

A photograph of a vulture standing over a dead animal lying on the ground. The vulture is dark brown with white patches on its head and neck. The dead animal is dark-colored and appears to be a large mammal like a deer or boar. They are in a natural, outdoor setting with trees and brush in the background.

# Development and Nutrition

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# Outline

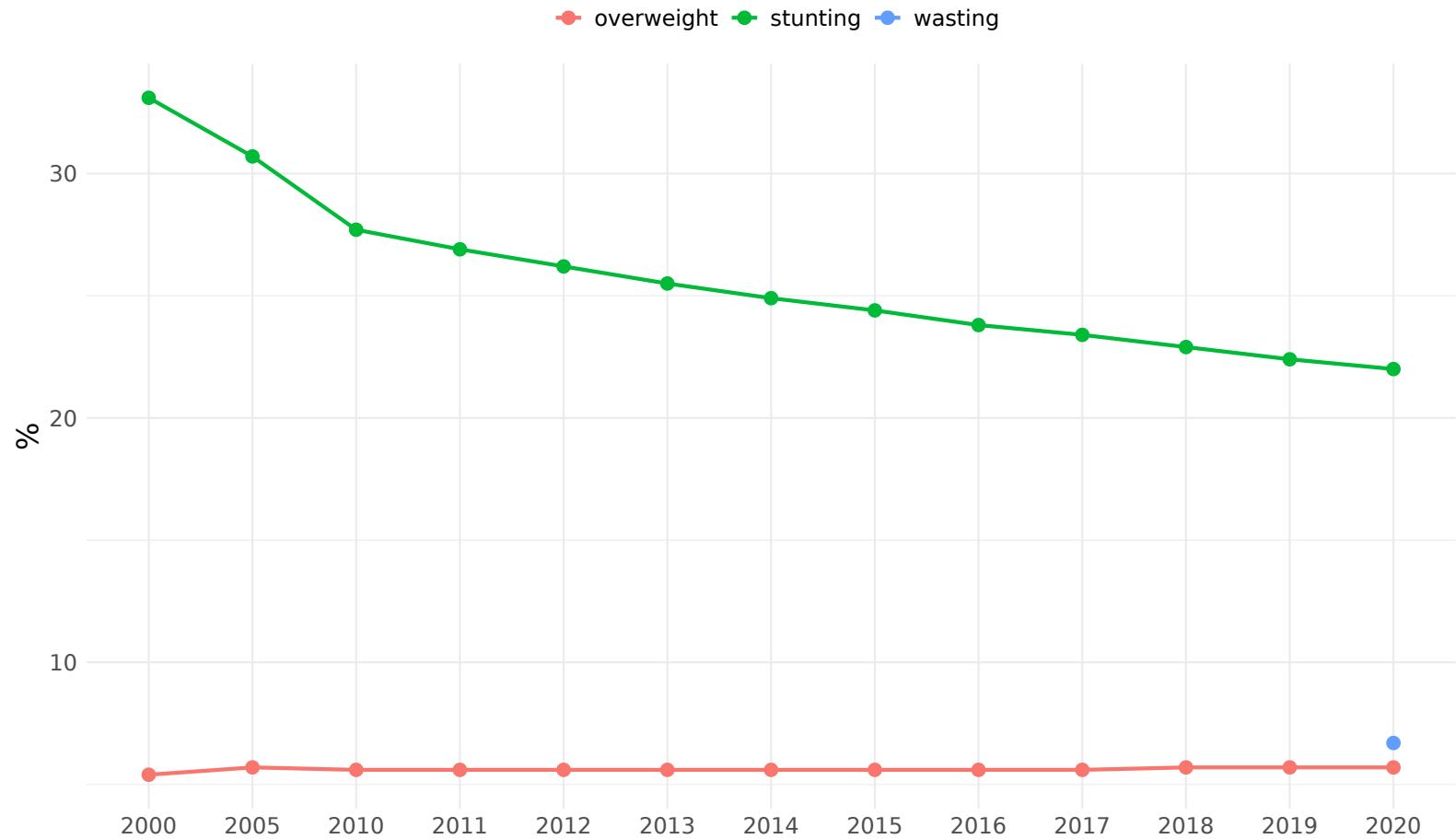
- The current global malnutrition burden
- Undernutrition, mortality, and famine oh my!
- Interventions: what works?

# Global burden of malnutrition

Charts taken from the 2021 Global Nutrition Report

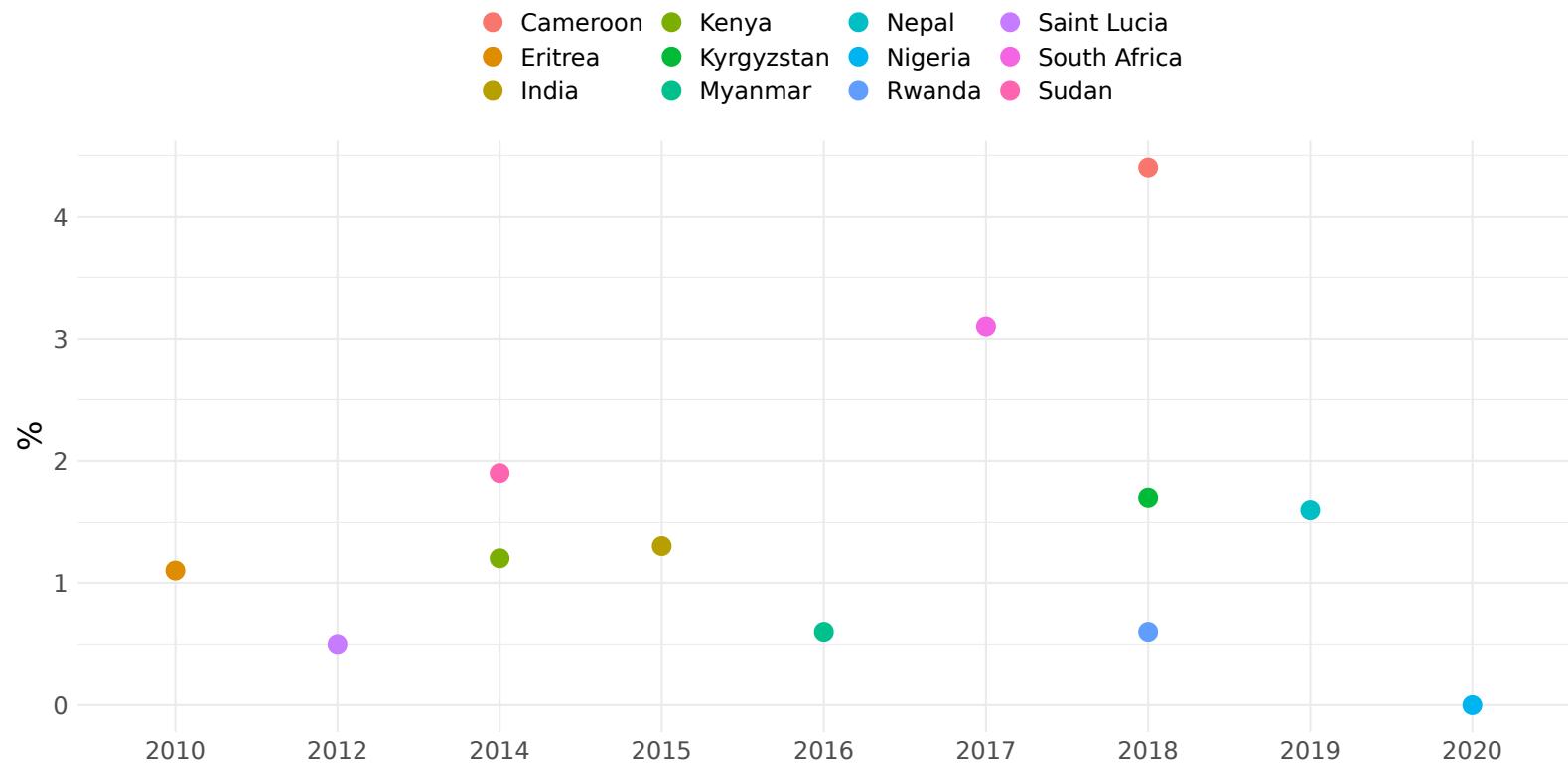
# Burden of child malnutrition

Prevalence of stunting, wasting and overweight in children under 5 years of age



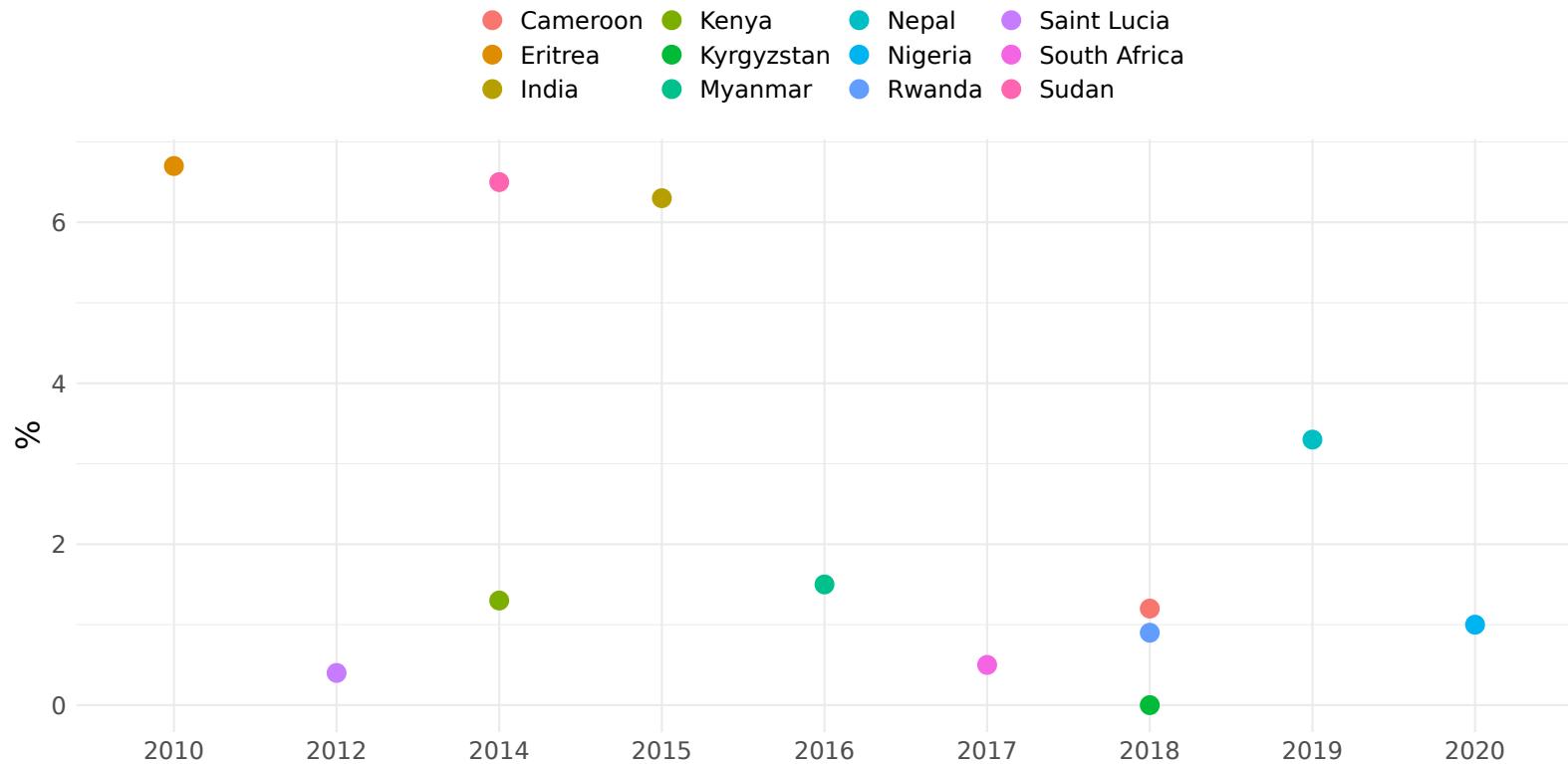
# Double burden: stunting and overweight

Prevalence of coexisting stunting and overweight in children under 5 years of age



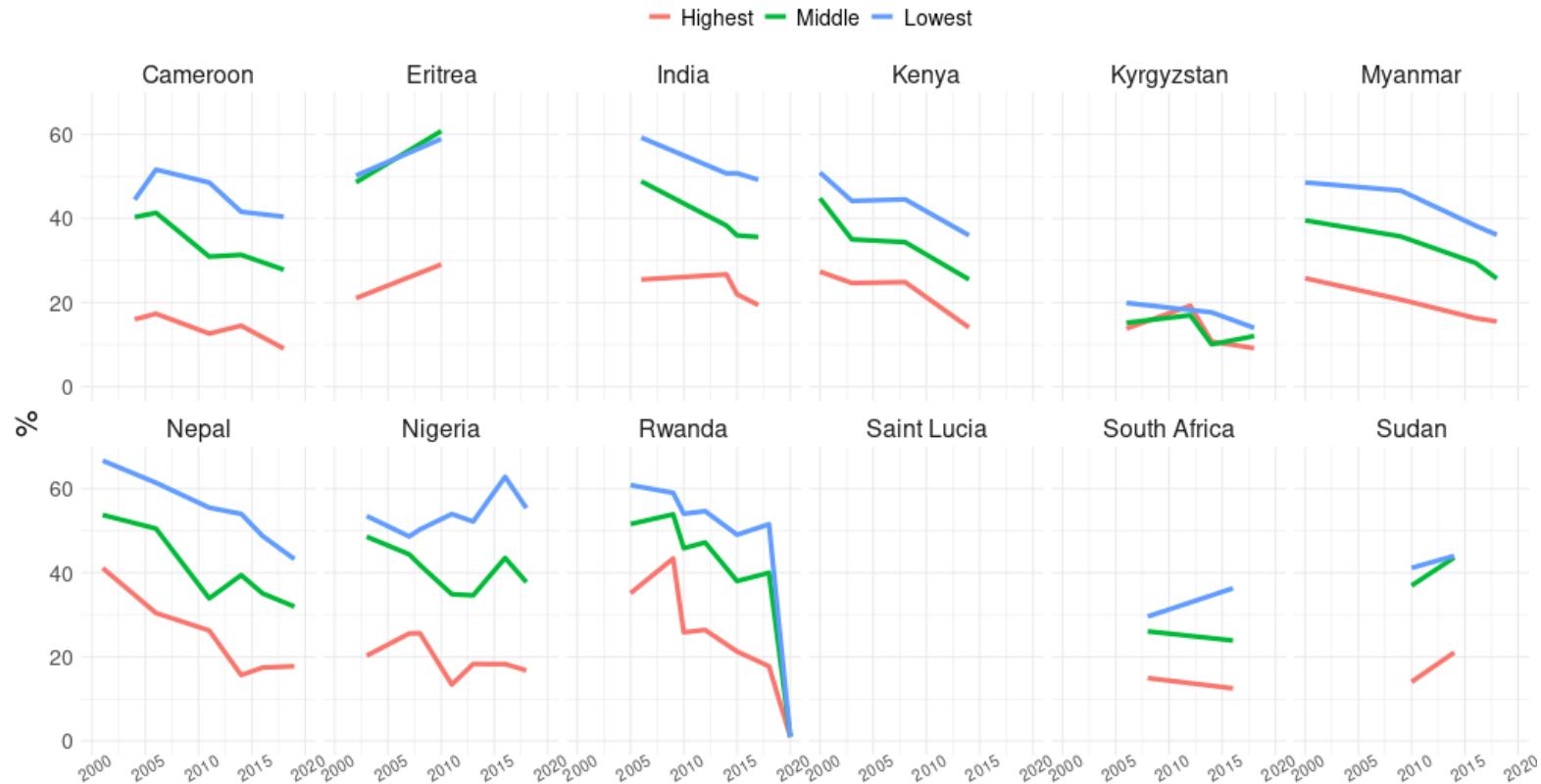
# Double burden: wasting and stunting

Prevalence of coexisting wasting and stunting in children under 5 years of age



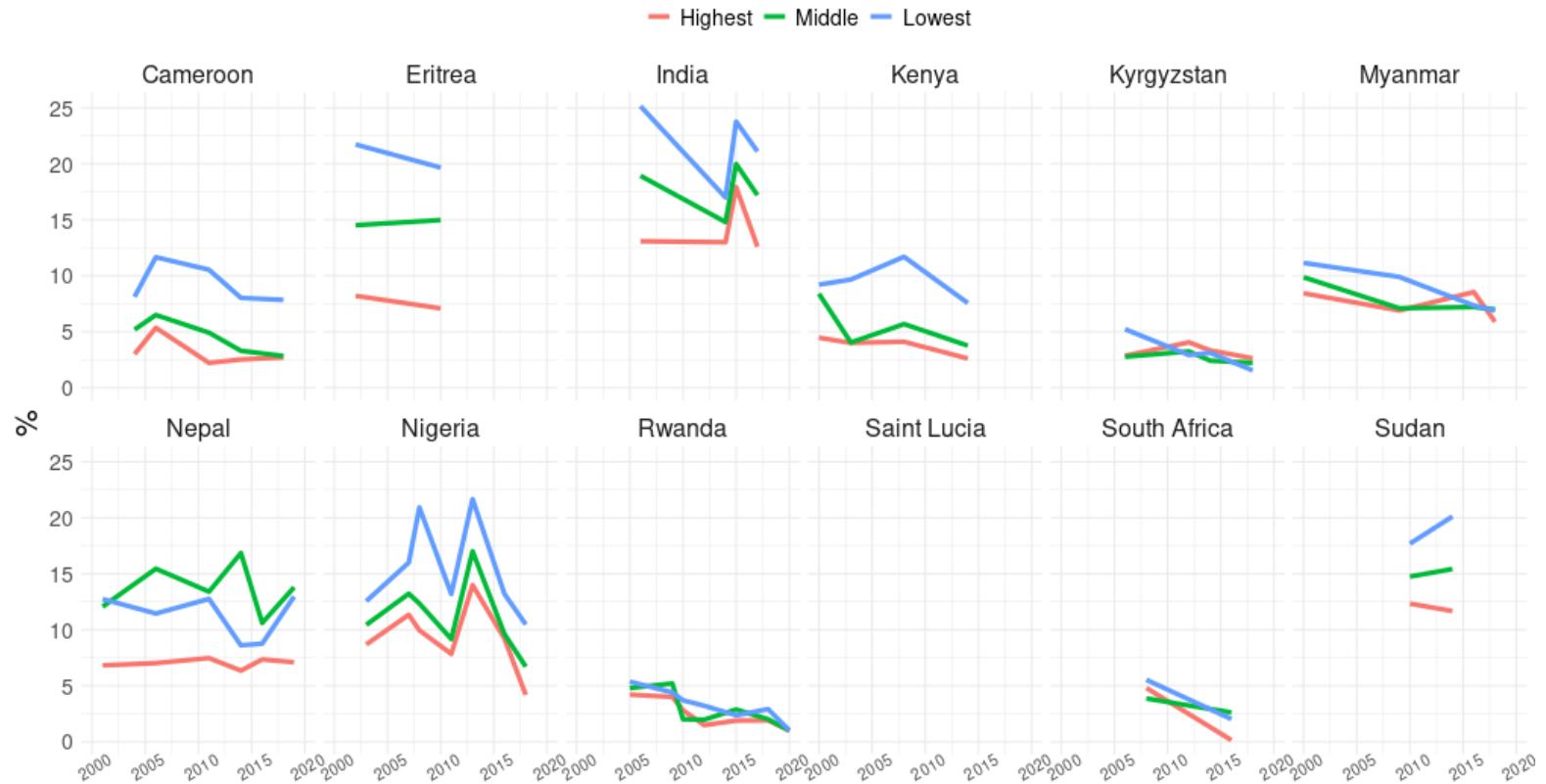
# Inequalities in child stunting

Prevalence of stunting in children under 5 years of age by wealth quintiles



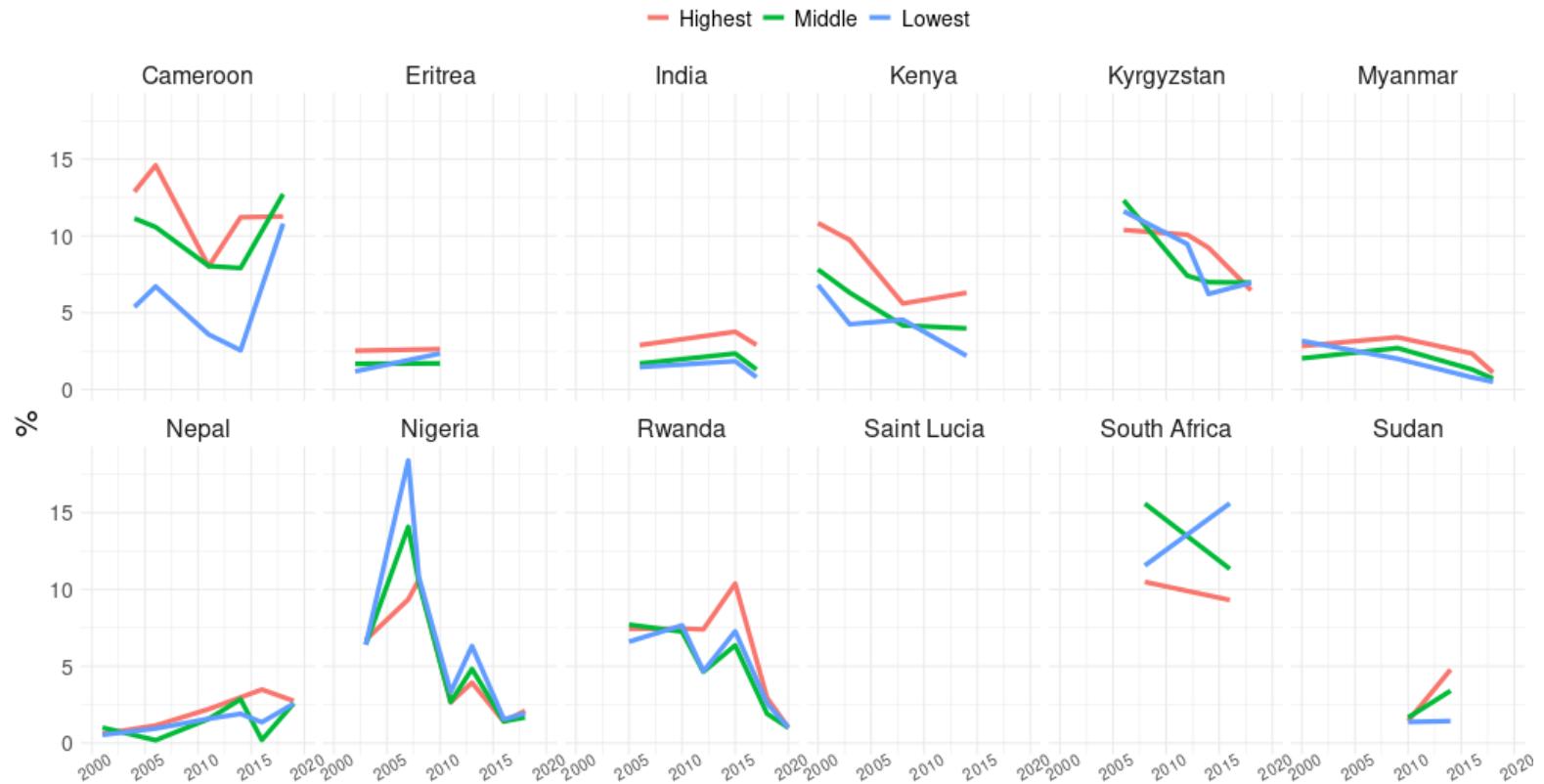
# Inequalities in child wasting

Prevalence of wasting in children under 5 years of age by wealth quintiles



# Inequalities in child overweight

Prevalence of overweight in children under 5 years of age by wealth quintiles

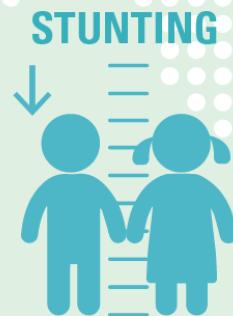


**Undernutrition, mortality, and  
famine oh my!**

# Which undernutrition?

- Undernutrition - many forms, many manifestations
- When discussing, learning, and researching on the links of nutrition and development, important to distinguish the form/s of malnutrition used

## THREE FACES OF MALNUTRITION



**144 million**

children under 5 are **stunted**  
**(too short for their age)**



**47 million**

children under 5 are **wasted**  
**(too thin for their height)**



**38 million**

children under 5 are **overweight**

# Forms of undernutrition commonly linked to development

- childhood stunting - assessed using height-for-age z-score (HAZ) index
- childhood underweight - assessed using weight-for-age z-score (WAZ) index
- childhood, adolescent and adult micronutrients deficiency - this includes various forms of anaemia, vitamin A deficiency, folic acid deficiency, iodine deficiency

# Childhood stunting

- important to distinguish the terminology of **stunting** - *the process of growth faltering* - with the terminology of **stunted** - the *state of growth failure*
- a measure of chronic undernutrition measured by height-for-age z-score (HAZ) index
- often used as a target outcome measure or outcome of interest when discussing development processes

# More than 40% of all kids in Tanzania are stunted.

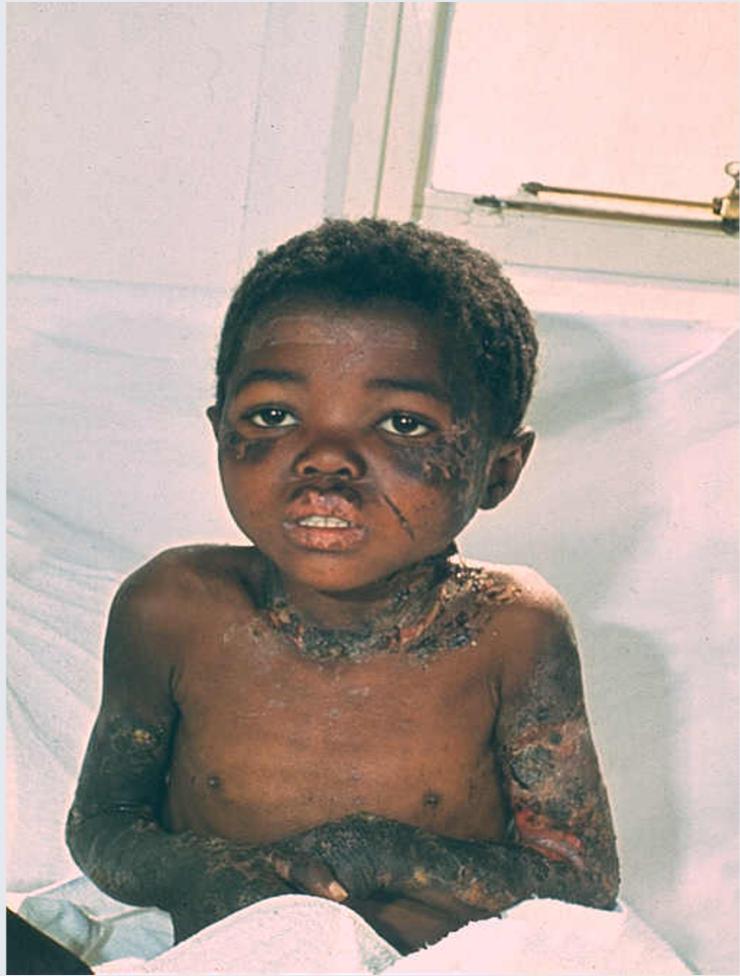
This line is the median height of 9-year-olds worldwide

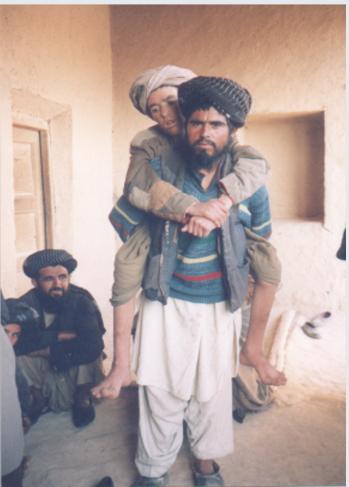
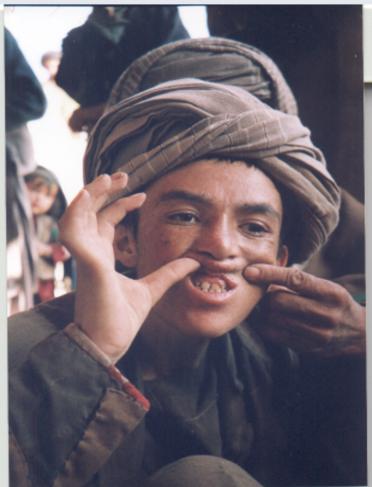


# Micronutrient deficiency

- deficiency in nutrients results from a medium-term process of diet inadequacy - both in quantity and quality
- the level of micronutrient deficiencies at a population level gives an indication of diet quality
- micronutrient deficiency often manifest sub-clinically; when physical signs manifest, condition is often already very severe







White spots

# Mortality

- 52.5% of all deaths in young children are attributable to undernutrition; 44.8% in deaths due to measles; 60.7% of deaths due to diarrhoea
- This is interesting from a development perspective given that the types of undernutrition that relates most to mortality (wasting and underweight) are not the measures commonly used in relation to development
- Current research, however, indicate that children who are both underweight and stunted are at greatest risk of death compared to other children

# Famines

- The most extreme manifestation of the breakdown of a society's food system that results in excess mortality and increase in incidence of acute wasting
- Acute episode of extreme hunger that results in excess mortality due to starvation or hunger-induced diseases

# Useful definitions?

*“Most definitions merely provide ‘a pithy description’ of what happens during famines, rather than ‘helping us to do the diagnosis - the traditional function of a definition.’”*

Sen 1981

*“Famine is a socio-economic process which causes the accelerated destitution of the most vulnerable, marginal and least-powerful groups in a community, to a point where they can no longer, as a group, maintain a sustainable livelihood. Ultimately, the process leads to the inability of the individual to acquire sufficient food to sustain life.”*

Walker, 1989

# Declaring a famine

*“There is still a major controversy over whether the Ethiopia crisis of 1999-2000 should be labeled a 'famine' or not, in light of the emotive and political connotations of the word. In the author's view - given the number of people affected, the damage to livelihoods and human development, and the loss of human life - there is no question about whether Ethiopia 1999-2000 was a famine. But the continued controversy over this issue points to the need for a broadly accepted operational definition of famine.”*

Maxwell, 2005

# Declaring a famine

- Highly politicised label
- When is a ‘famine’ declared and who decides?
- Incentives or disincentives to declare
- What are the information needs and how reliable are information sources?

# Food availability decline (FAD)

- Supply theory of famine
- Shortage of food
- Assessed through estimation of
  - Food production (+)
  - Imports (+)
  - Exports (-)
  - Wastage (-)
  - grain needed for sowing (-)
  - residual stocks (+)

# Causes of FAD

- Drought or floods
- Diseases of plants or animals
- Declines in soil productivity
- Conflict
- Government policies (e.g. cash cropping)
- Regulations on land use
- Trade regulations
- Alternative use of agricultural production (e.g. Food as fuel)

# Food entitlement decline (FED)

- Demand theory of famine
- Failure to demand even when supply sufficient
- Types of entitlements (entitlement set):
  - Ownership
  - Exchange
  - Non-market
- Relationship between non-food and food prices
- Famine may result form a change in the price of key items in the entitlement set

# Market failures

- Imperfect system of distribution
  - Infrastructure
  - Transport (ownership, repair, alternative uses)
- Physical fragmentation
  - Transaction costs & risks (physical isolation, imperfect information)
- Speculation and hoarding
  - Collusion of merchants to artificially limit supply in order to increase costs and profits

# Modern famines

- Complex combinations of many factors including FAD and FED and market failures
- Conflicts and/or sanctions
- Pandemic (?)

# **Interventions: what works and what have we achieved?**

## Maternal, infant and young child nutrition targets

### Childhood stunting

**OFF COURSE**

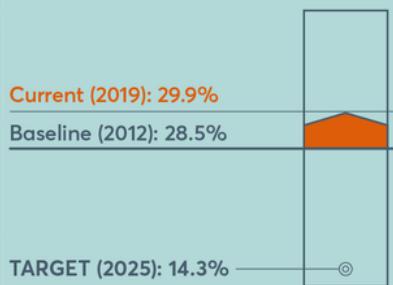
◎ TARGET 40% reduction in the number of children under 5 who are stunted.



### Anaemia

**OFF COURSE**

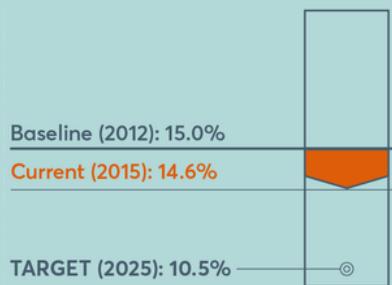
◎ TARGET 50% reduction of anaemia in women of reproductive age.



### Low birth weight

**OFF COURSE**

◎ TARGET 30% reduction in low birth weight.



### Childhood overweight

**OFF COURSE**

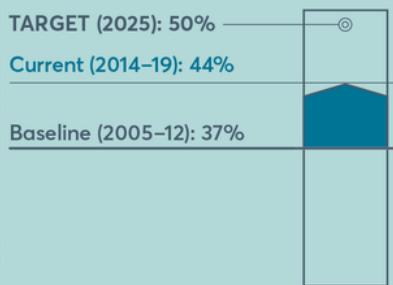
◎ TARGET No increase in childhood overweight.



### Breastfeeding

**ON COURSE**

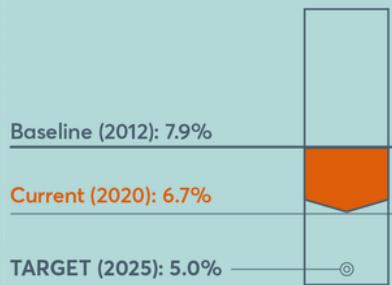
◎ TARGET Increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%.



### Childhood wasting

**OFF COURSE**

◎ TARGET Reduce and maintain childhood wasting to less than 5%.



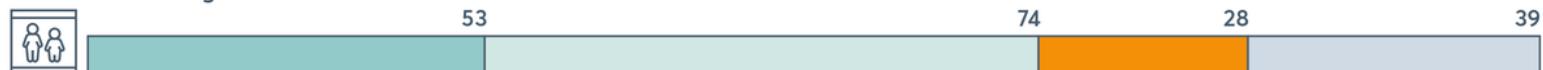
## Diet-related NCD targets

Men

## Maternal, infant and young child nutrition indicators

(●) On course (●) Some progress (●) No progress or worsening (●) Off course (●) No data or insufficient data for assessment

### Childhood stunting



### Anaemia



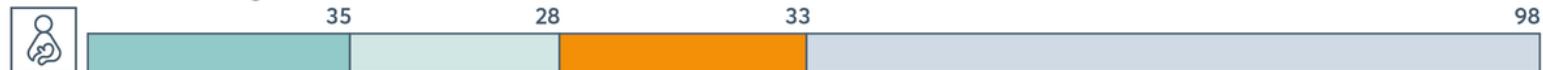
### Low birth weight



### Childhood overweight



### Exclusive breastfeeding



### Childhood wasting



## Nutrition-related NCD indicators

(●) On course (●) Off course (●) No data or insufficient data for assessment

### Sodium intake (women and men)



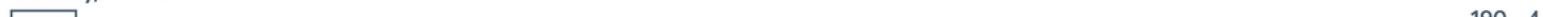
### Raised blood pressure, women



### Raised blood pressure, men

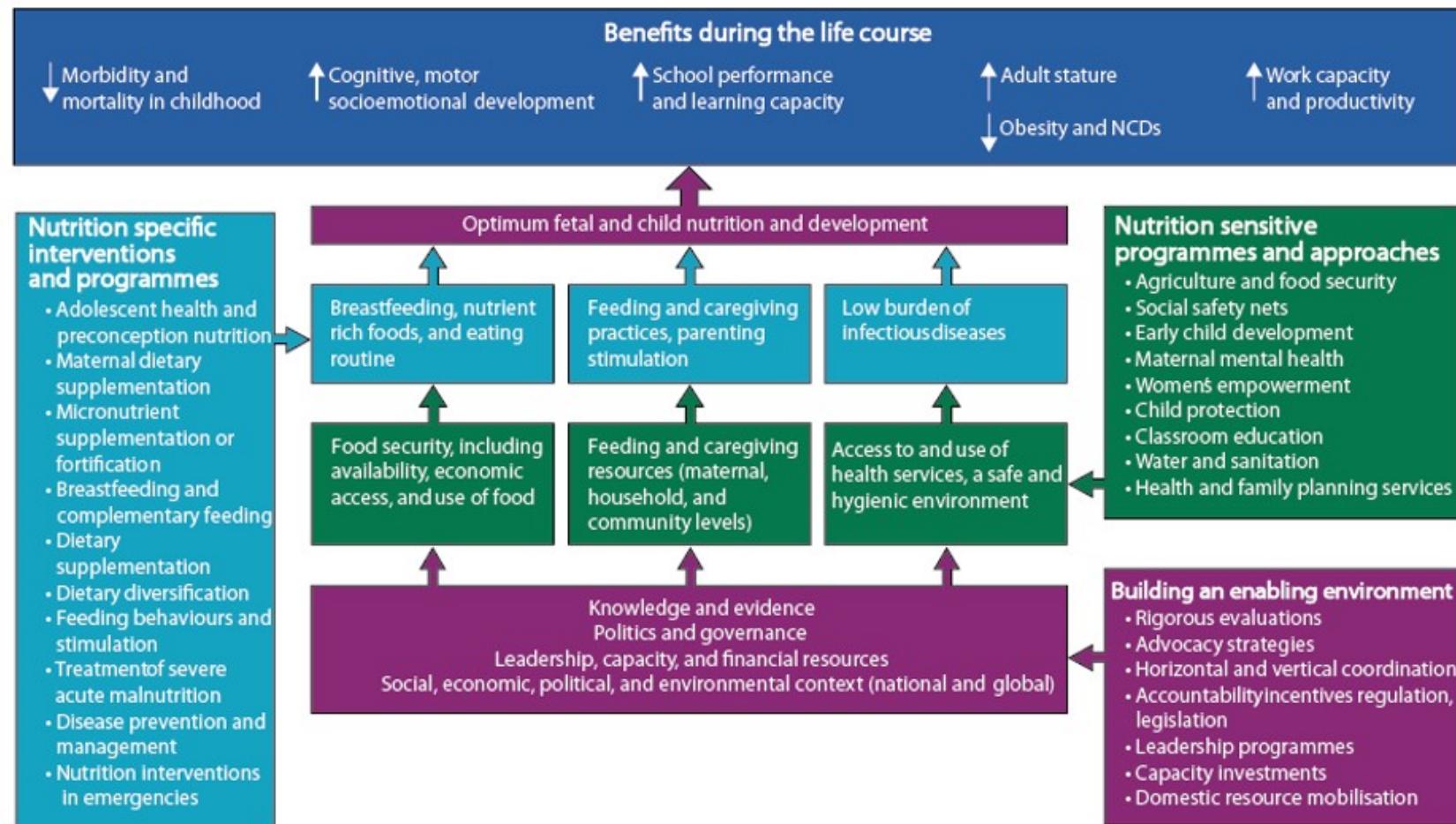


### Obesity, women



# **Development interventions in relation to nutrition outcomes**

# Framework for Actions to Achieve Optimum Fetal and Child Nutrition and Development



# Food systems approach

Encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded.



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# Questions?

# Thank you!

Slides can be viewed at <https://ernest.guevarra.io/devNutrition>

PDF version of slides can be downloaded at  
<https://ernest.guevarra.io/devNutrition/devNutrition.pdf>

R scripts for slides available at  
<https://github.com/ernestguevarra/devNutrition>