THE CONTRIBUTION OF FOOD COMPOSITION DATA TO ATTAINING FOOD SECURITY

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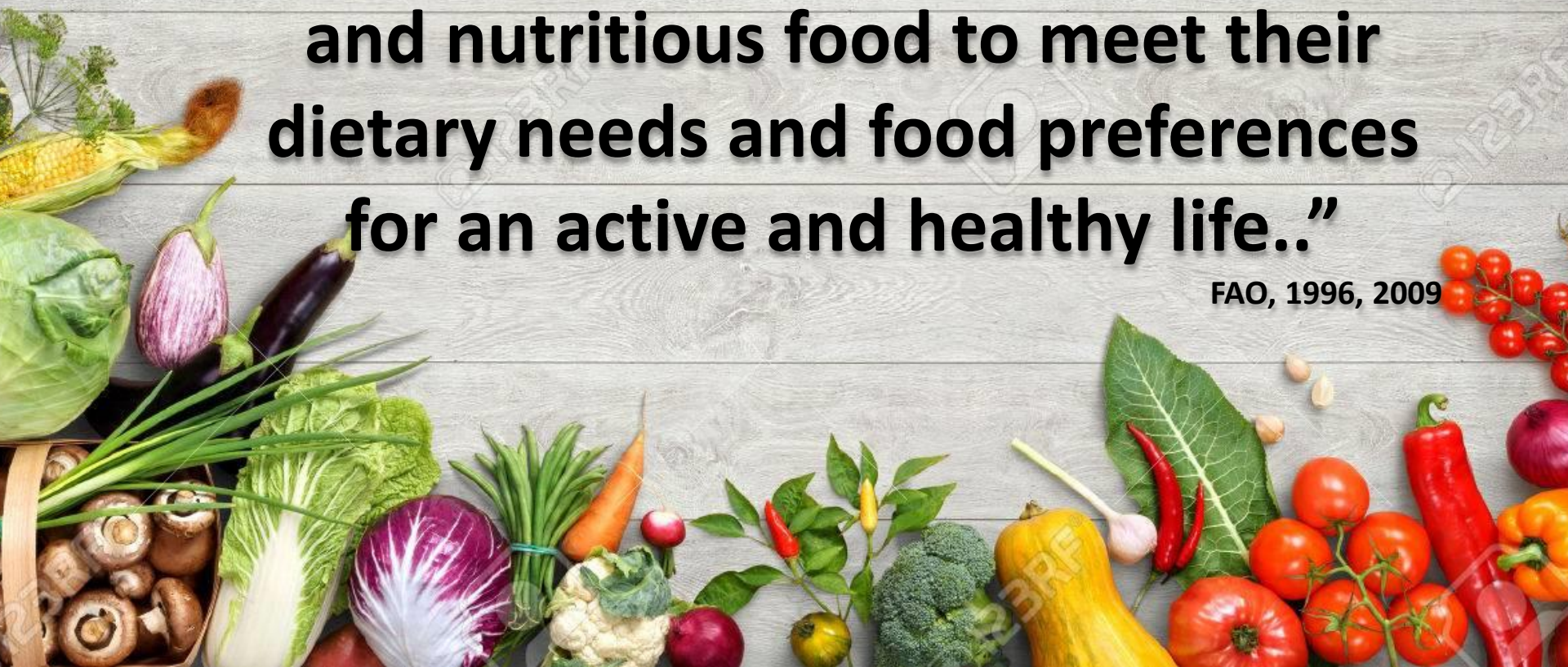
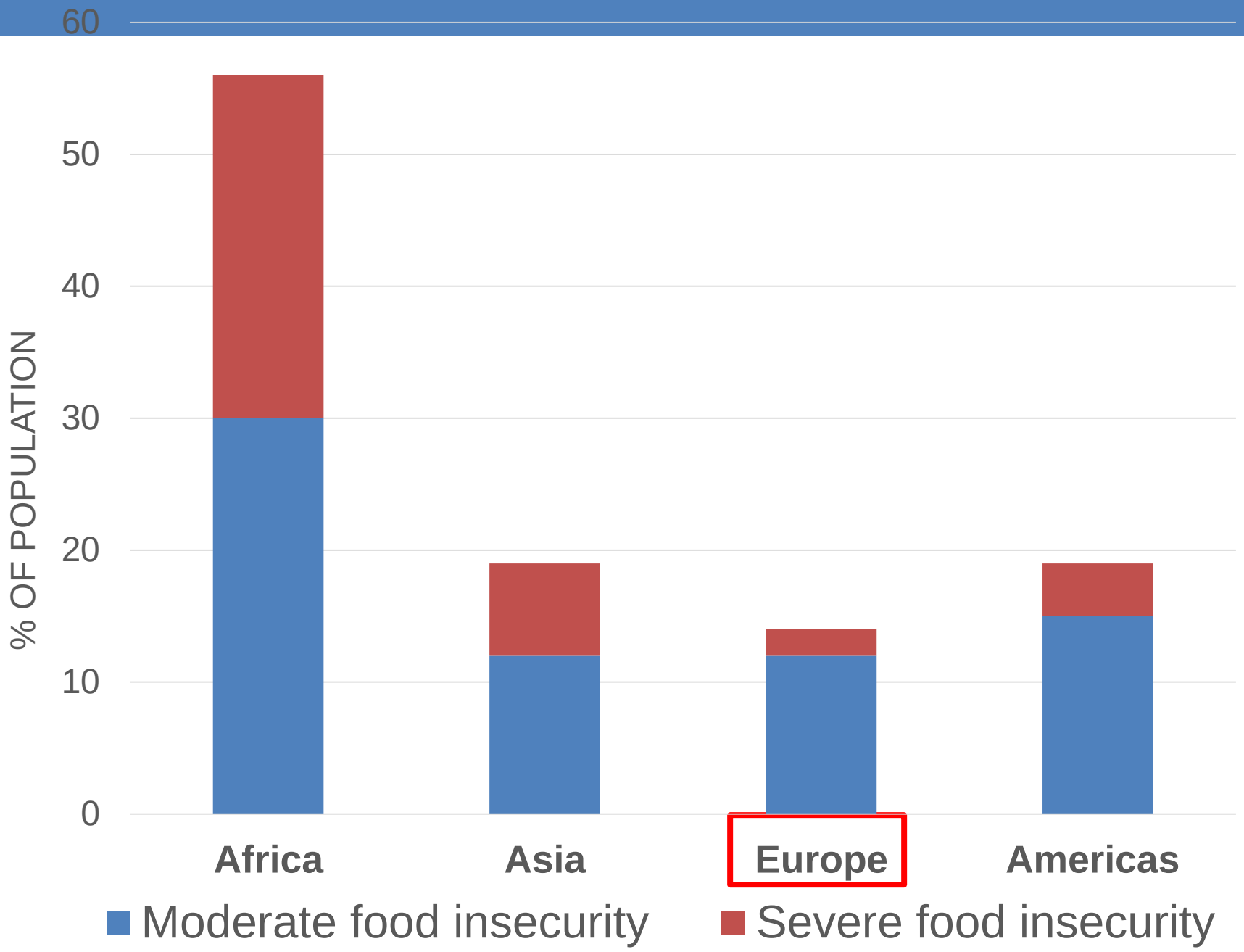
Food Security

“When all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life..”

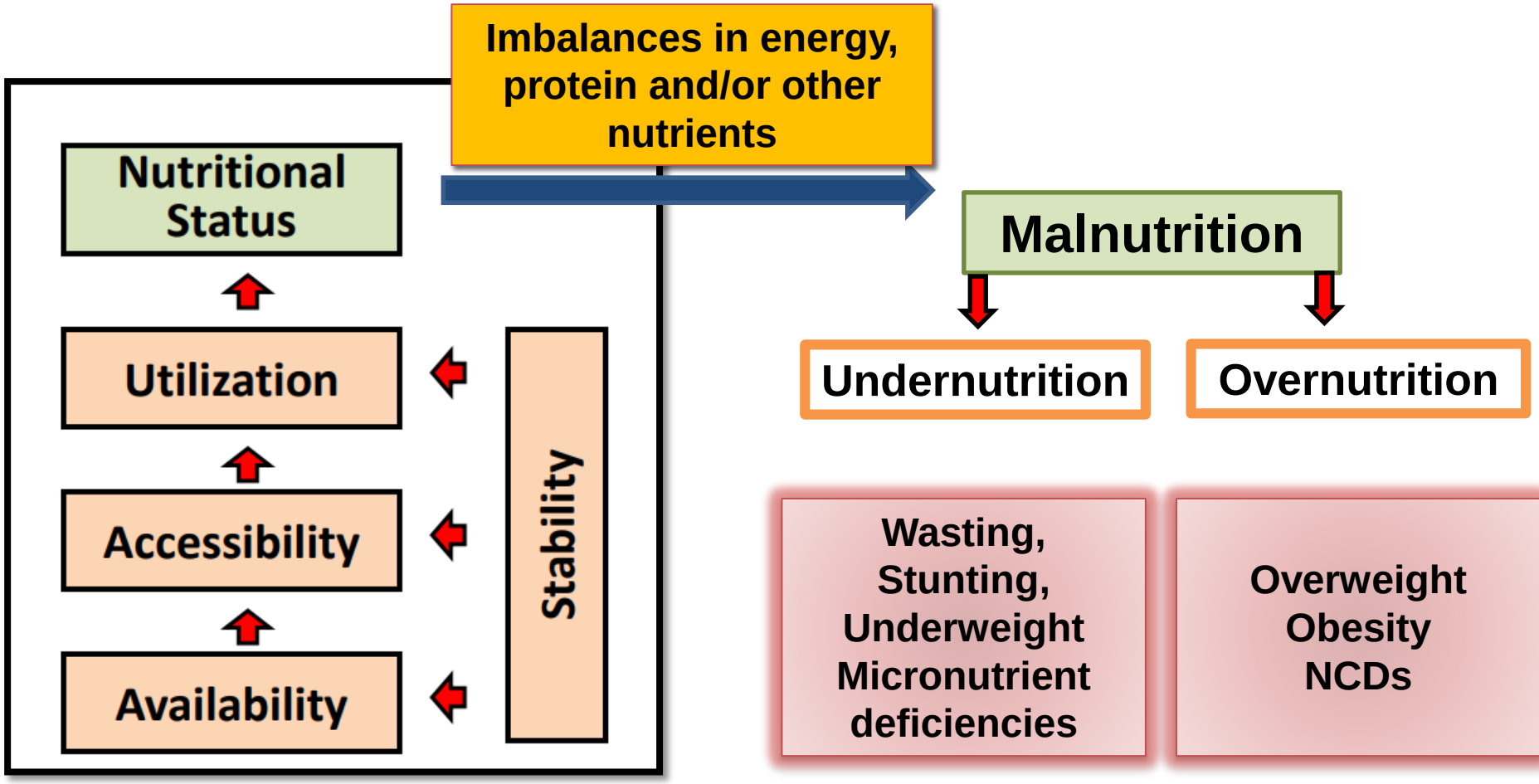
FAO, 1996, 2009





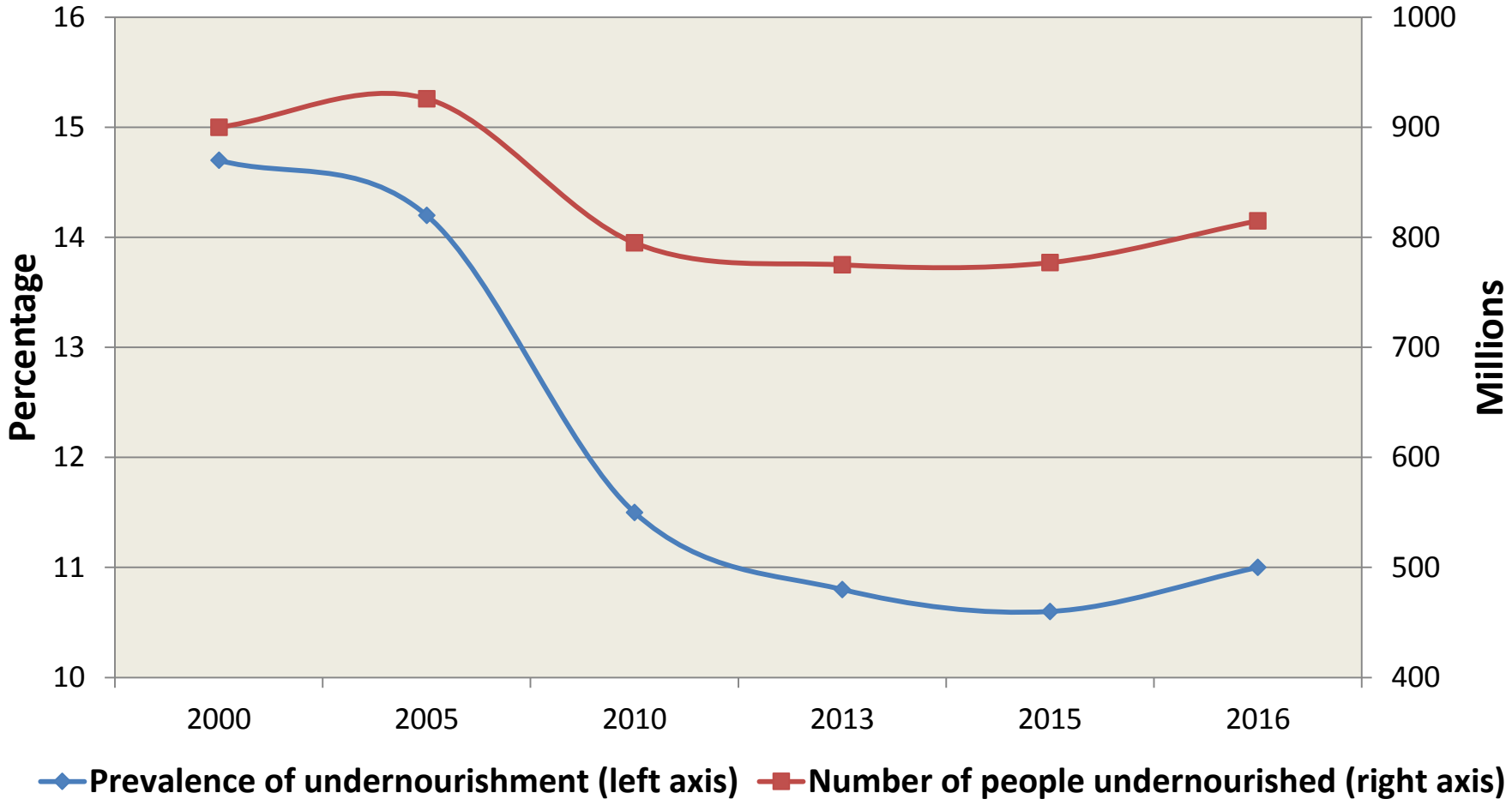
Global Nutrition Report, 2017

Food Security and Nutrition Linkage



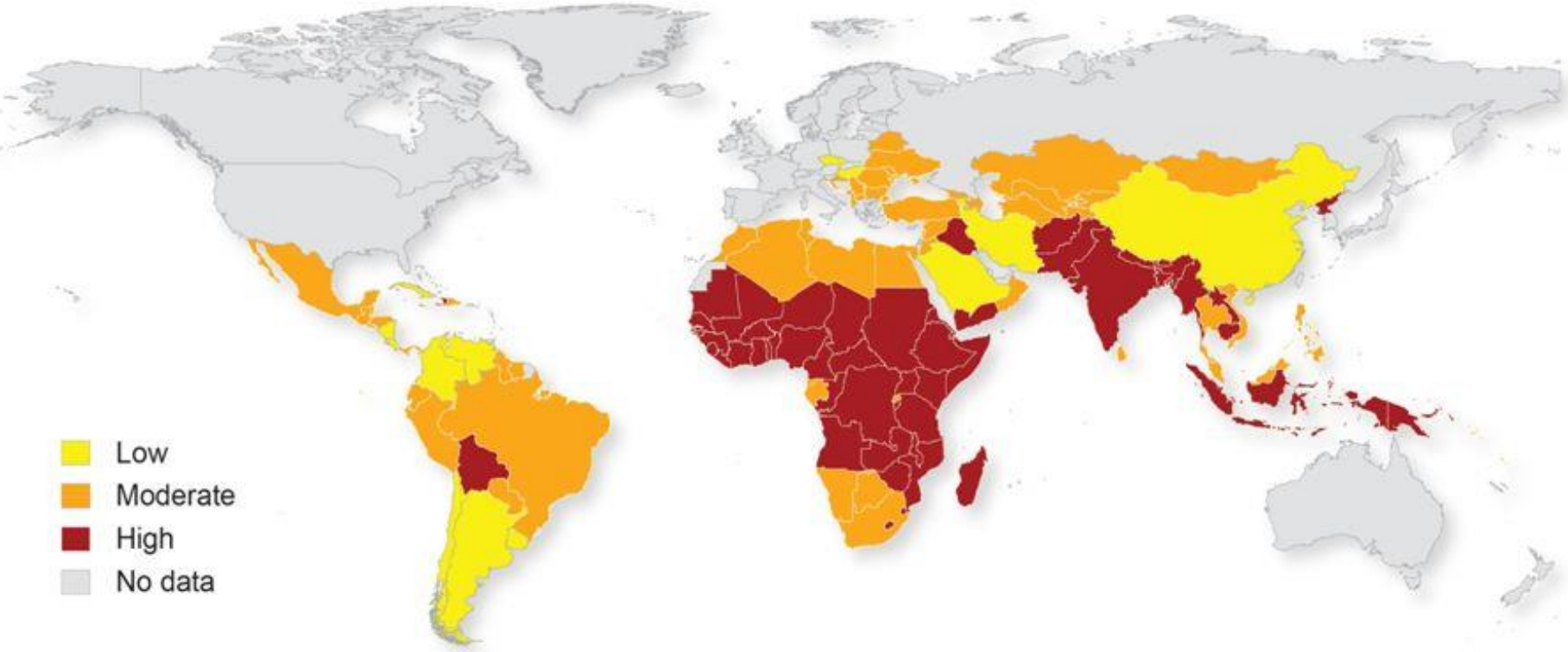
UNSCN, 2013

Prevalence of undernourishment in the World



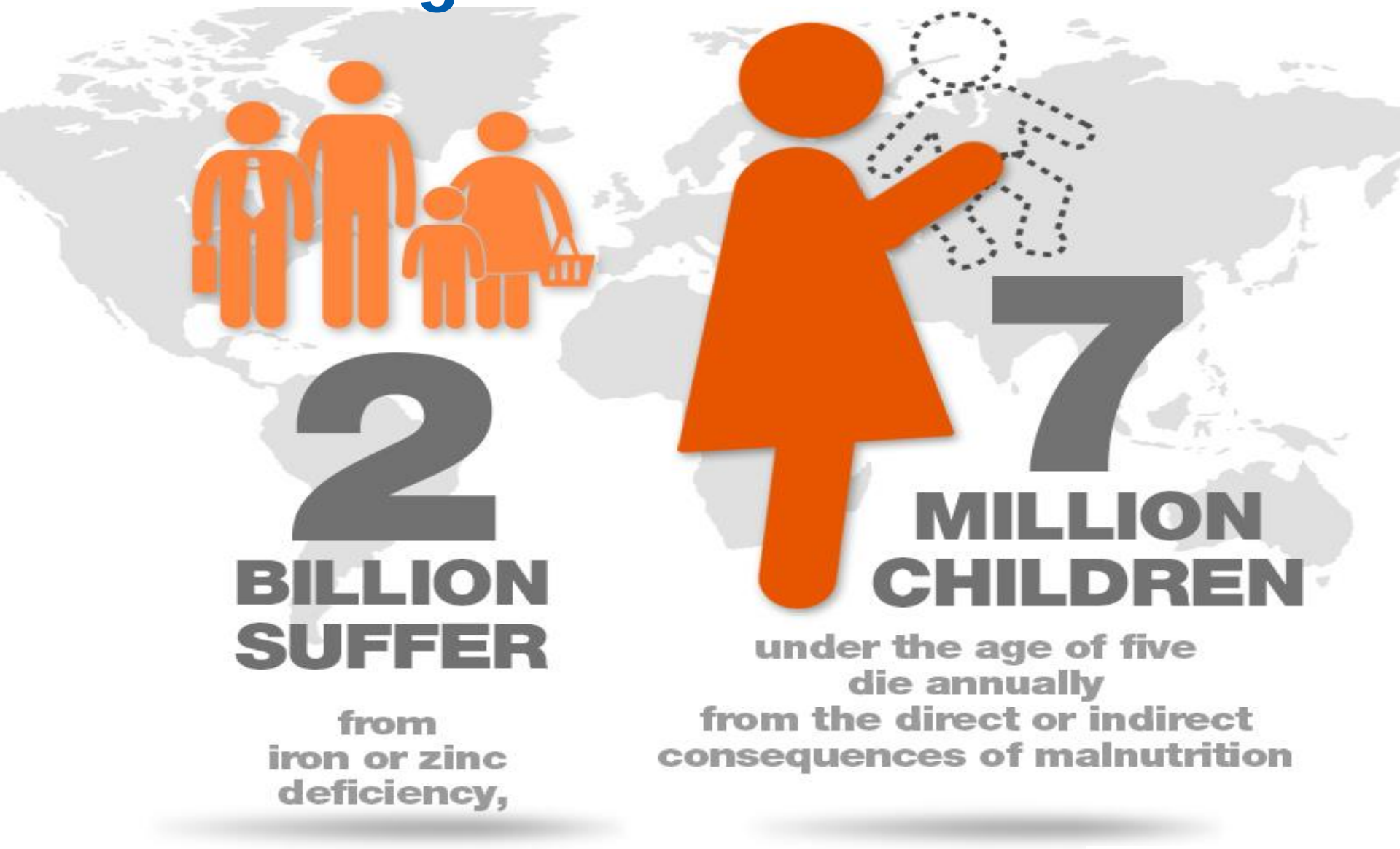
The State of Food Security and Nutrition in the World, 2017

Hidden Hunger – Distribution



Severity of the most common micronutrient deficiencies
(vitamin A, iron and zinc)

Hidden hunger



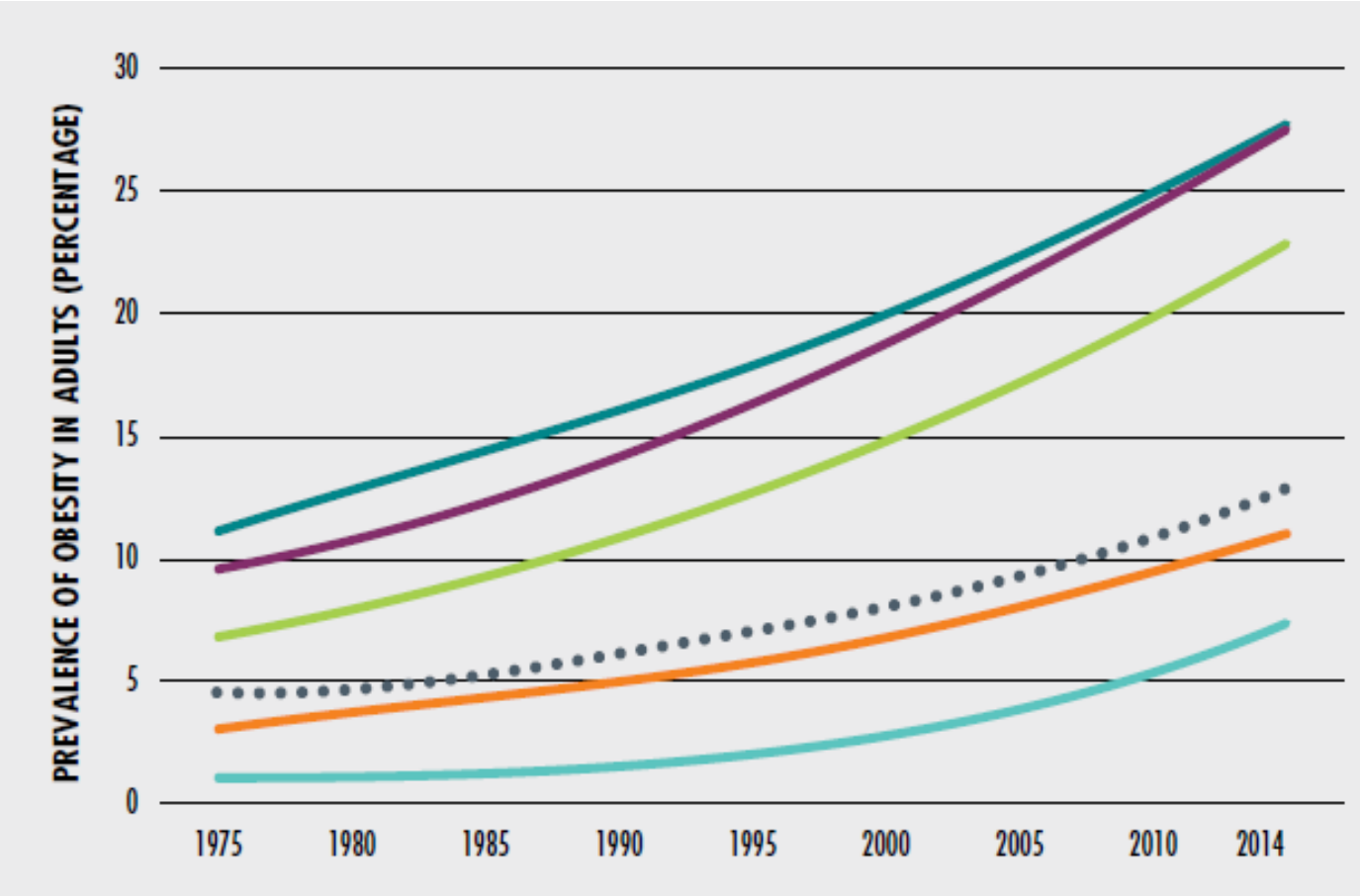
www.harvestplus.org

Micronutrients of Public Health Significance

Consequences of Micronutrient Malnutrition

- Lower IQ
- Limited cognitive development
- Cause stunting, wasting and blindness in children
- Permanent physical impairment
- Lower resistance to disease in both children and adults
- Increase susceptibility to common diseases
- Increased risks for both mothers and infants during childbirth

Adult obesity is rising globally at an accelerated pace



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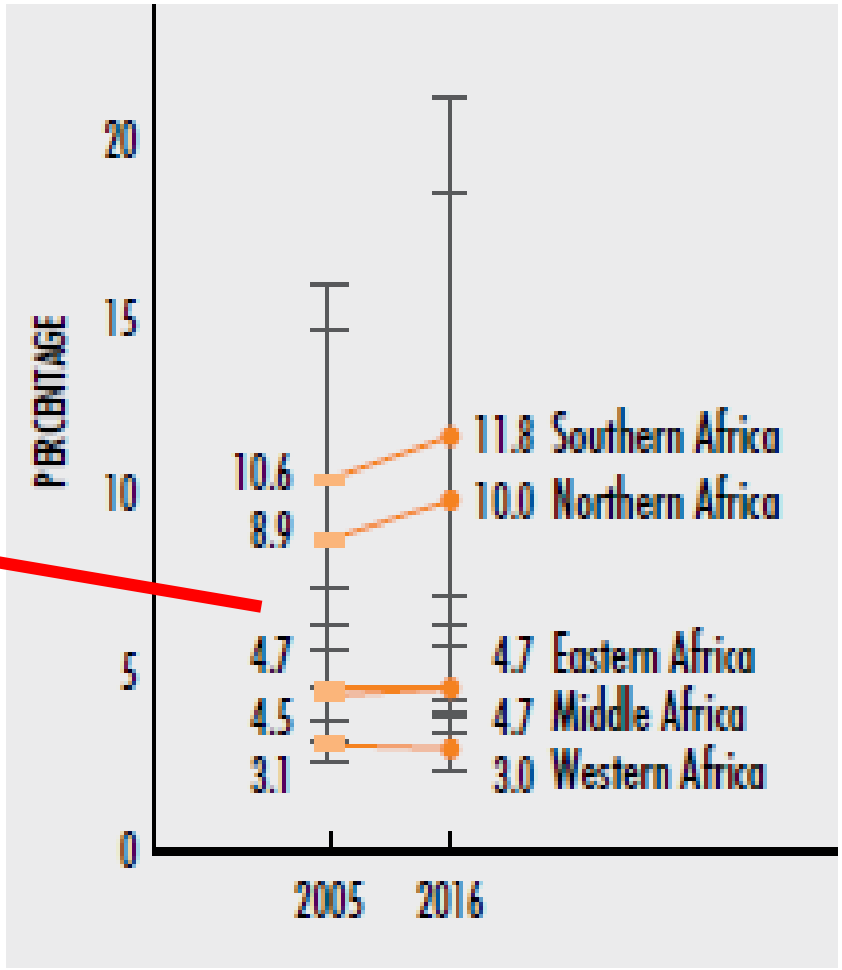
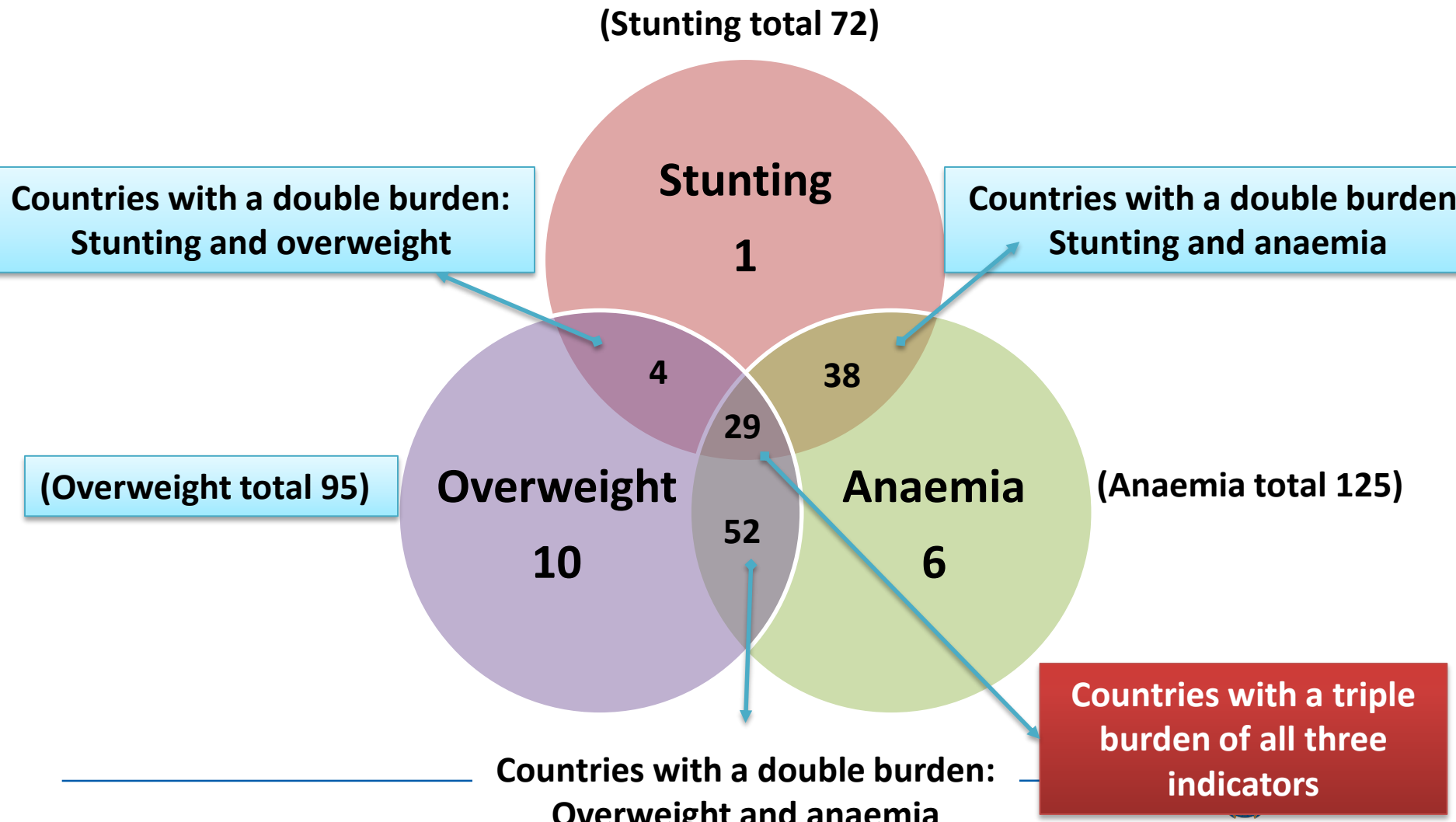
The State of Food Security and Nutrition in the World 2017

Overweight and obesity in children

Global 6%



Number of countries facing burdens of malnutrition



Global Nutrition Report, 2017

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FAO, 1996, 2009

Health Security

"The activities required, both proactive and reactive, to minimize vulnerability to acute public health events that endanger the collective health of populations living across geographical regions and international boundaries."

World Health Report, WHO, 2007

Health outcomes linked to specific nutrition situations

Undernutrition

- Decreased physical and mental development
- Compromised immunity
- Increased infectious diseases
- Vicious circle of malnutrition
- Micronutrient deficiencies

Overnutrition

Chronic non-communicable diseases of lifestyle:

- obesity
- metabolic syndrome
- cardiovascular disease
- type 2 diabetes

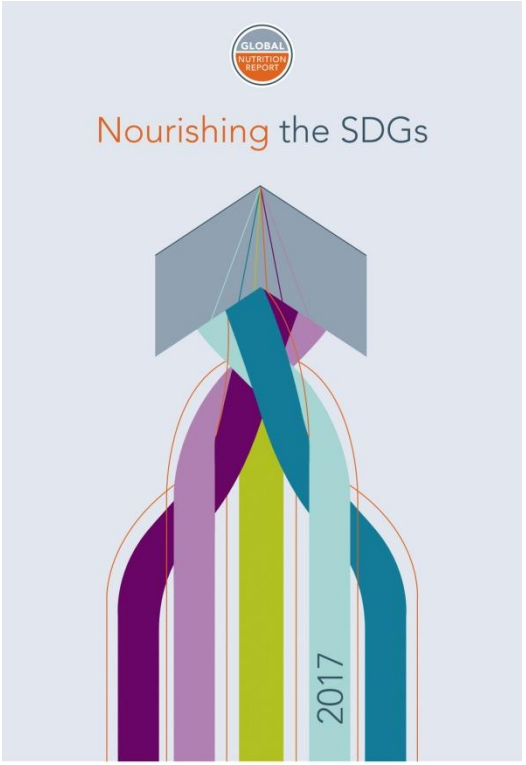
Hunger and food insecurity worsen the effects of all diseases and can accelerate degenerative conditions, especially among the young and elderly

Global nutrition discussions

Future global focus (Rio+20): *Sustainable Development Goals (SDGs)*
17 Global Goals with 169 Targets

Analysis shows there are five core areas that run through the SDGs which nutrition can contribute to, and in turn, benefit from:

- **sustainable food production**
- **strong systems of infrastructure**
- **health systems**
- **equity and inclusion**
- **peace and stability**



Global Nutrition Report, 2017

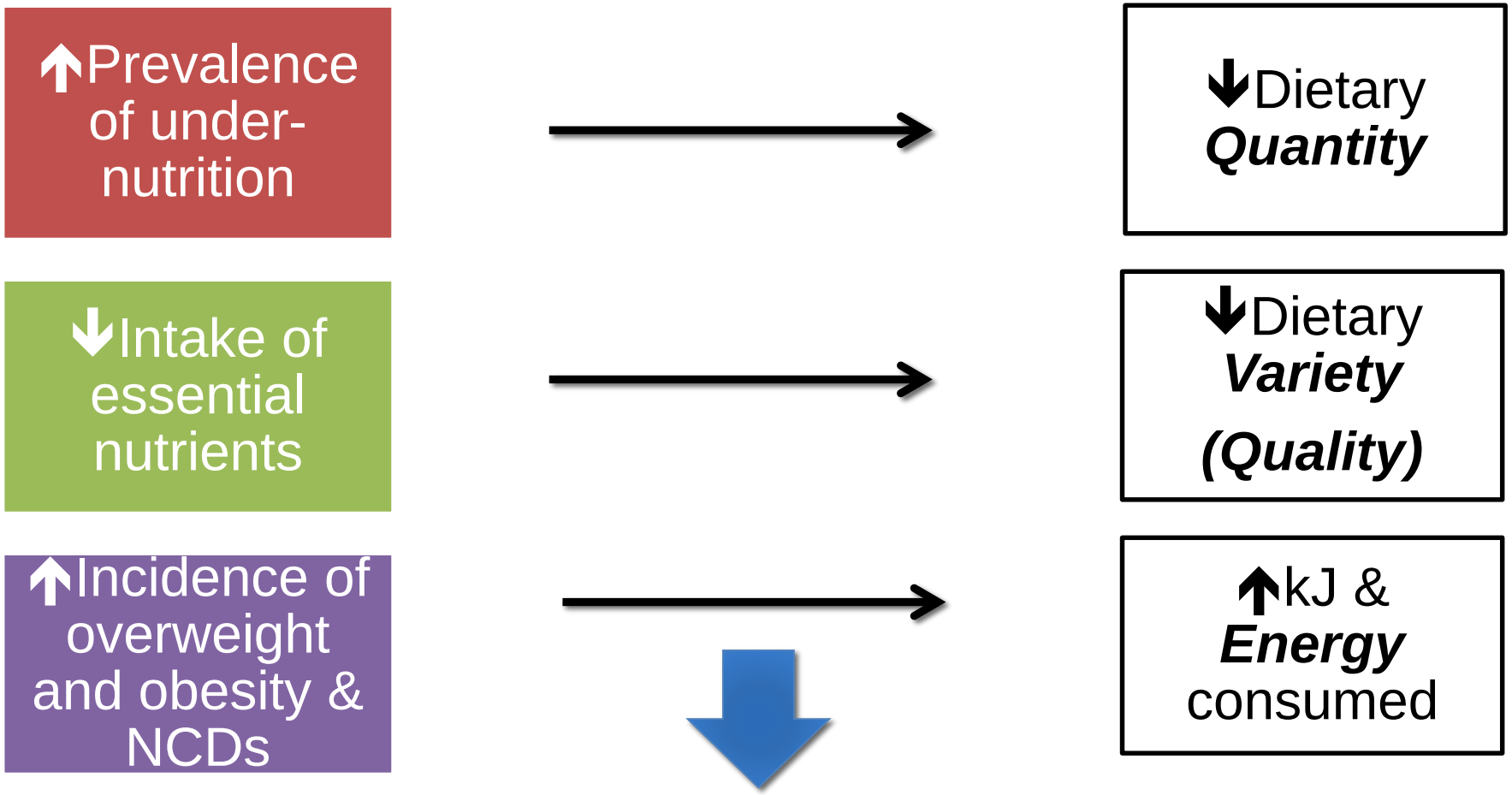
Importance of good nutrition in the food system

- Provision of ***energy***, without adequate intake of ***critical nutrients***:
  - increases weight but not length
  - promotes fat gain & obesity
  - restricts & retards physical as well as cognitive (mental) development

Retarded development & high incidence of obesity manifests a prominent *financial and social burden*

Shift needed from quantity to quality

Nutrition Transition very prevalent in all countries



Triple Burden of Disease

↑ prevalence of undernutrition

↑incidence of overweight & obesity

↑food insecurity

The "New Normal"

45% of countries are dealing with under nutrition and / or overweight/obesity

…we need to see malnutrition in multiple dimensions

Food Environment

VS

The average supermarket has at checkout:

- **56 m of candy**
- **10.7 kg sugar**
- **6.1 kg fat**
- **535 500 kJ**

Almy & Wootan; 2015

Quantity vs Quality

Enough food & energy?

Or enough nutrients?

Assessments of energy and nutrient intake

Requires reliable data on food composition

Necessary information on food sources for different nutrients and country specific food composition data

Fundamentals of food-based dietary guidelines for healthy nutrition

Food composition tables can provide information on chemical forms of nutrients and the presence and amounts of interacting components, and thus provide information on their bioavailability

Examples to follow……..

Example of differences in nutrient content of rice

Dietary diversification of nutrient rich foods is globally considered a sustainable food-based strategy to combat malnutrition…

…as the nutrient content can differ significantly between varieties of the same food

- **These differences are both statistically & nutritionally significant, with up to 1000-fold differences**
  - **E.g. consuming 200g rice per day could either contribute 20%, or more than 50%, of an individuals NRV (Nutrient Reference Value) for protein**
  - **Dependent on the variety…**

(Schönfeldt and Pretorius, 2011)

Diversity within a specific food type influences nutrient intake, e.g. green leafy veggies

Iron

(mg/100g) raw, edible portion

16.2

Amaranthus tricolor
(misbredie)

14.3

Cleome gynandra
(cat's whiskers)

15.9

Cucurbita maxima
(pumpkin leaves)

6.3

Corchorus tridens
(wild jute)

3.9

Vigna unguiculata
(cowpea leaves)

1.8

Beta vulgaris var. cicla
(Spinach/Swiss chard/Chard/Silverbeet/Perpetual Spinach)

2.71

Spinach Oleracea

Nutrition Facts

Serving Size: 3 oz (85g)

Amount Per Serving	
Calories 181	Calories from Fat 77
	% Daily Value*
Sugars 0 g	
Sugar Alcohols 0 g	
Protein 24.19 g	
Vitamin A 5.95 IU	0%
Vitamin C 0.85 mg	1%
Calcium 11.05 mg	1%
Iron 0.91 mg	5%

Meat

HFe: (0.91*0.82) = 0.75mg
NHFe: 0.16mg

Available for absorption:
(0.75*0.23) + (0.16*0.03) = 0.18mg

Nutrition Facts

Serving Size: 1/3 cup (85g)

Amount Per Serving	
Calories 20	Calories from Fat 0
	% Daily Value*
Sugars 0 g	
Sugar Alcohols 0 g	
Protein 2 g	
Vitamin A 6000 IU	120%
Vitamin C 18 mg	30%
Calcium 80 mg	8%
Iron 1.44 mg	8%

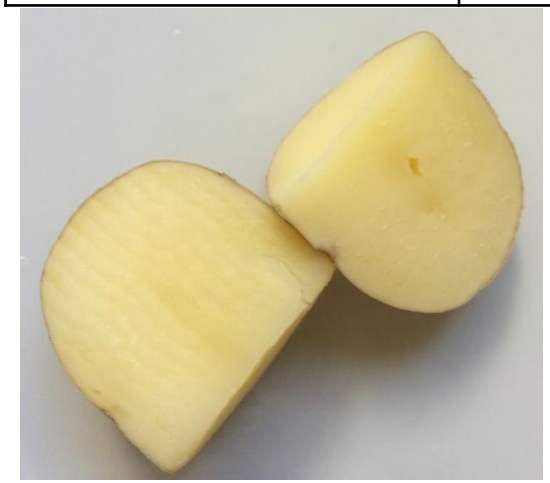
Spinach

HFe: 0.0mg
NHFe: 1.44mg

Available for absorption:
(1.44*0.03) = 0.04mg

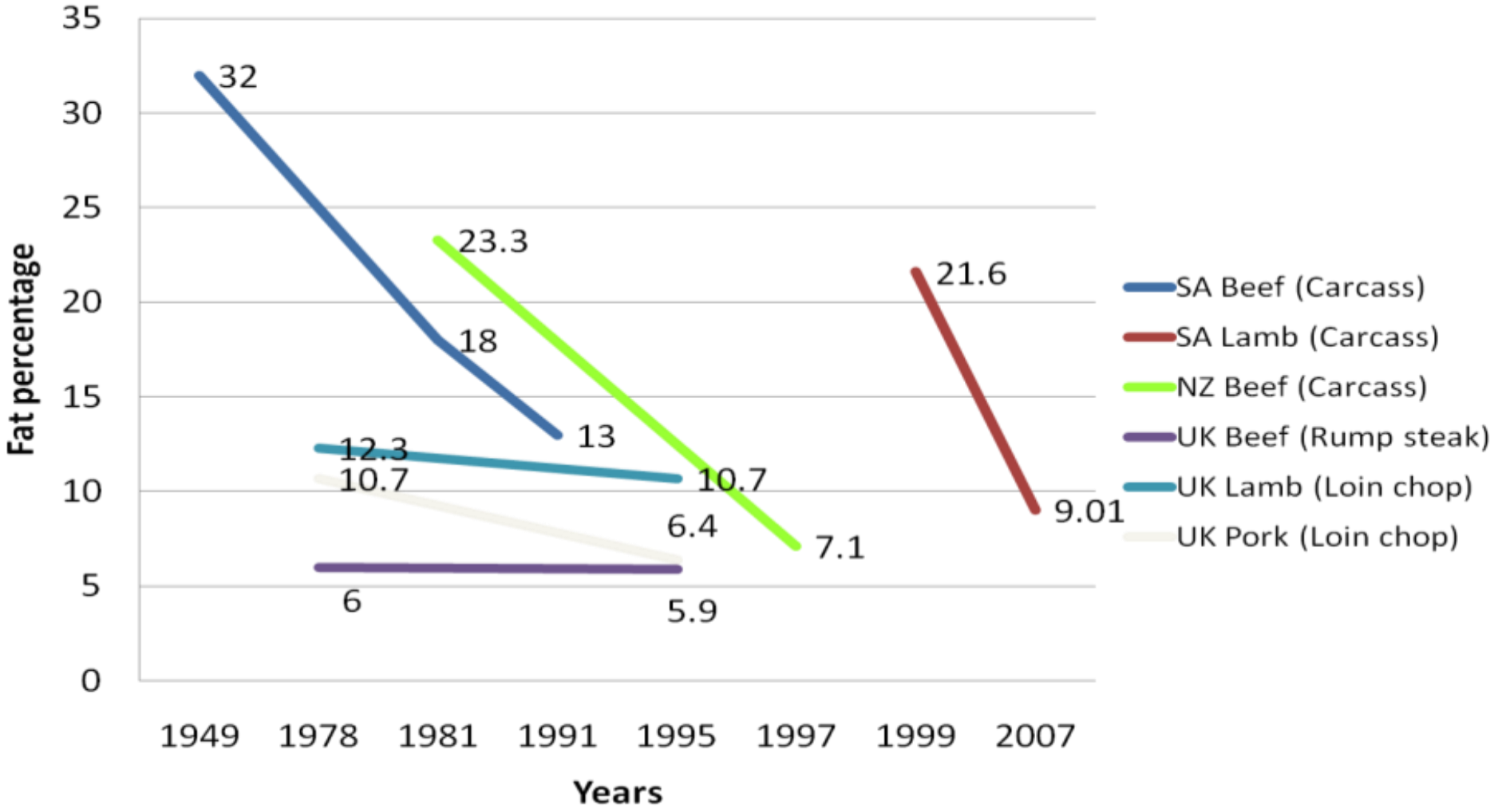
Dietary Choices

Cooking method	Energy kJ (kcal)	Protein g	Carbohydrates g	Fat g	Moisture mg	Sodium mg
	Per 100 g edible portion					
Boiled (without skin)	318 (1335)	1.5	15.5	0.1	80.4	2
Baked (without skin)	405 (1701)	2.0	20.1	0.1	75.4	5
Fried (without skin)	1277 (5363)	4.3	35.1	14.8	40.2	198



Condensed food composition tables for South Africa, 2010.

Global decreases in fat content of meats observed over time (due to consumer demand)



Link between food and risk exposure

A valid risk assessment requires data on exposure, and thus on the contents of contaminants in foods – particularly as related to consumers at risk e.g. the food insecure, elderly, infants and young children and pregnant and breastfeeding women

- **Most food composition tables focus on energy, macro- and micronutrients (incl. fatty acid and amino acid profiles)**
- **More focus in future on link between health outcomes and intake of:**
  - **Non-nutritive components (polyphenols and carotenoids)**
  - **Contaminants (agrochemicals, industrial pollutants, mycotoxins)**
  - **Residues (hormones, antibiotics)**
  - **etc.**

This data are highly variable and may significantly differ even within narrowly confined regions

The economics is also convincing

back for every $ invested in nutrition programmes

30 year compound rate of interest of 10%

Acknowledgement

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EuroFIR
European Food Information Resource

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THANK YOU

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