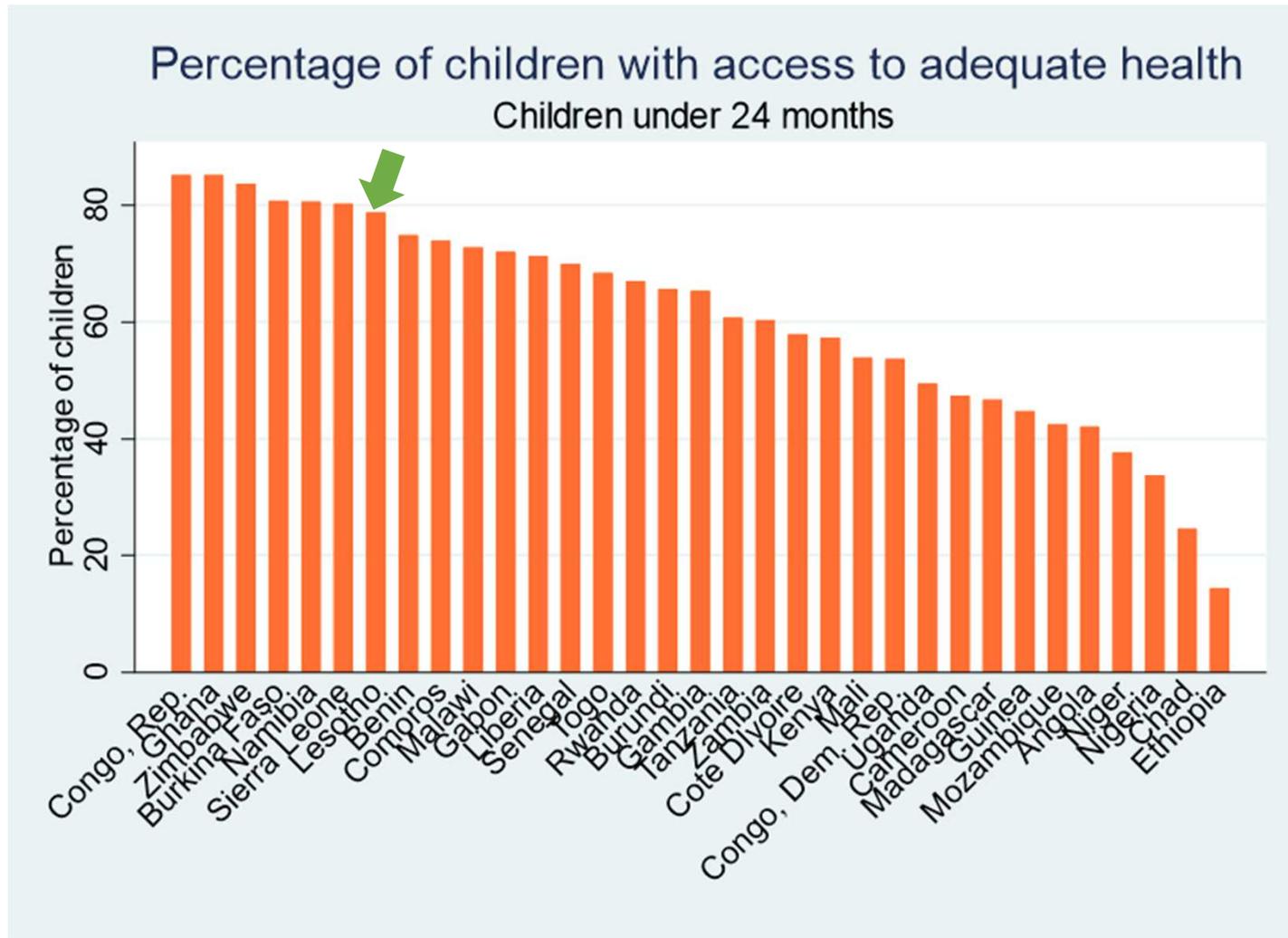
# Message # 1

- There are wide gaps in access to adequate Food & Care (F&C), Health (H) and Environment (E)
  - among SSA countries, and
  - within SSA countries
    - between Urban and Rural areas
    - between the Poor (B20%) and the Wealthy (T20%)
- Within each country, many children do not have access to any of the three nutrition drivers.
  - In three countries—Ethiopia, Chad and Niger—more than 50% of the children do not have access to even one of the nutrition drivers

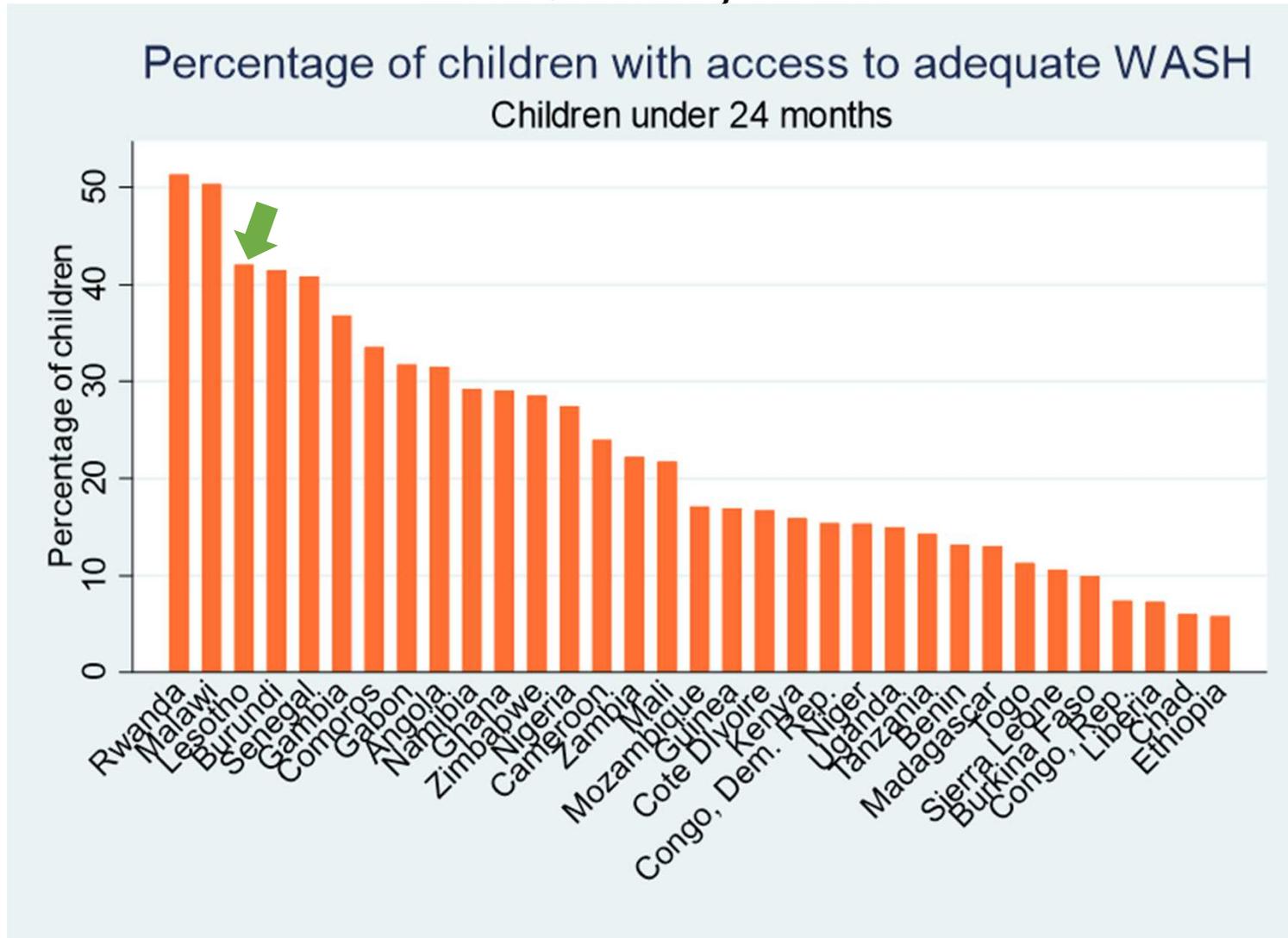
# Percent of children with access to adequate Food & Care



# Percent of children with access to adequate Health

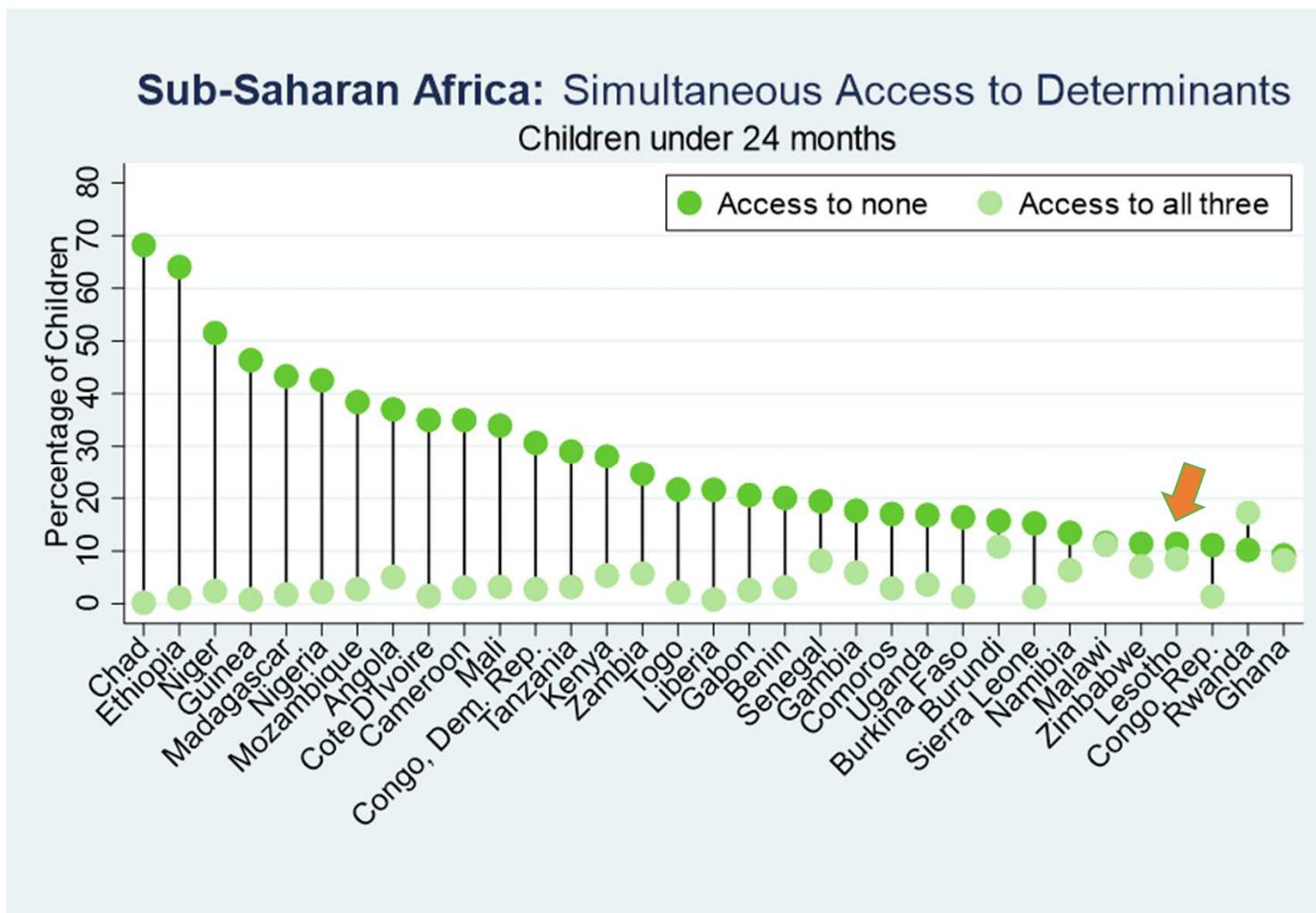


# Percent of children with access to adequate Environment/WASH

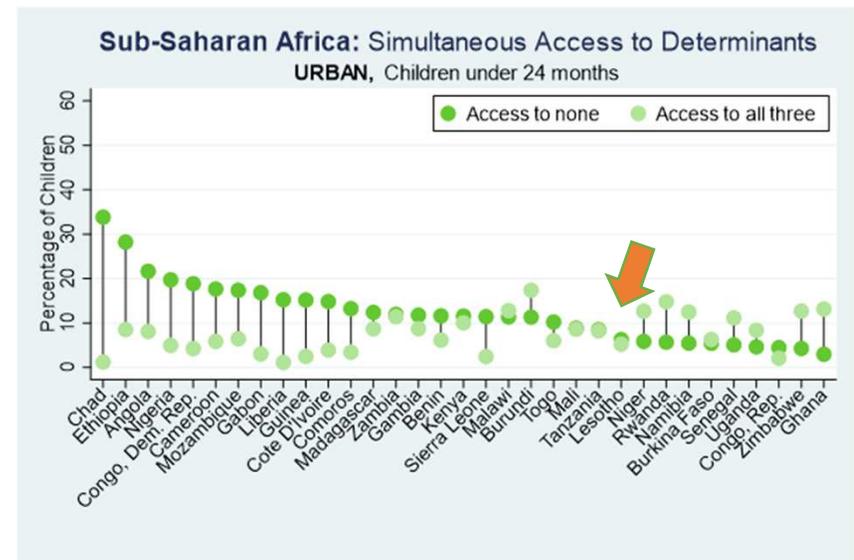
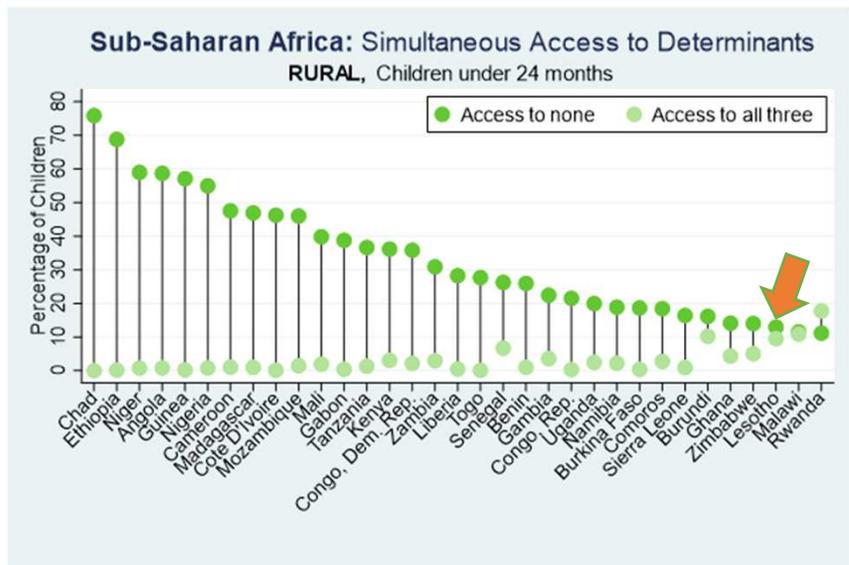


# Many children do not have access to any of the three nutrition drivers

In three countries—Ethiopia, Chad and Niger—more than 50% of the children do not have access to even one of the nutrition drivers

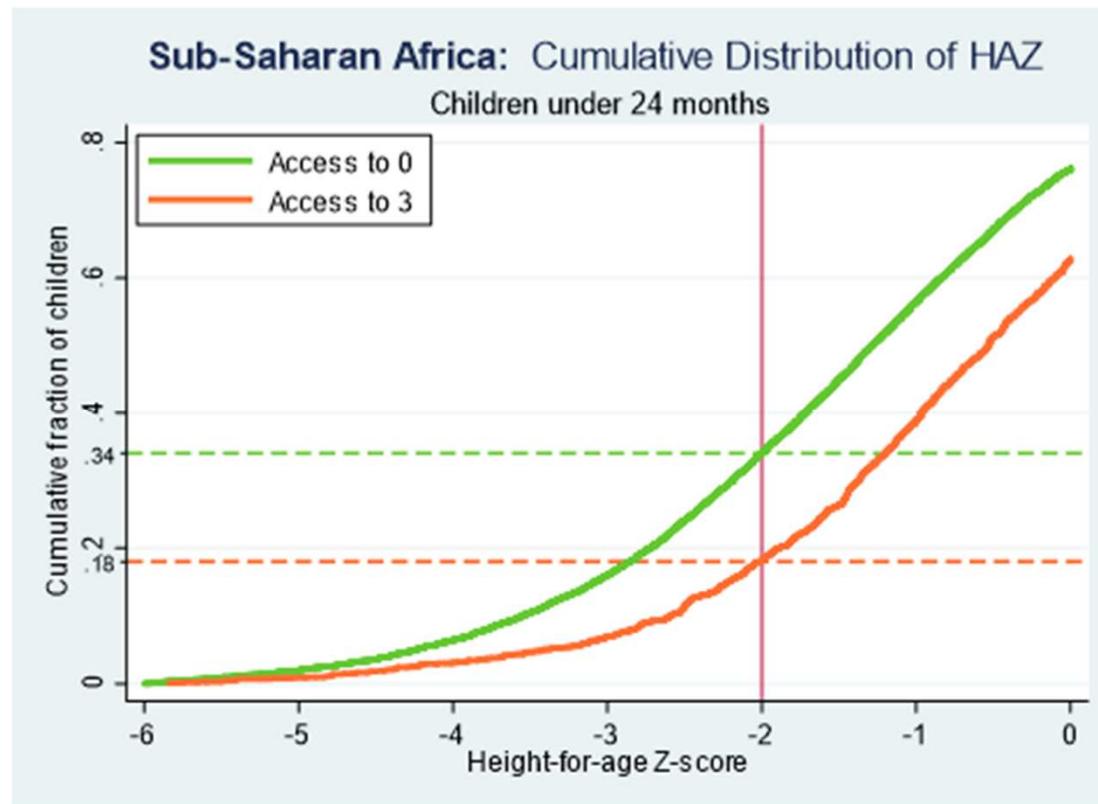


# Gaps in simultaneous access to 0 or 3 drivers are much wider in Rural areas than in Urban areas

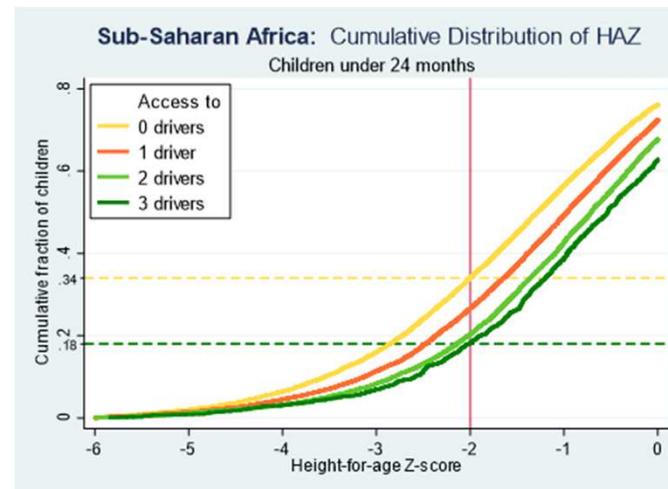
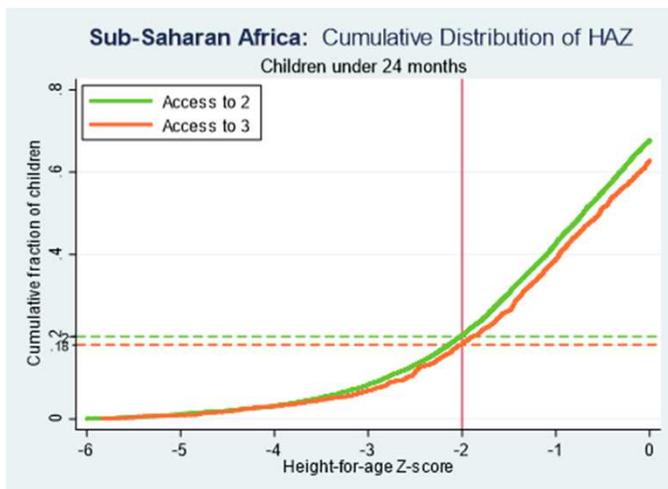
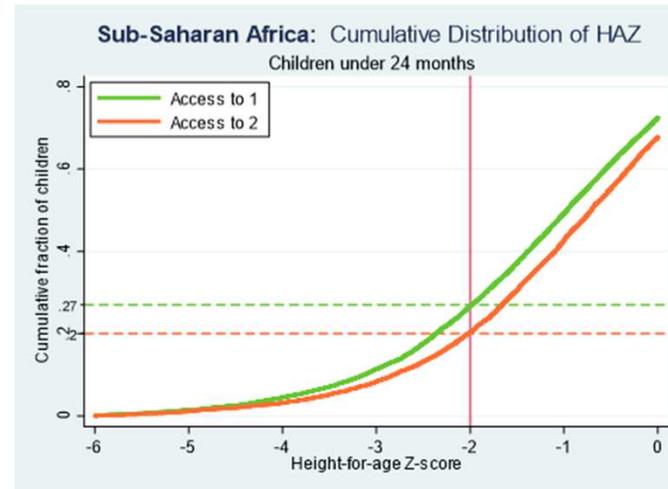
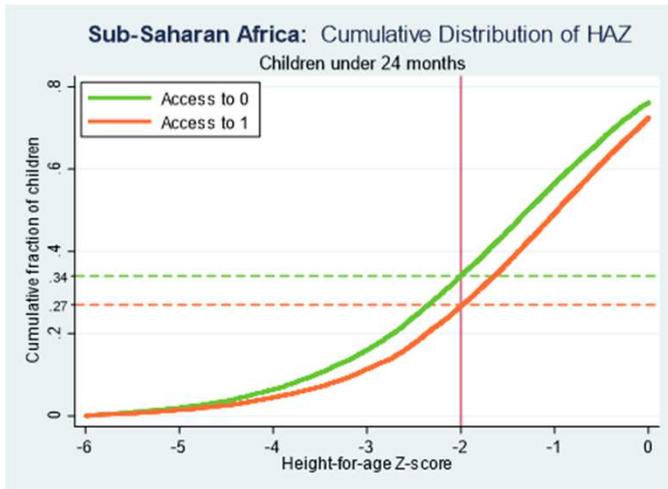


# Message # 2

- Simultaneous access to more of the drivers of nutrition by children is associated with lower stunting rates among children (less than 24 months)



The greatest reductions in stunting in SSA occur with increasing simultaneous access from 0 to 1 or from 1 to 2 of the drivers of nutrition.

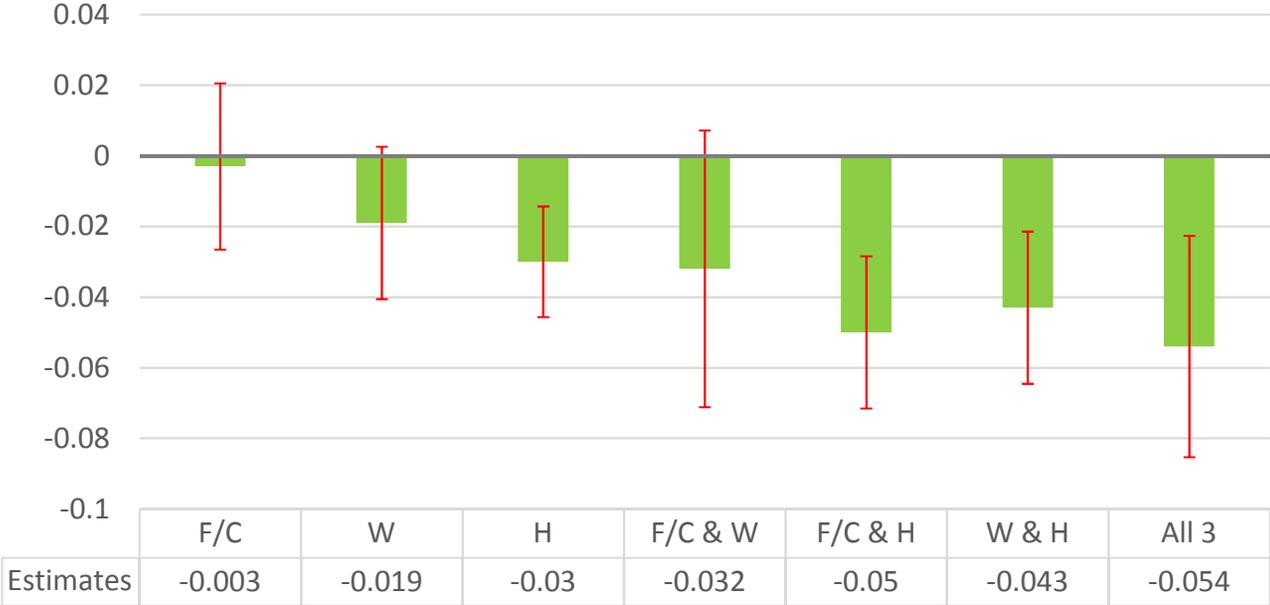


# Message #3

- The marginal effect on the probability of a child being stunted from access to adequate health only, is greater than the marginal effect from access to adequate food and care only, or access to adequate WASH only.
- The marginal effects on stunting of complementing health interventions with simultaneous access to adequate food/care or with simultaneous access to adequate WASH are the same.

# Simultaneous access to all three determinants is associated with the greatest decrease in stunting

Stunting and Simultaneous Access to Determinants in SSA  
With covariates and country-strata fixed effects



# Policy implications-1

- Prioritize
  - geographic areas/children with high prevalence of stunting and inadequate access to all 3 drivers of nutrition
- Take stock
  - of the sectors operating in the target areas (or target population groups) and redirecting operations of the missing sectors to the target areas.
- Scale-up
  - of interventions by agriculture (food security), health, care and WASH that are jointly targeted
- Suggested sequence if cannot increase access to all drivers at once:
  - if budgetary or other considerations allow for interventions covering deprived children by only one sector, this sector should be health
  - if a target area is already covered by the health sector, the decision of whether to cover the same target area by sectors such as WASH or agriculture should be based mainly on costs rather than benefits.

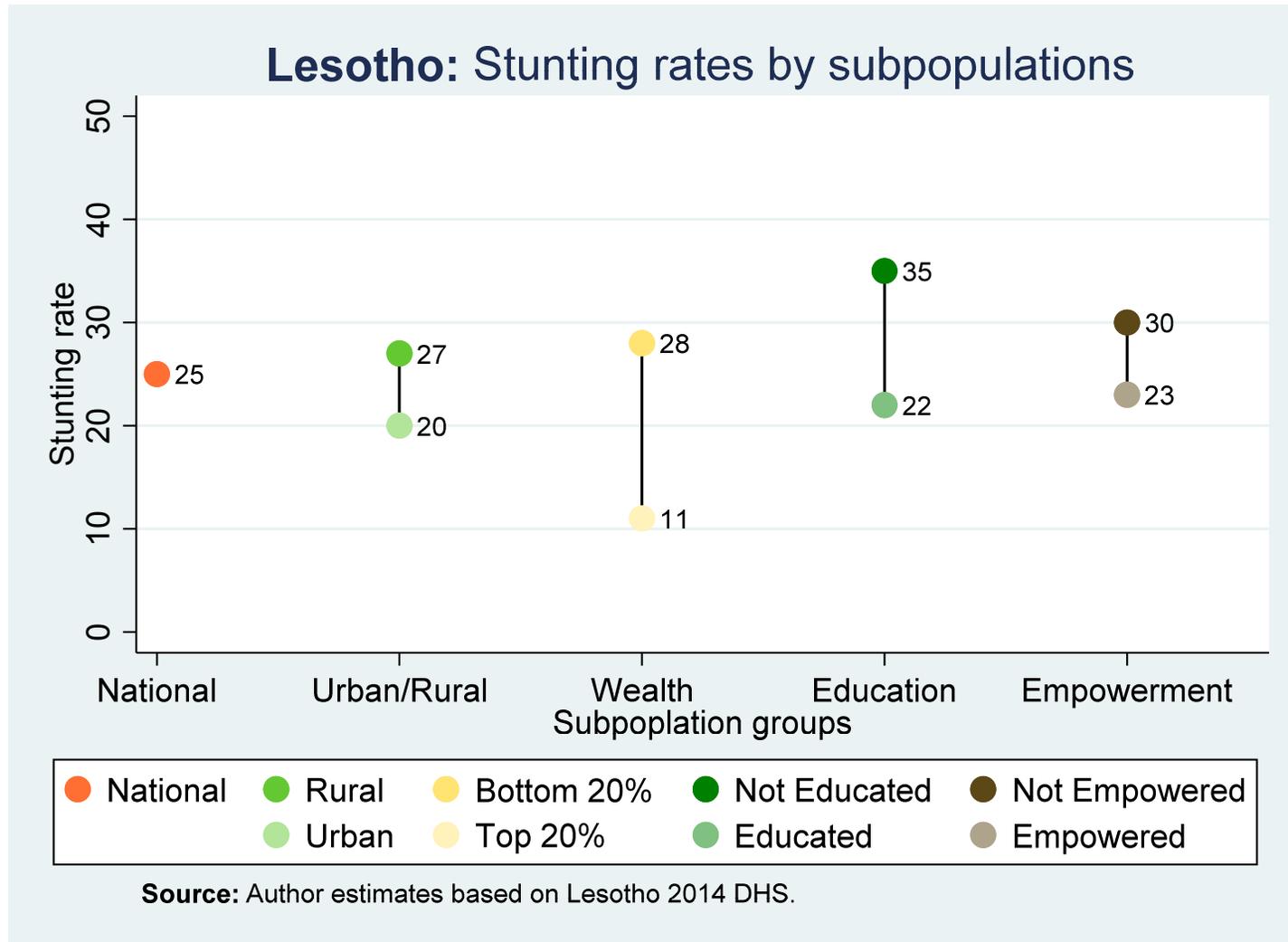
## Policy implications - 2

- Programs and interventions aimed at increasing the **level and stability** of income among populations where stunting is prevalent should be considered as indispensable components of a “multisectoral” approach to reducing undernutrition in Sub-Saharan Africa.
  - Adaptive social protection
  - Climate-Smart agriculture
- Fundamental ingredient for the success of Multisectoral approach:
  - A governance and accountability structure that provides the right incentives to all actors involved.

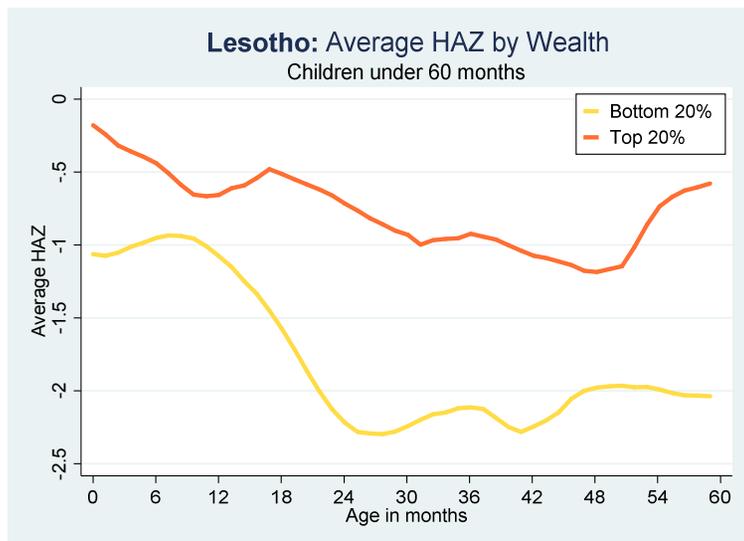
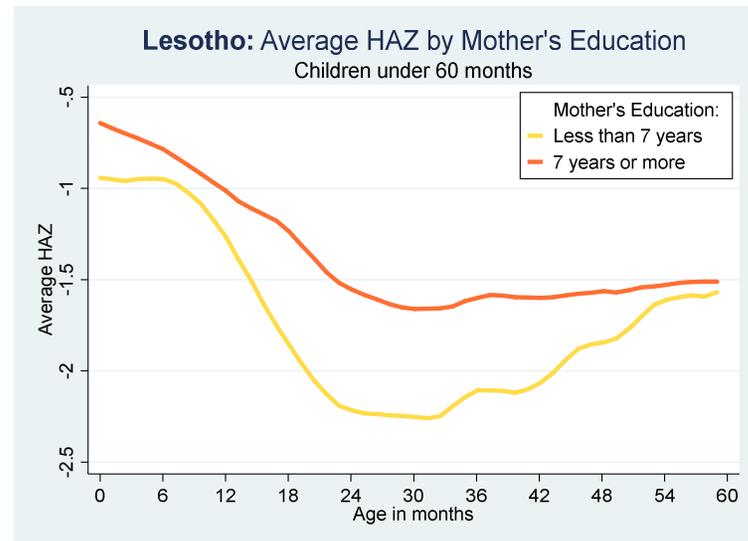
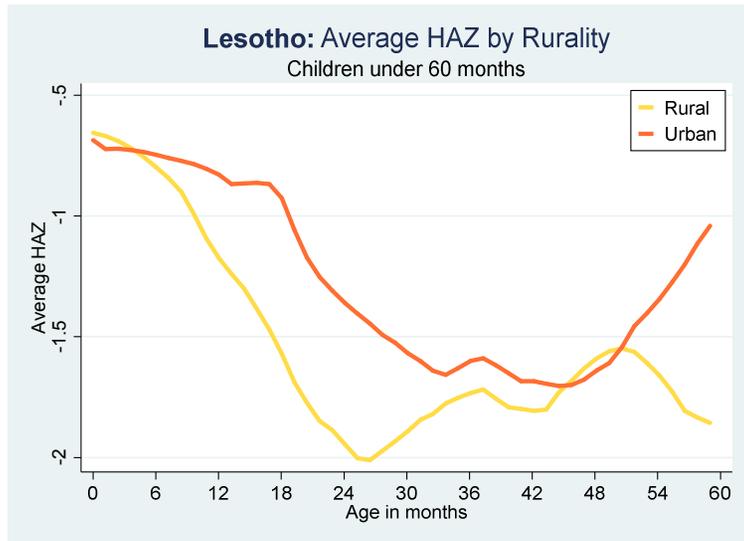
# Annex:

Country Notes useful for country-specific operations (example of Lesotho)

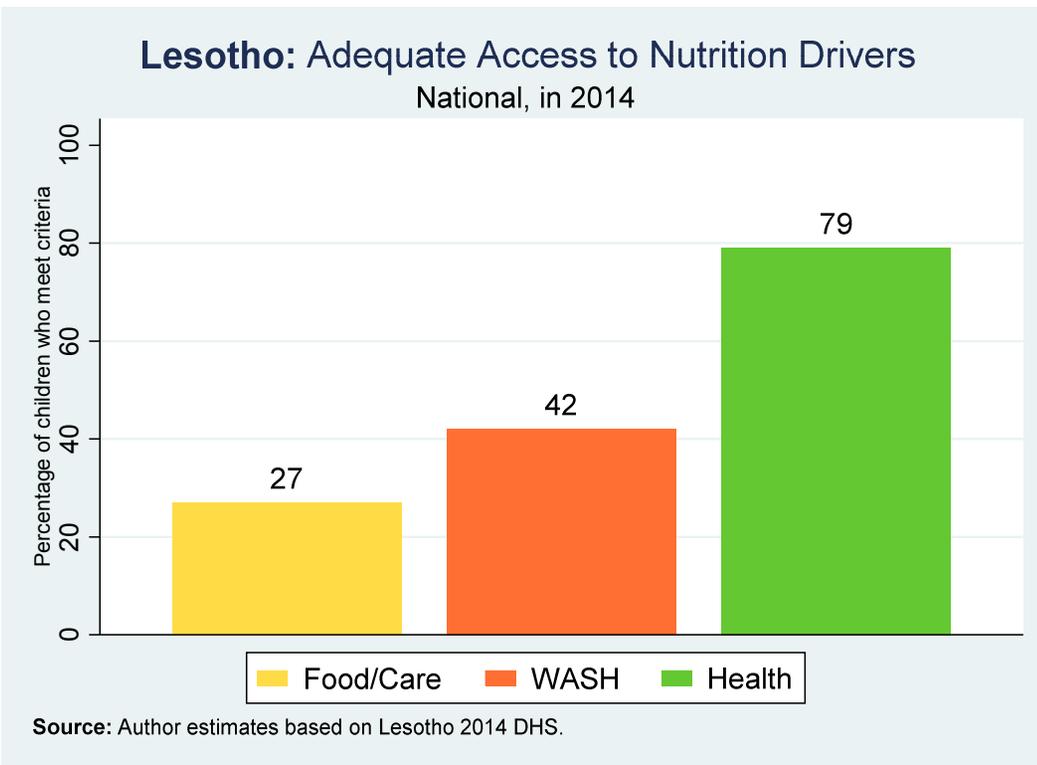
# Stunting prevalence among children less than 2 years of old is high and varies by SEs.



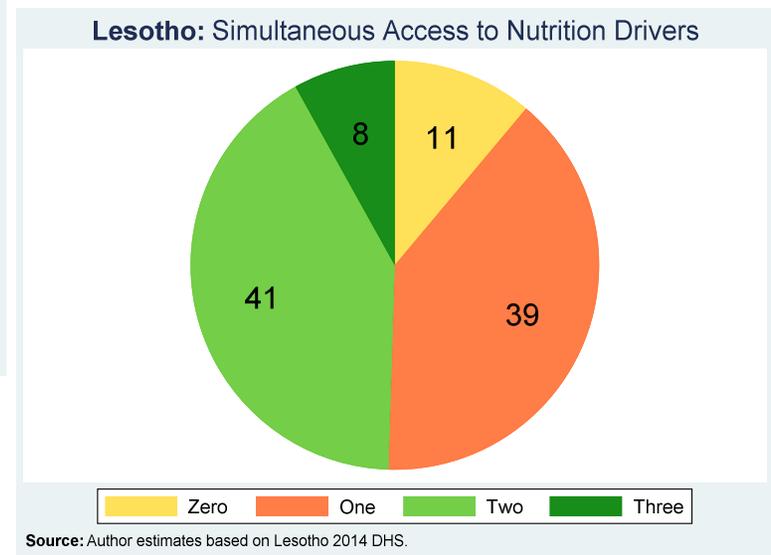
# CHILD GROWTH FALTERING: LESOTHO



# Access to Adequate F/C, H, and/or E is sub-optimal in Lesotho

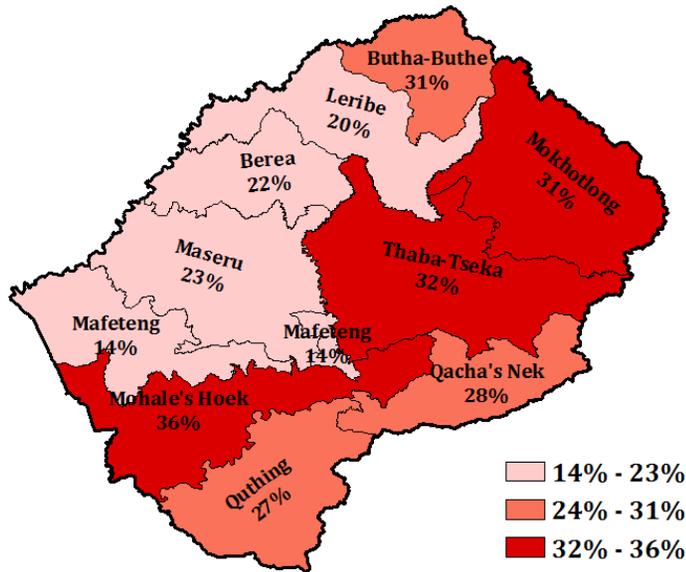


About HALF of children <2y have adequate access to at least 2 drivers of nutrition



# LESOTHO: REGIONAL STUNTING AND ACCESS

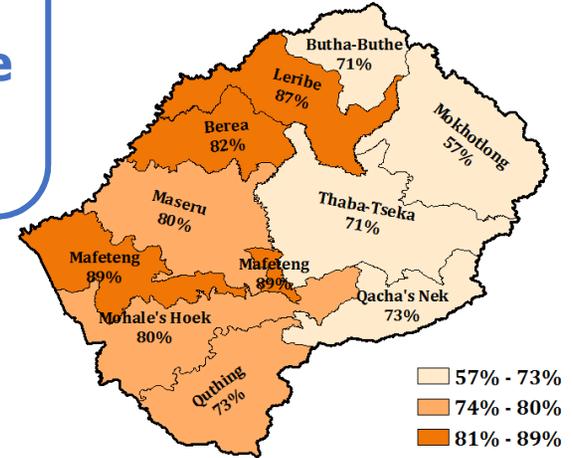
Regional Stunting Rates (Children 0-23 Months)



14% - 23%  
24% - 31%  
32% - 36%

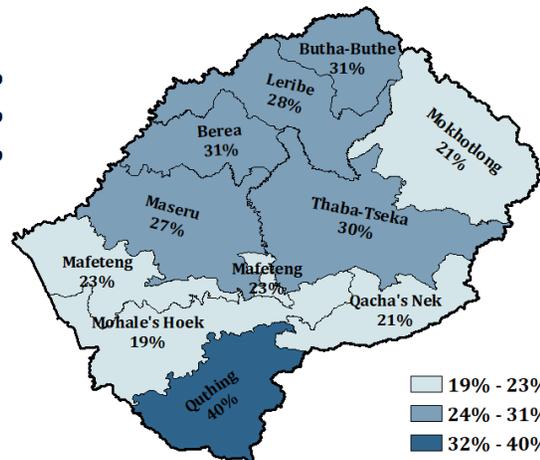
Areas with low rates of access have high stunting rates

Percent of Children (0-23 months) with Adequate Health by Region



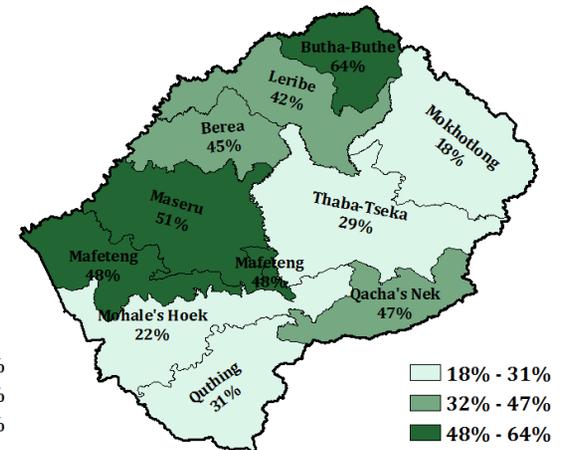
57% - 73%  
74% - 80%  
81% - 89%

Percent of Children (0-23 months) with Adequate Food & Care by Region



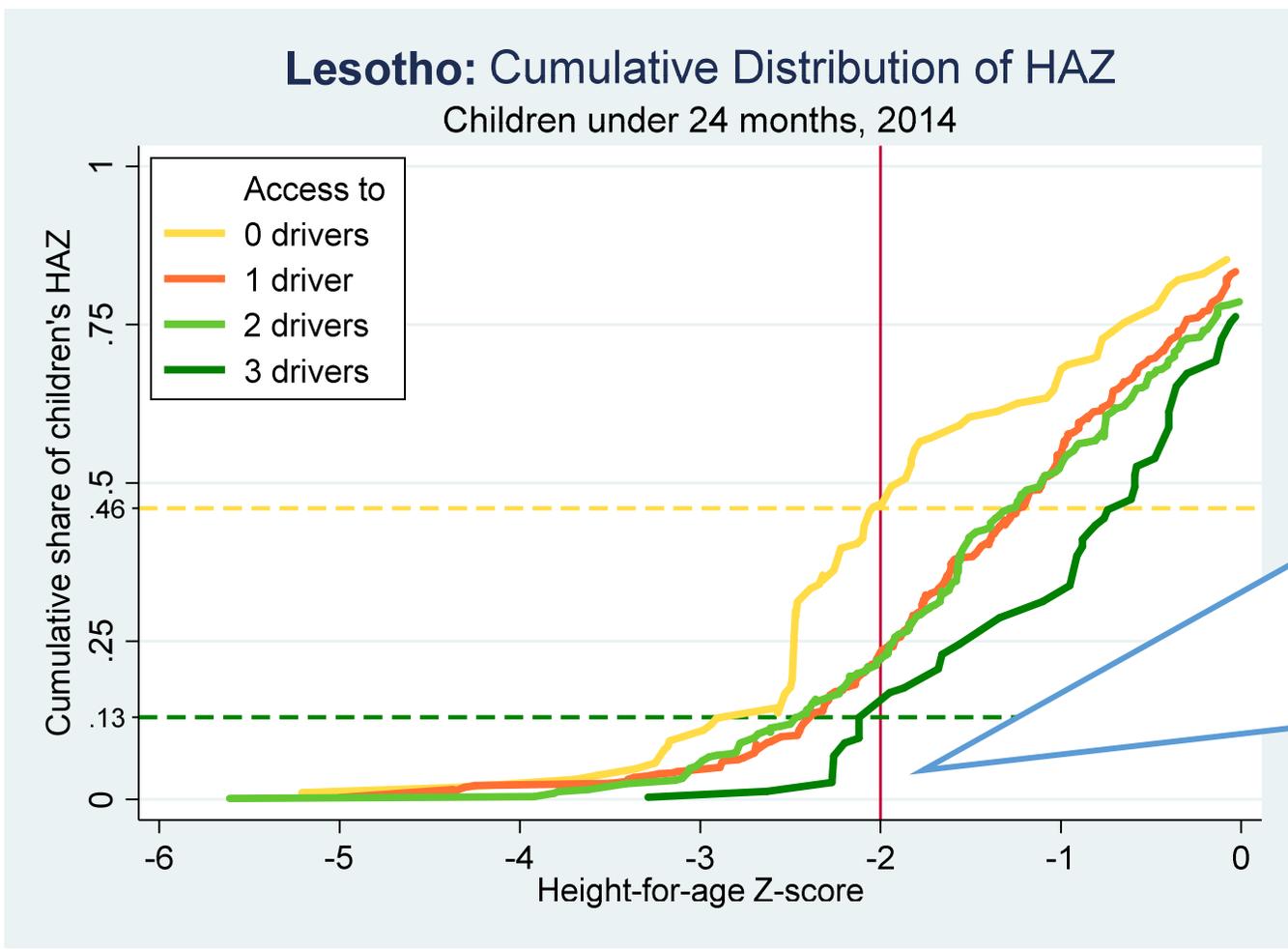
19% - 23%  
24% - 31%  
32% - 40%

Percent of Children (0-23 months) with Adequate Environment by Region



18% - 31%  
32% - 47%  
48% - 64%

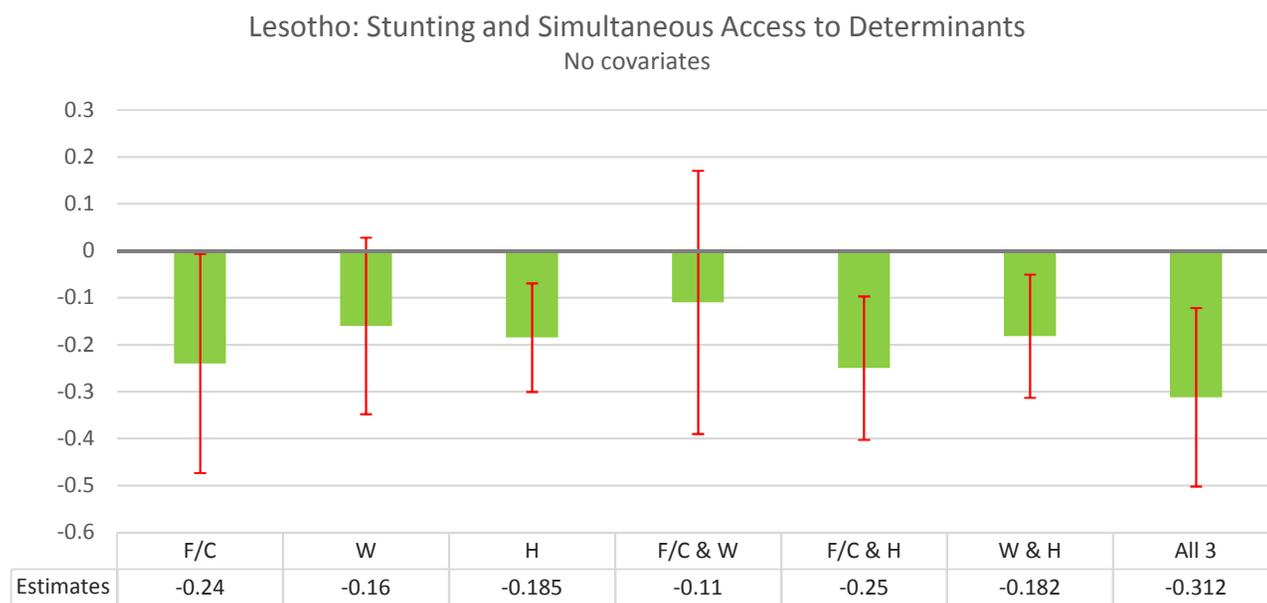
# Simultaneous access to drivers of nutrition is associated with lower stunting rates among under 2-year-olds



In Lesotho, reductions in stunting increases with simultaneous access from 0 to 3 drivers of nutrition. → **Scale up interventions that are jointly targeted**

Note: Even among children with access to all 3 determinants, the stunting rate is high at 13%.

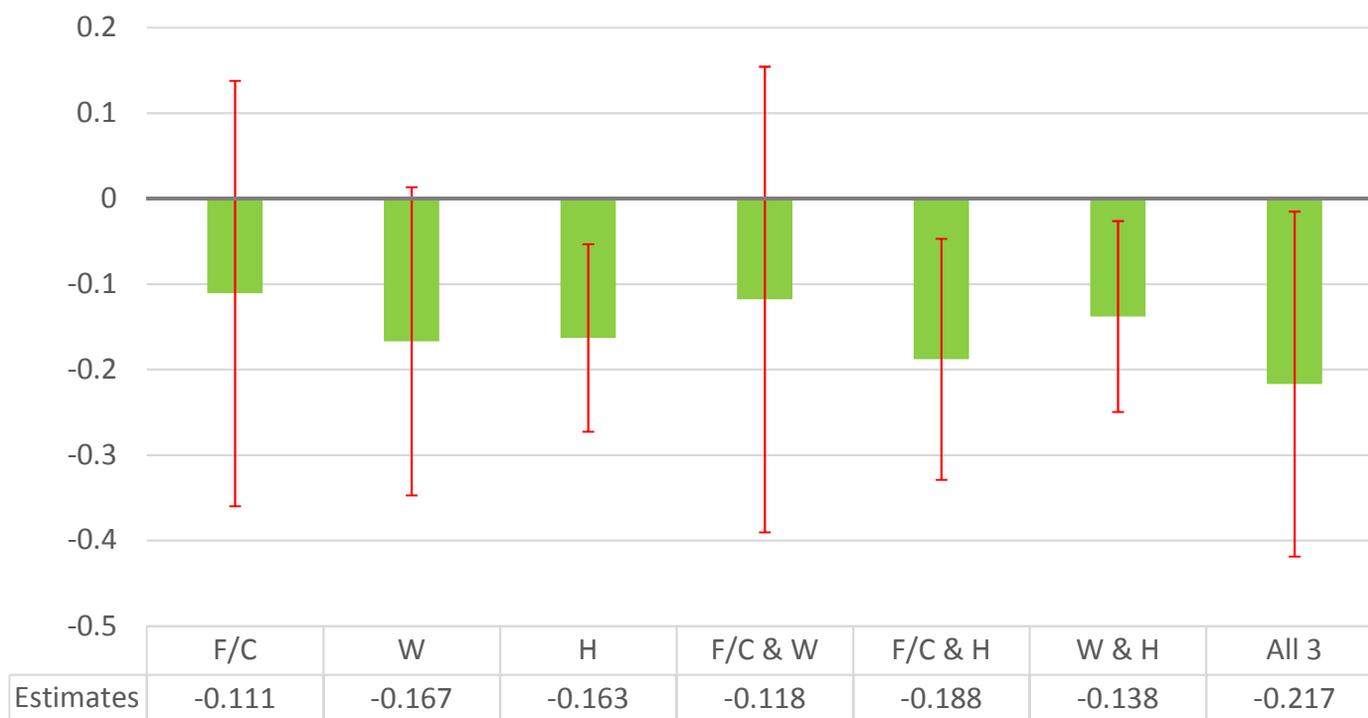
# Access to any combination of nutrition drivers, beside WASH alone or WASH with food/care, is associated with lower probability of stunting



And the importance of simultaneous access to determinants is reinforced when child, parental and household characteristics are included as controls

# Access to **health** alone or health with other nutrition drivers is associated with lower probability of stunting

Lesotho: Stunting and Simultaneous Access to Determinants  
With covariates

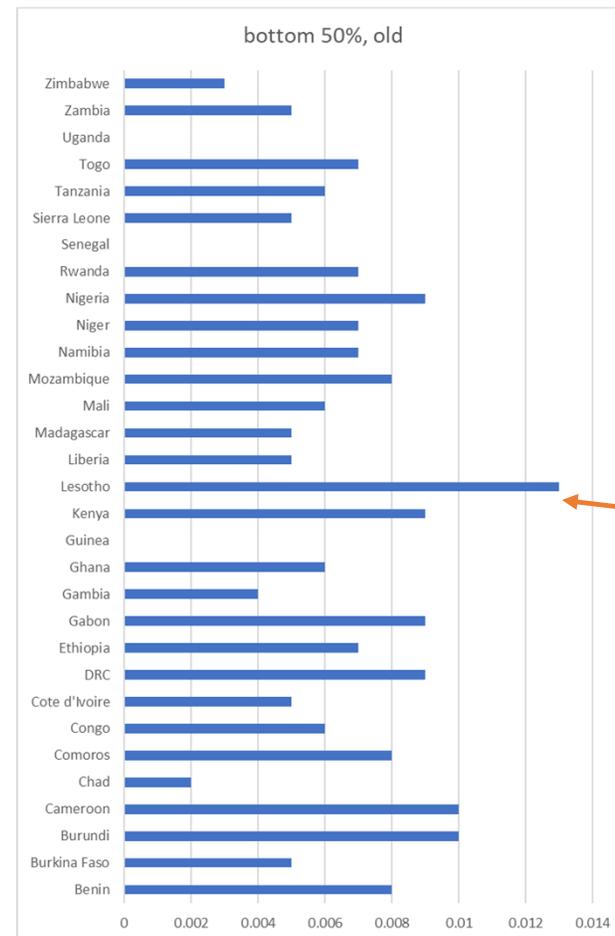
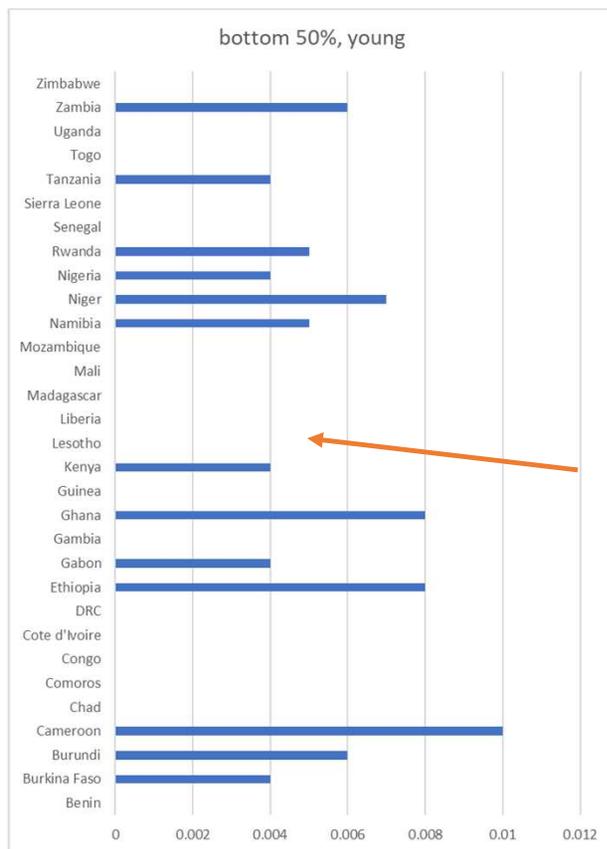


Note: Relatively few children (2 percent of sample) have simultaneous access to food/care and WASH alone.

# LESOTHO: Significant elasticity of stunting to income for older children

## 0-23 mo old children

## 24-59 mo old children



**THANK YOU**