



Grand Programme de Recherche  
IPORA | Recherche  
interdisciplinaire orientée  
vers l'élaboration de  
politiques en Afrique

Université  
de BORDEAUX



# Drivers of malnutrition: a call for interdisciplinary research

Kaleab Baye (PhD; Associate Prof)

Center for Food Science and Nutrition, Addis Ababa University



anrs  
MALADIES INFECTIEUSES  
EMERGENTES Inserm

IRD  
Institut de Recherche  
pour le Développement  
FRANCE



24 janvier 2013, Abidjan



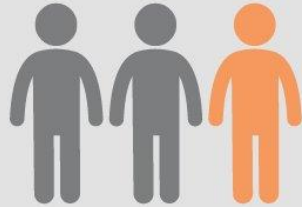
# Objectives



- Highlight the various drivers of malnutrition and their interactions
- Show examples of multidisciplinary research conducted in the past
- Illustrate how the initiative of IPORA is timely

# Background

MALNUTRITION AFFECTS  
**ONE IN THREE**  
PEOPLE AROUND THE WORLD



Poor quality diets and diet-related conditions represent the largest set of risk factors for the global burden of disease – greater than unsafe sex, alcohol, drug and tobacco use combined (GBD)



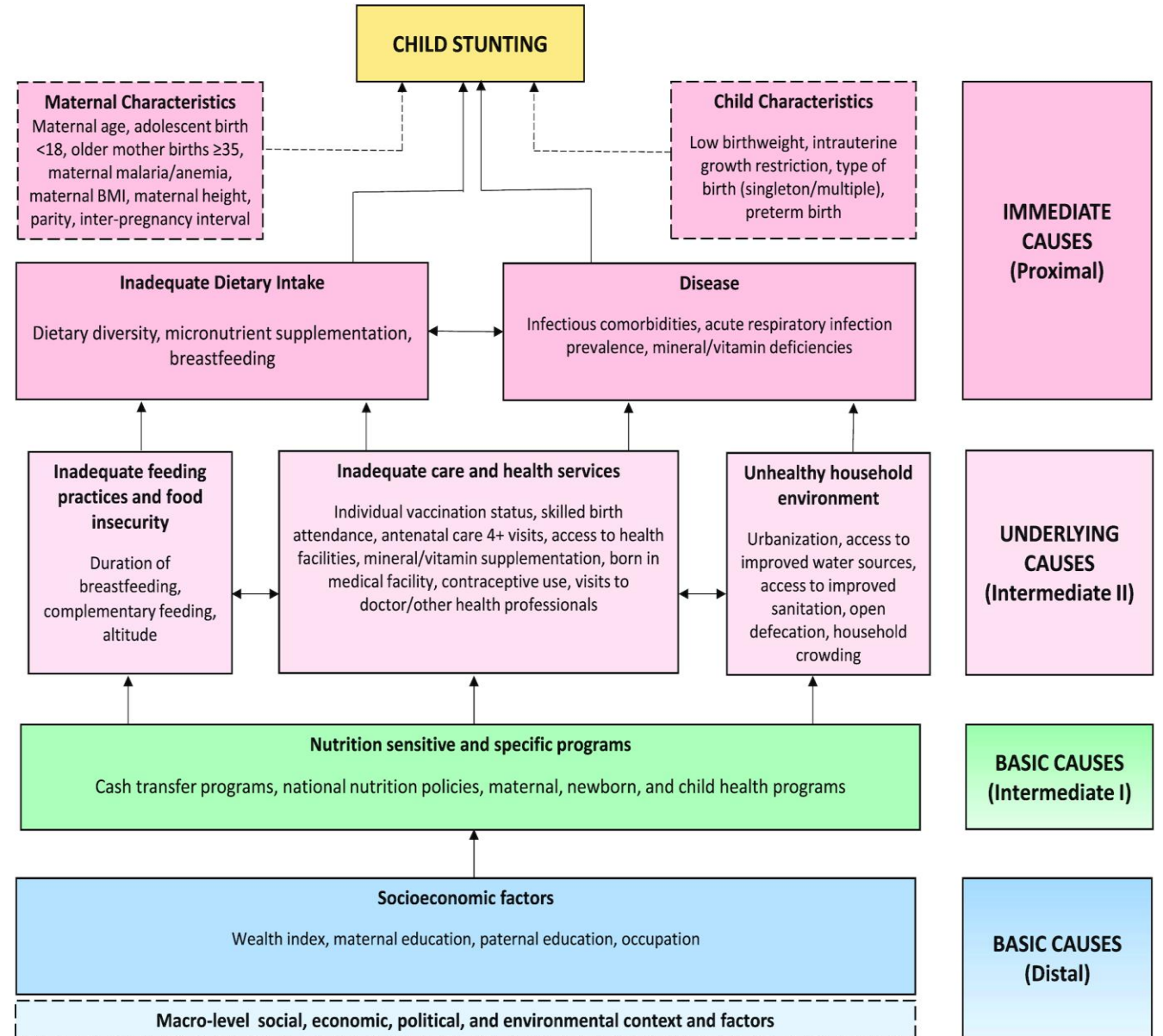
WE MUST END MALNUTRITION—IN ALL ITS FORMS—BY 2030. #NUTRITIONREPORT



# Existing frameworks

## Summary

- Diseases
- Diet
- Food security
- Health care
- WASH
- Socioeconomic factors
- Political and environmental factors



Research

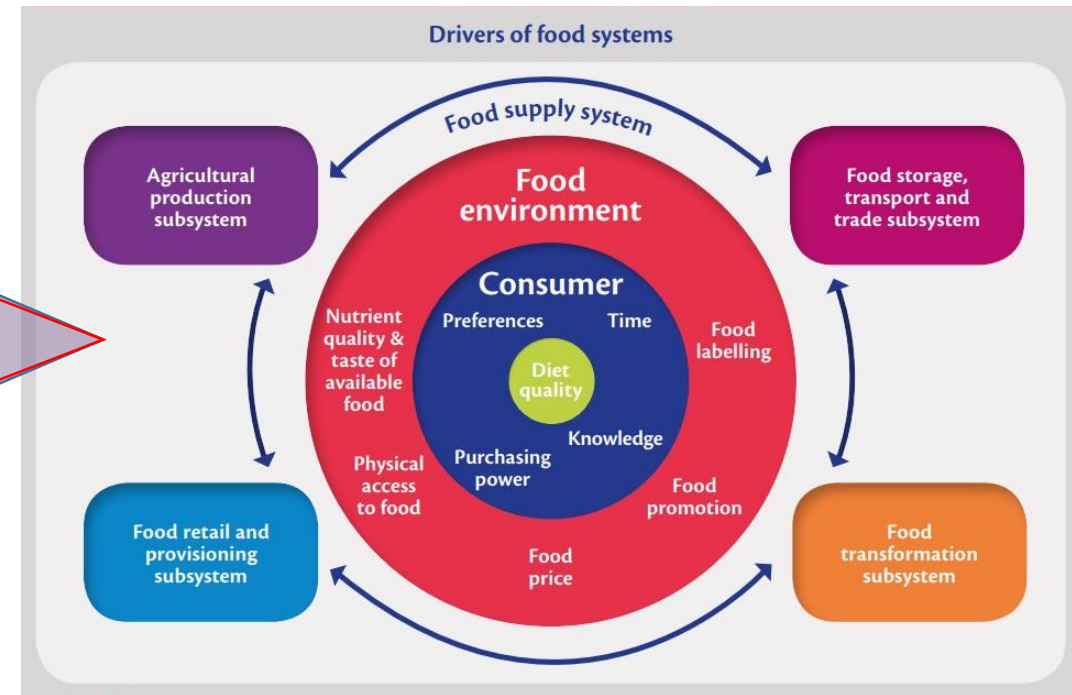
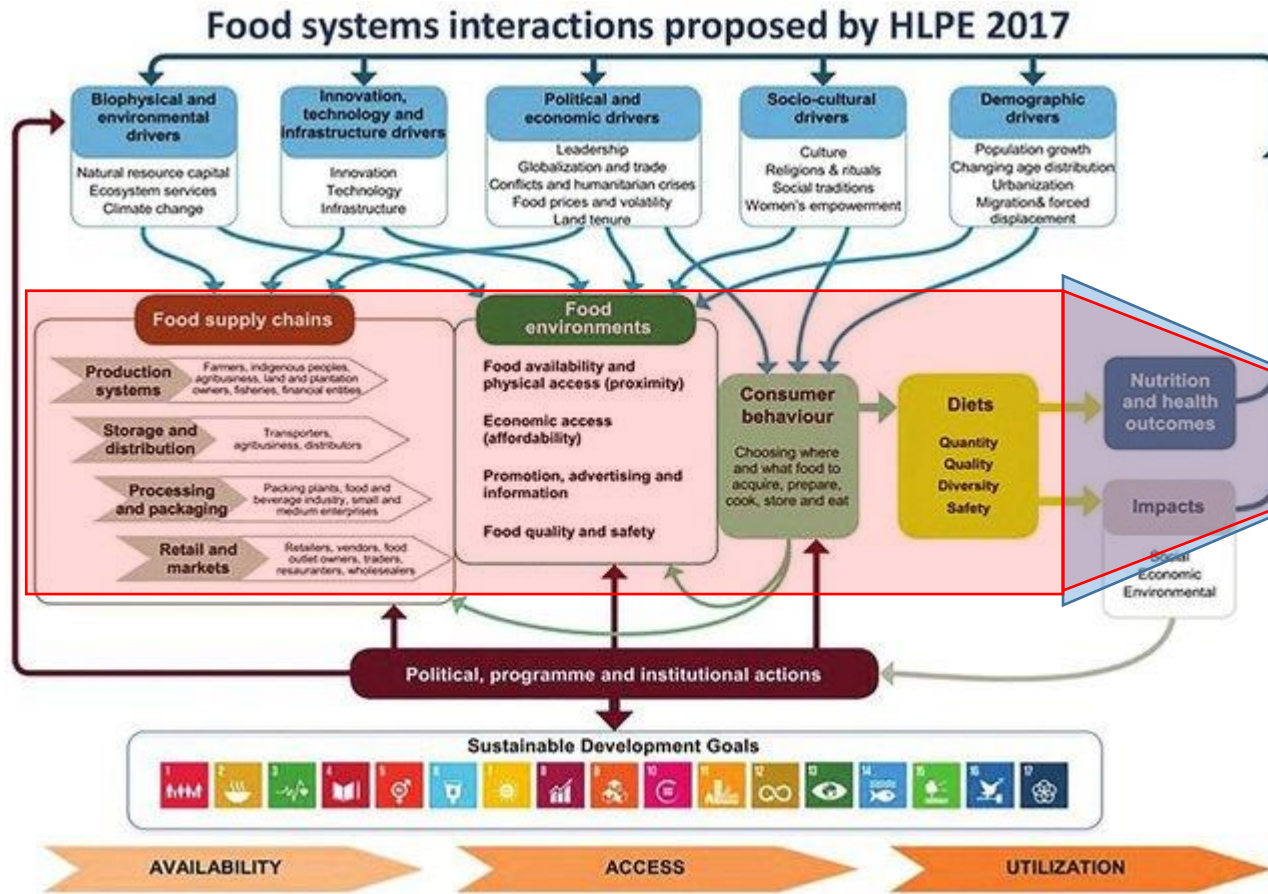
JAMA Pediatrics | Original Investigation

## Evaluation of Linear Growth at Higher Altitudes

Kaleab Baye, PhD; Kalle Hirvonen, PhD

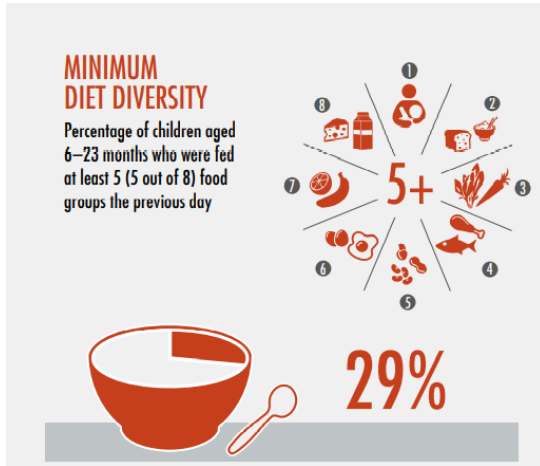
JAMA Pediatr. 2020;174(10):977-984.  
doi:10.1001/jamapediatrics.2020.2386

# Drivers of diet quality



# MDD- almost no change

*EDHS data*

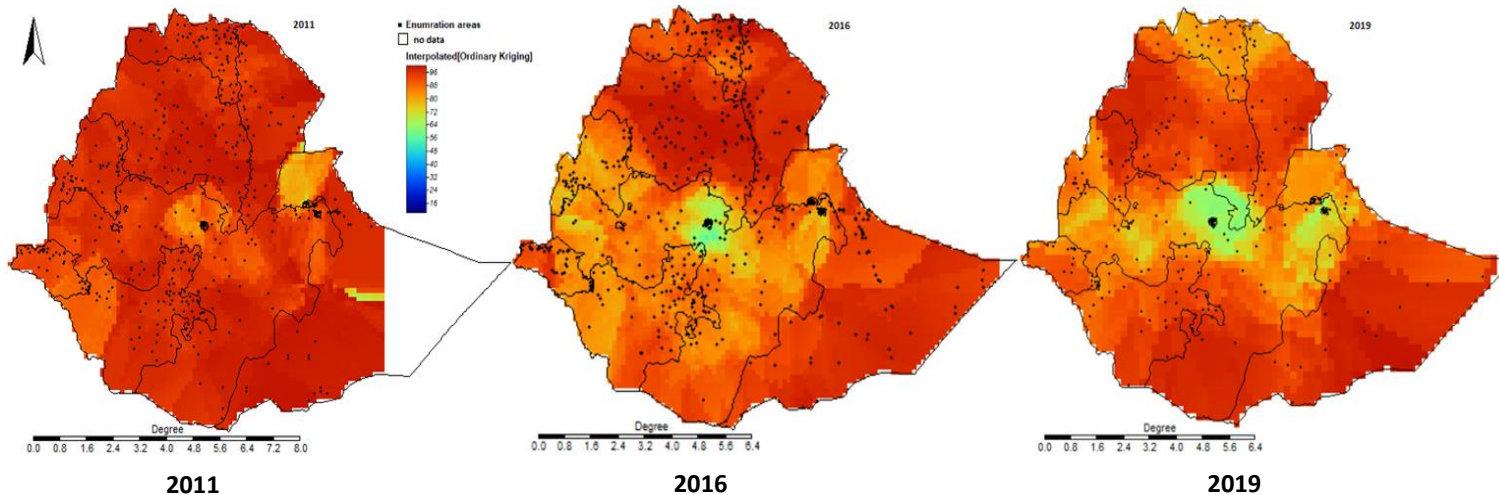


**MDD is a proxy of the nutrient adequacy of children’s diet**

Minimum Dietary Diversity (MDD) a proxy indicator of nutrient adequacy of children’s diet  
→ Consistently associated with reduced risk stunting (child growth faltering)



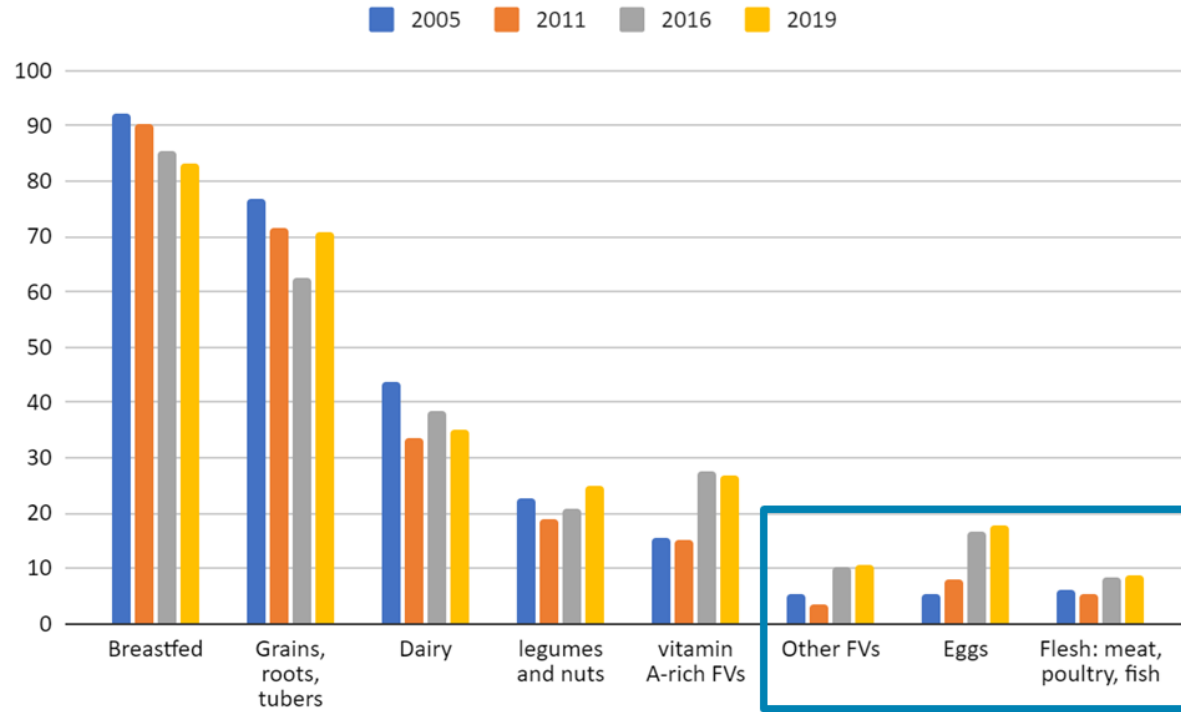
*Subnational spatial and temporal trends in the prevalence of children meeting the minimum dietary diversity (5+ food groups)*



In 2019, pockets of **improvements** have been observed **in central Ethiopia**, surrounding the capital city, and areas in northern and eastern part of the country

# MDD- which food groups are missing and why?

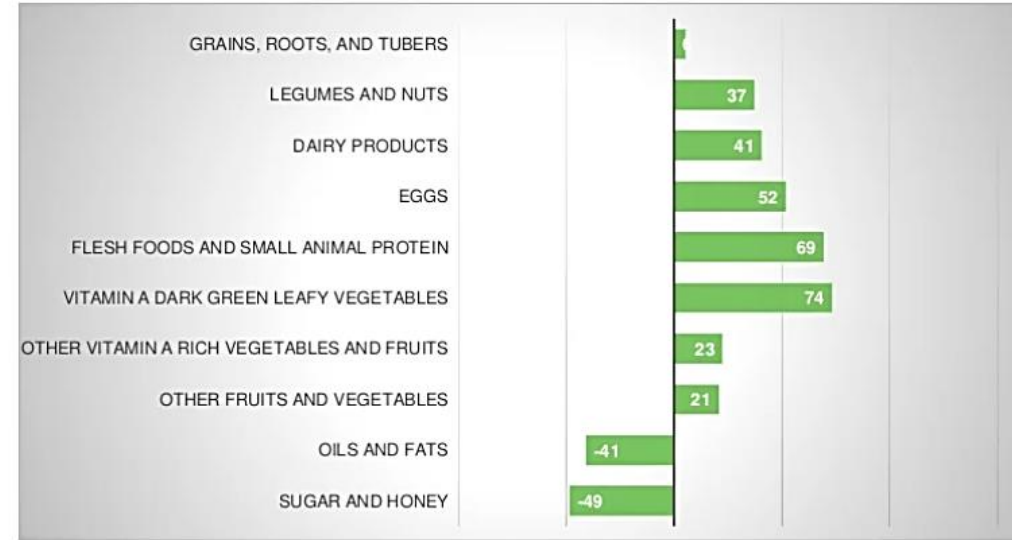
*EDHS data*



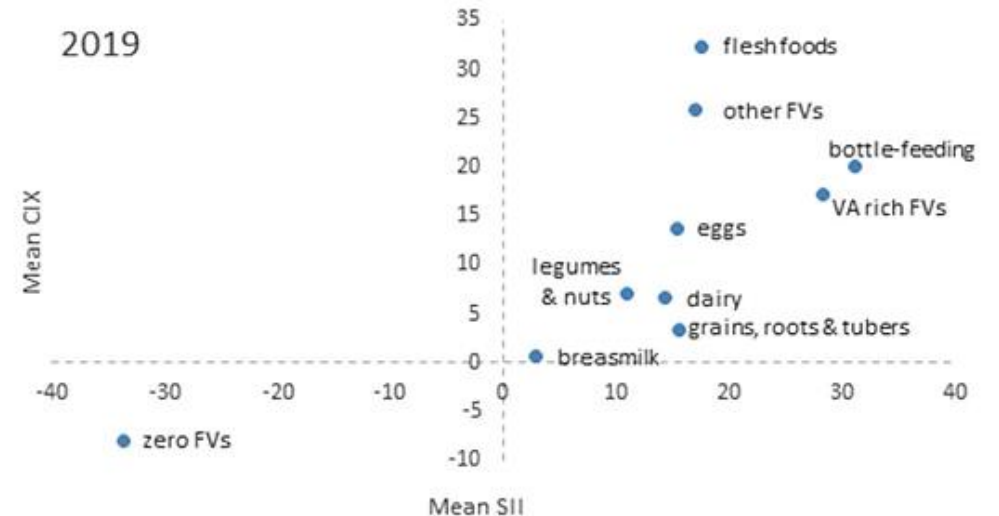
Tiazazu, Laillou, Hailu, Chitekwe & Baye (2022) Complementary feeding and food-group level inequality among Ethiopian children 6-23 months of age (2011-2019) – *Matern Child Nutr.* 2022;e13375

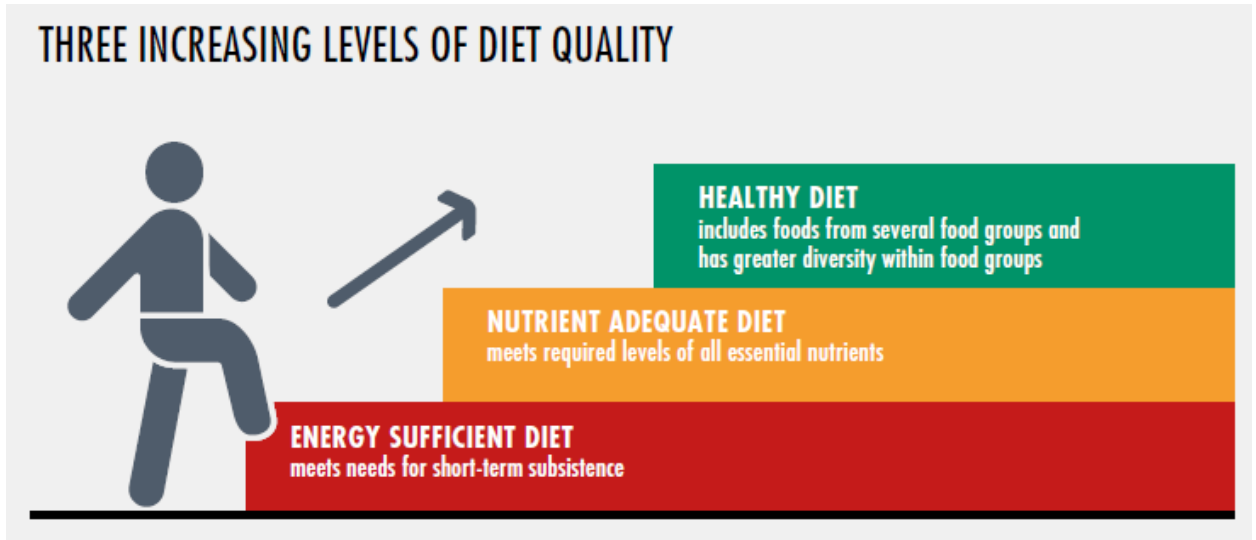
## Real prices of foods

% change in real prices by food group (2005-2018)



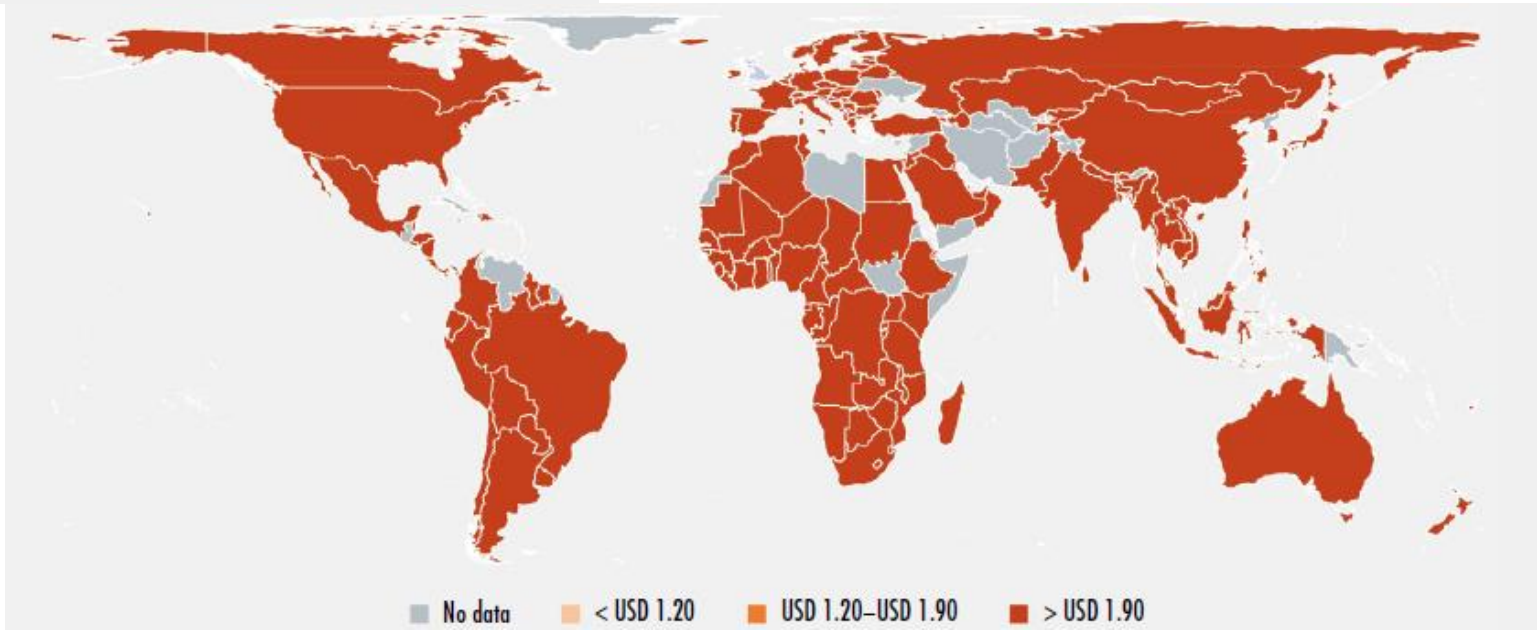
Source: Bachewe, Hirvonen, Minten & Yimer (2017)





→ 60% of the world population cannot afford healthy diet

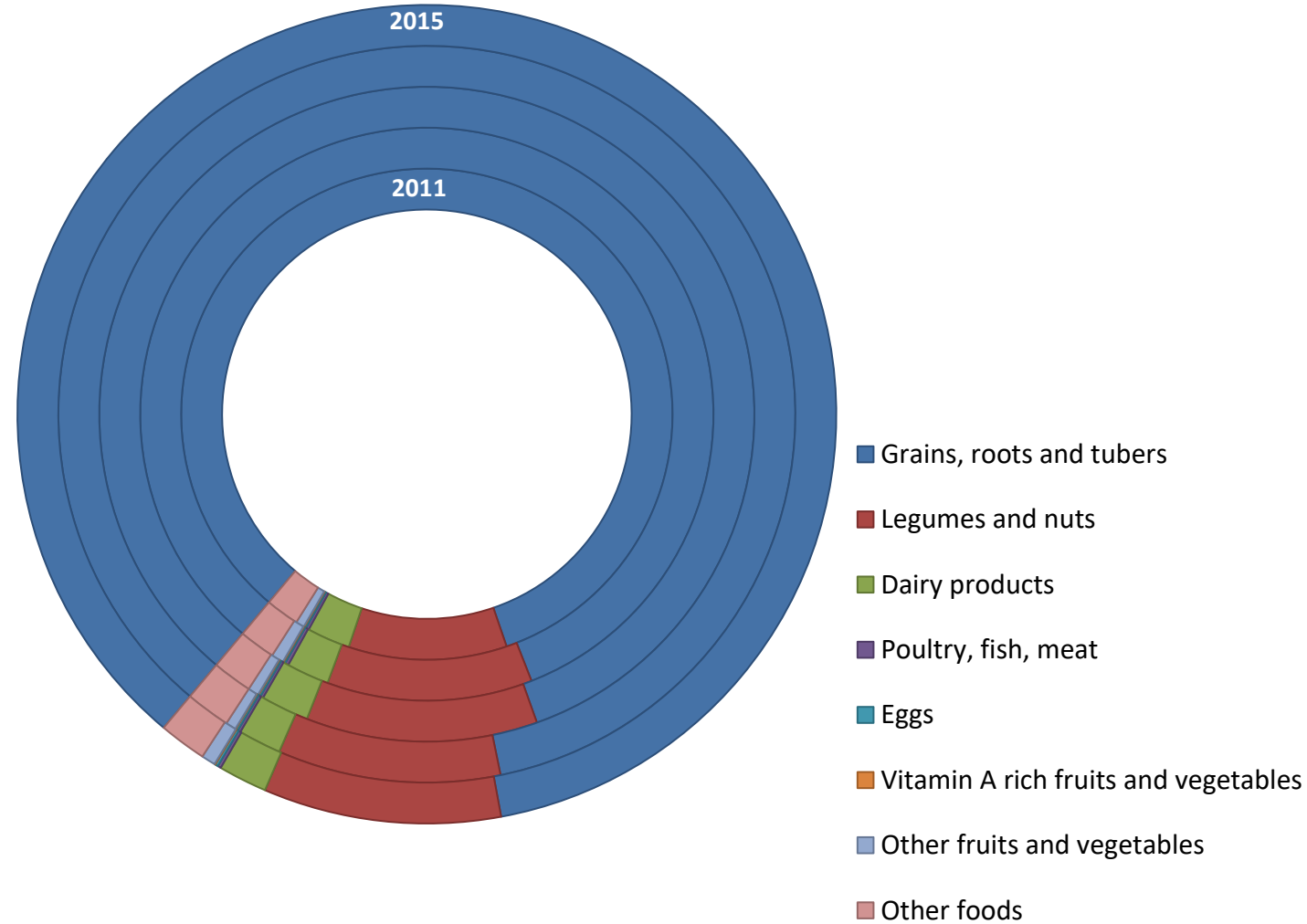
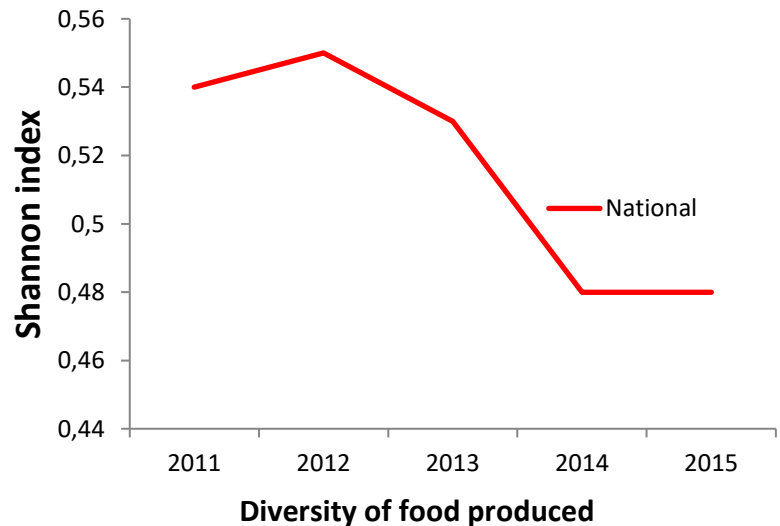
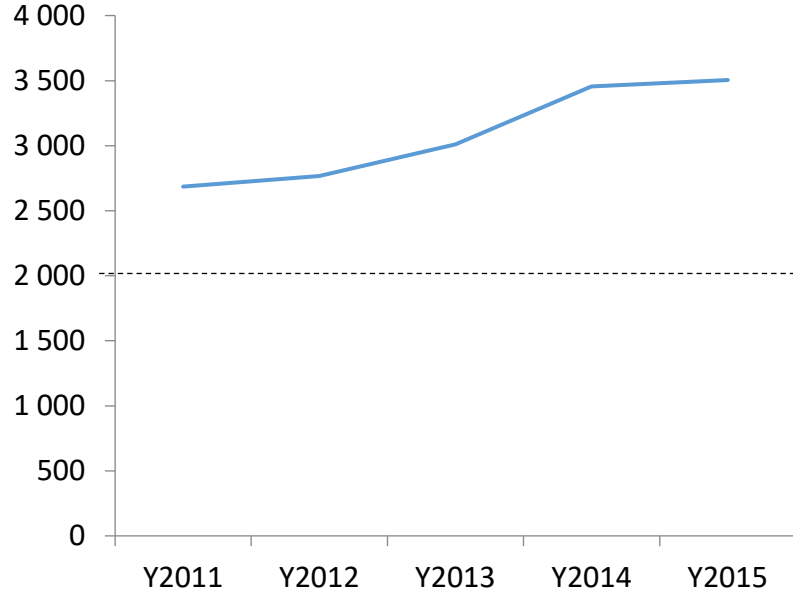
→ This calls for a shift/transformation of food systems to improve diet





# Food supply (quantity and diversity)

Energy (kcal)



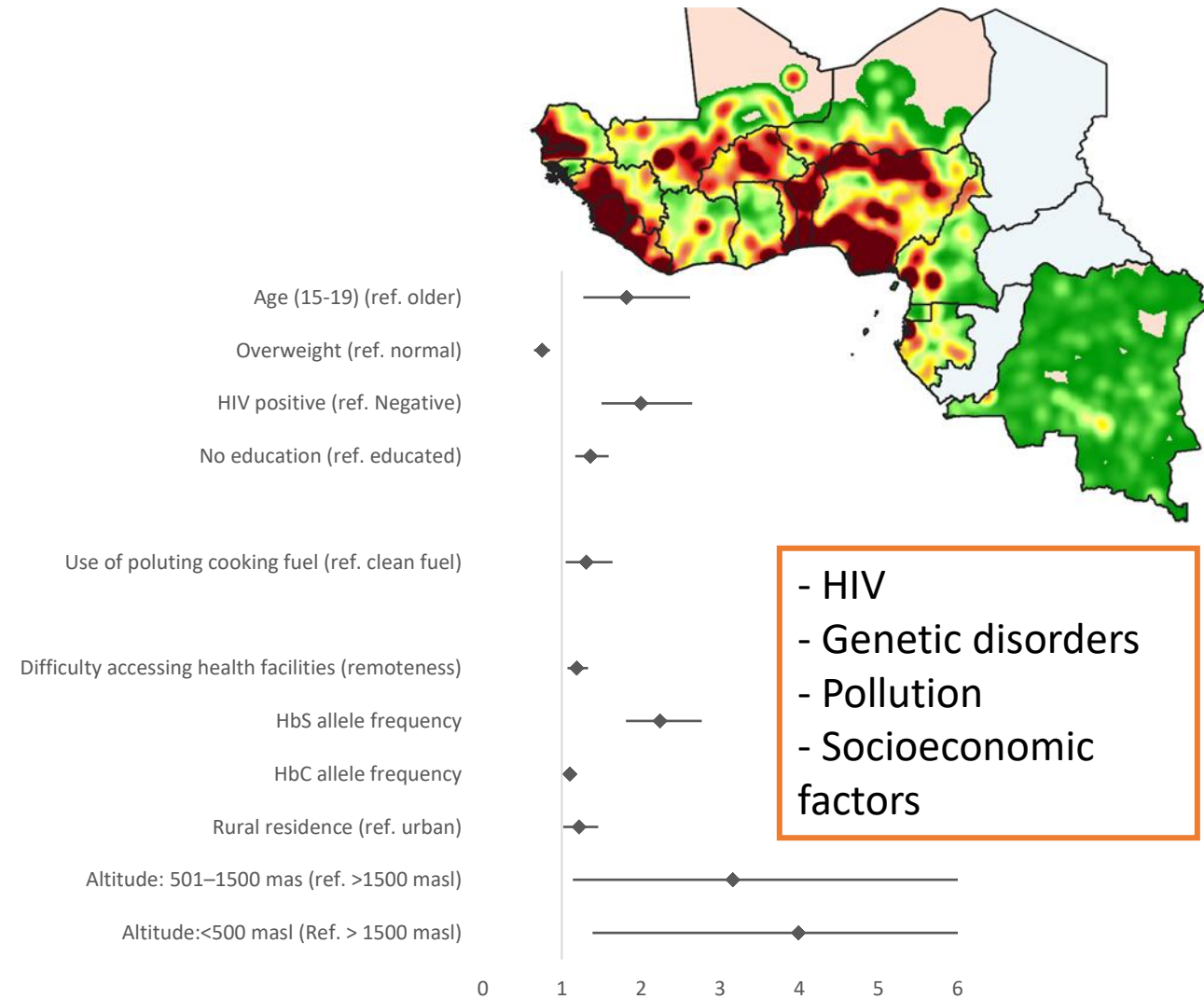
Baye, Hirvonen, Dereje & Remans. 2019 Energy and nutrient production in Ethiopia, 2011-2015: Implications to supporting healthy diets and food systems. *Plos One* 14 (3), e0213182

## Relationship between access to health coverage and child diet and nutritional outcomes in Ethiopia

Stunting	Adjusted <sup>a</sup>		
	<i>b</i>	95% CI	<i>p</i> Value
Co-coverage (n out of seven)	-0.008	-0.014, -0.002	0.008
At least one intervention	-0.013	-0.049, 0.022	0.458
At least three interventions	-0.017	-0.040, 0.006	0.154
At least six interventions	-0.027	-0.056, 0.001	0.057
Wasting			
Co-coverage (n out of seven)	-0.012	-0.017, -0.008	<0.01
At least one intervention	-0.016	-0.044, 0.012	0.258
At least three interventions	-0.037	-0.055, -0.019	<0.01
At least six interventions	-0.049	-0.071, -0.027	<0.01
MDD			
Co-coverage (n out of seven)	0.017	0.013, 0.020	<0.01
At least one intervention	0.018	-0.002, 0.039	0.081
At least three interventions	0.037	0.024, 0.051	<0.01
At least six interventions	0.08	0.064, 0.096	<0.01

Baye, Laillou, & Chitekwe (2022) Co-coverage of reproductive, maternal, newborn and child health interventions shows wide inequalities and is associated with child nutritional outcomes in Ethiopia (2005–2019)

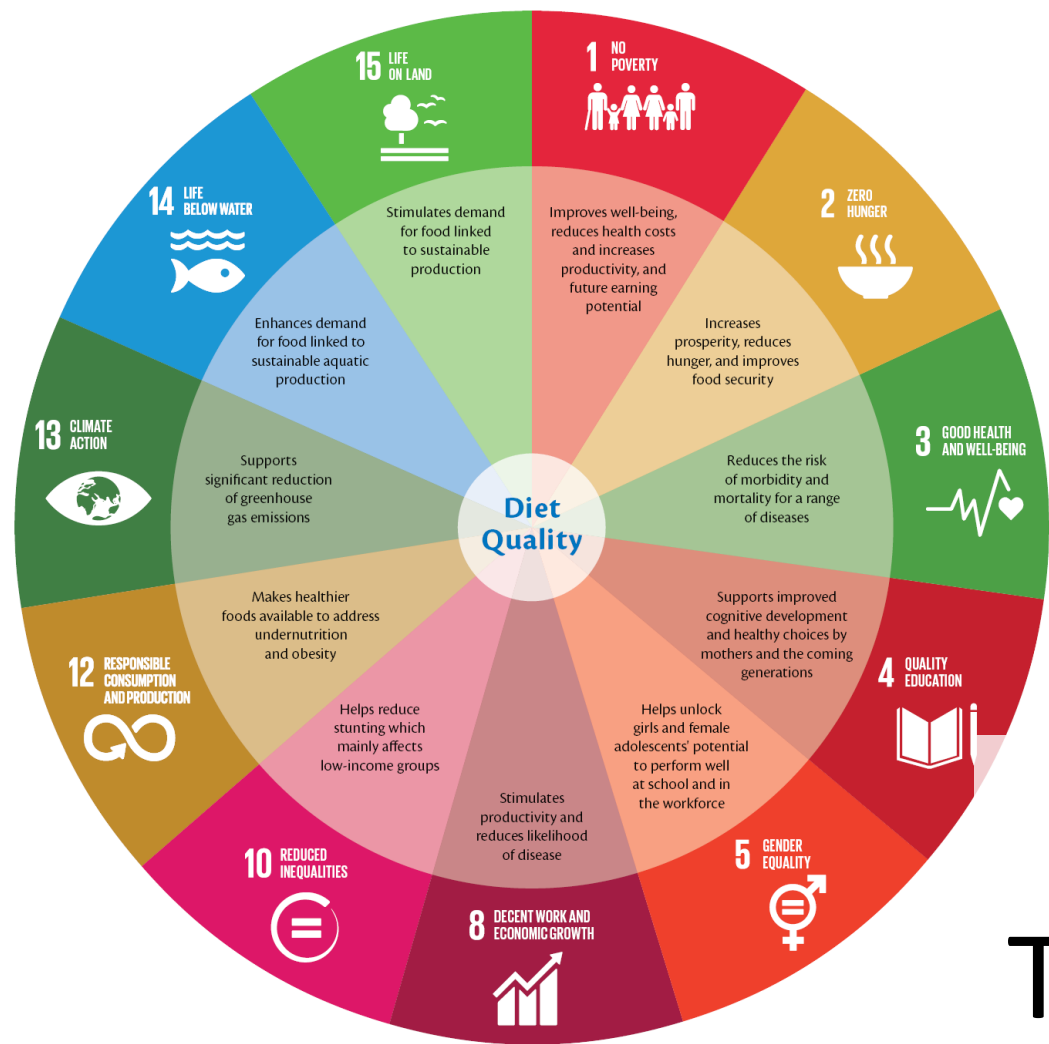
## Caseload density of moderate anemia



Baye et al (under preparation) Anemia in West Africa

## Summary and concluding remarks

- The determinants of malaria are diverse, often overlapping and crosscuts multiple sectors
- Effectively addressing malnutrition requires multisectoral efforts that can only be best informed by a multidisciplinary diagnostics and solutions
- As illustrated by some of the examples, interdisciplinary efforts have been made to understand malnutrition, but deliberate, systemic, and sustainable platforms are needed: role for IPORA
- More advanced methodologies and techniques are needed to integrate multiple datasets from multiple disciplines and inform decision making



Viewpoint | [Published: 21 September 2016](#)

# The Sustainable Development Goals cannot be achieved without improving maternal and child nutrition

[Kaleab Baye](#) ✉

*Journal of Public Health Policy* **38**, 137–145 (2017) | [Cite this article](#)

778 Accesses | 22 Citations | 1 Altmetric | [Metrics](#)

Merci!  
Thank you!

