

***Food Fortification and Nutrient
Bioavailability: future measures for
ensuring Food Security in Indians.***

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What is Food Security'?



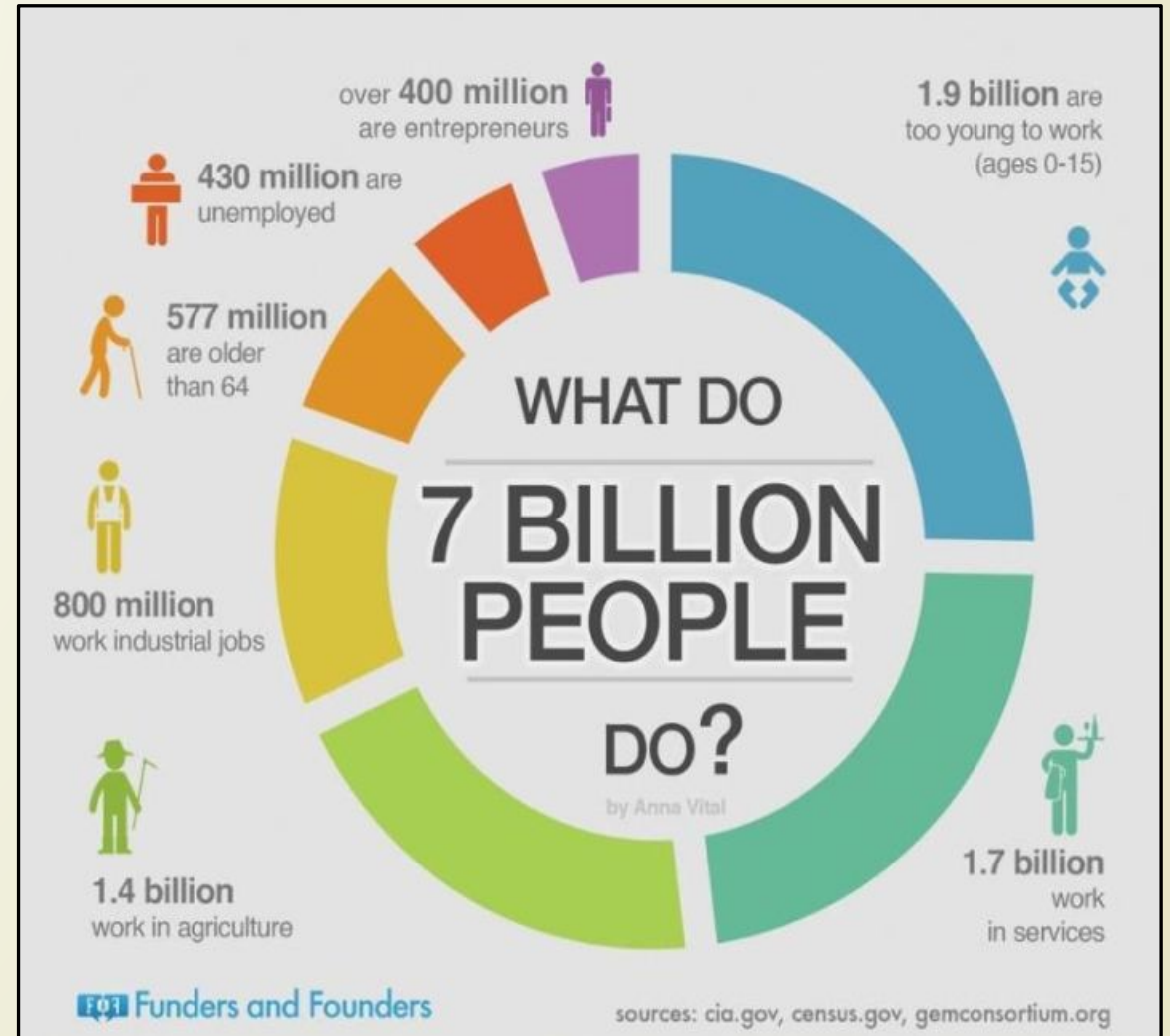
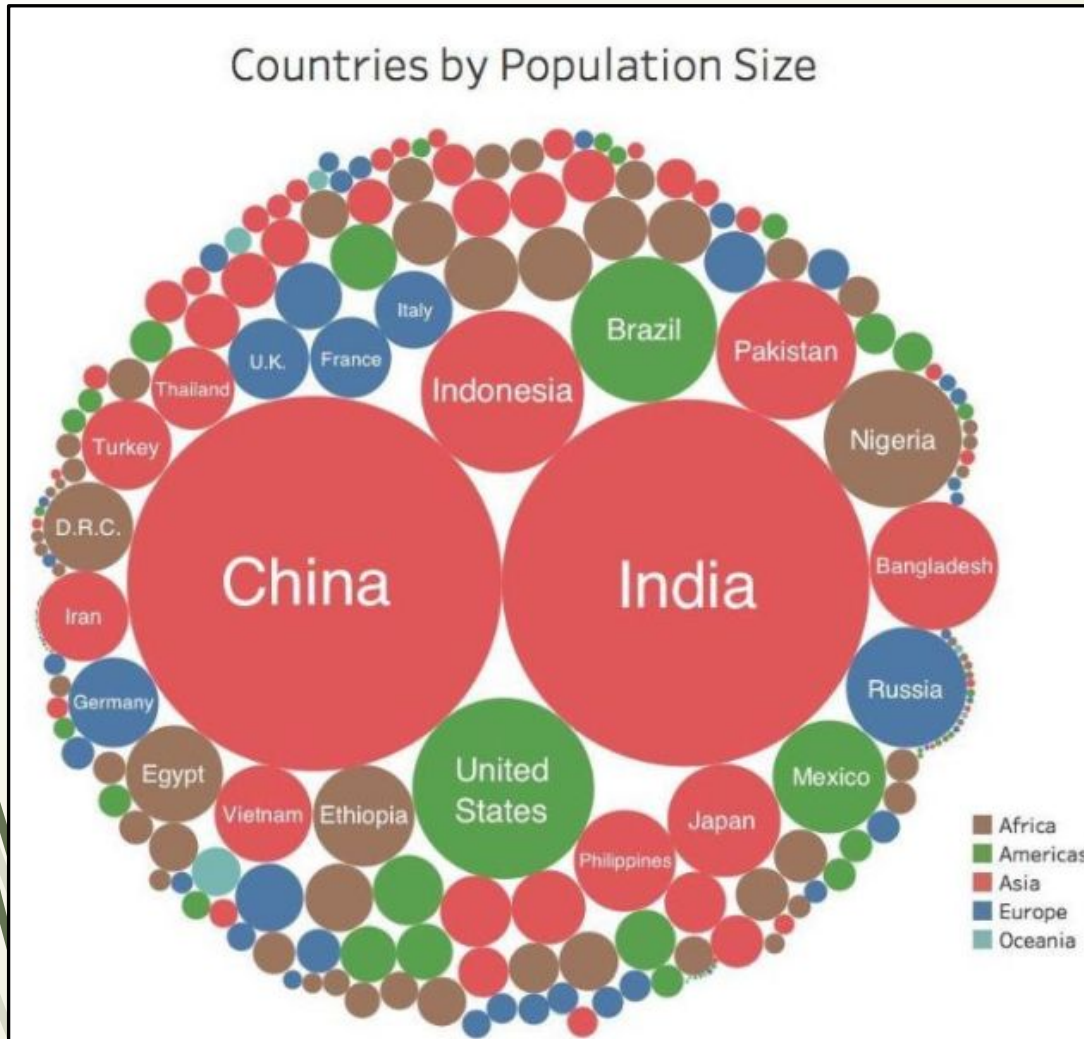
- It is surely not only the protection of food, but a larger concept associated to feeding the whole population.
- In simple terms, you can call it the ability to **guarantee on a long-term plan or an arrangement of nutritionally sufficient food supply.**
- In India, **food security** infers to the national nutritional security and the fulfilment of individual capabilities.

Dimensions of food security (in India)

The food security in any country can be ensured if the three dimensions of the food security are checked upon. So, what are these three dimensions.

- First: **Availability of food:** Presence of enough food for all the persons
- Second: **Accessibility of food:** Absence of barrier on access to food
- Third: **Affordability of food:** Capability of all persons to buy food of acceptable quality

Population Dimension



CONTINENT

60 Asia
15 Africa
11 Europe
9 South America
5 North America

GENDER

50 female
50 male

AGE

26 aged 0-14
66 aged 15-64
8 aged 65+

RELIGION

33 Christians
22 Muslims
14 Hindus
7 Buddhists
12 other
12 no religion

AREA

51 live in urban areas
49 live in rural areas

LANGUAGE

12 Chinese
5 Spanish
3 Arabic
3 Hindi
3 Bengali
3 Portuguese
2 Russian
2 Japanese
62 other

LITERACY

83 able to read & write
17 unable

COLLEGE

7 have a college degree
93 do not

HOUSING

77 have access to shelter
23 do not

INTERNET

30 have access to the Internet
70 do not

NUTRITION

1 starving
15 undernourished
63 adequate
21 overweight

POVERTY

48 live on less than
\$2 USD per day

PHONES

75 have cell phones
25 do not

WATER

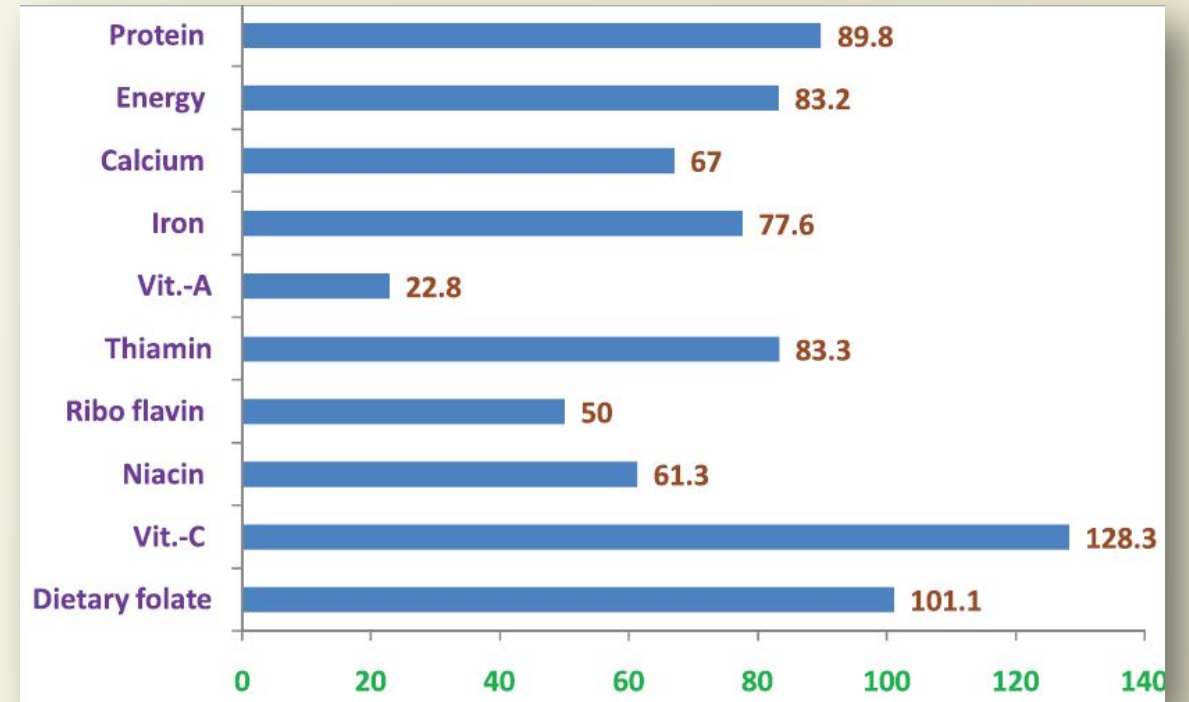
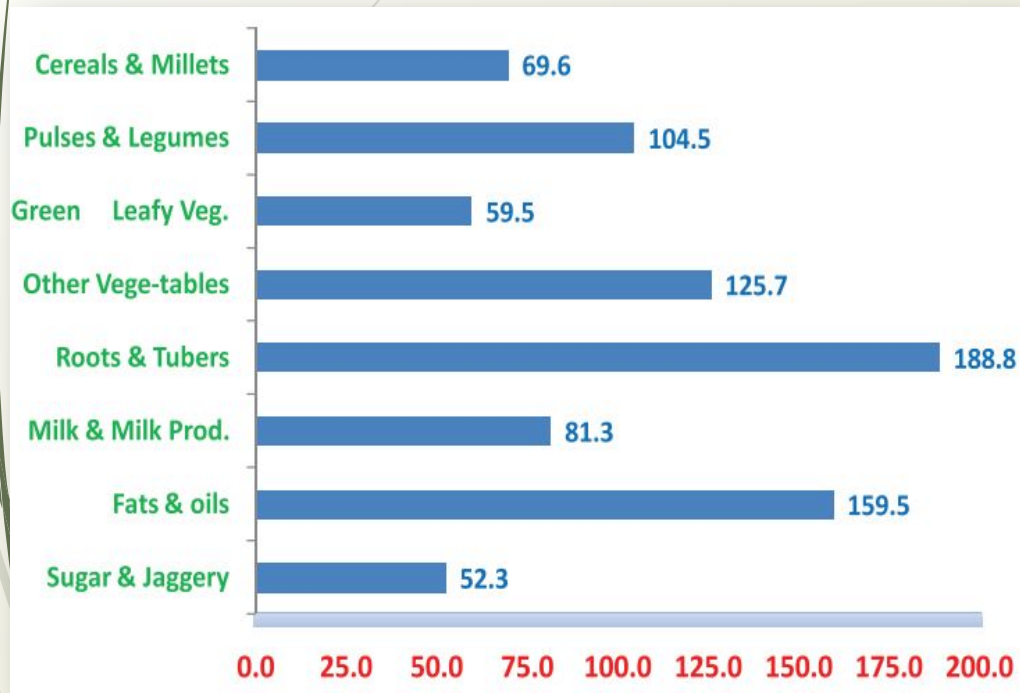
87 have safe water
13 do not



the
WORLD
as
100 PEOPLE

The infographic features a central globe with a graduation cap above the text and a group of people below it. The globe is surrounded by a circular ring divided into segments of various colors, each corresponding to a demographic or social category. The categories are labeled in colored boxes around the ring, and their respective statistics are listed in text boxes adjacent to the ring.

What do the Urban Indians Eat?



Average Household Consumption of Food stuffs as %RDI.

Source: NNMB, 2017

Ground Realities!

UNDER-NUTRITION

Global Hunger Index 2016: India is

#97

out of 118 countries

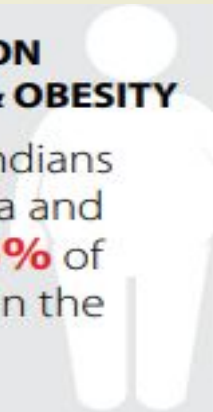


MICRONUTRIENT MALNUTRITION

Over **70%** of the Indian population still consumes **less than 50%** of the RDA for micronutrients

OVER-NUTRITION OVERWEIGHT & OBESITY

30 million Indians are obese. India and China have **15%** of obese people in the world.



CHILDREN

58.4% of children (6 – 59 months) are anaemic

35.7% of children under 5 are underweight



WOMEN

53% of women in the reproductive age (15 – 49 years) group are anaemic



MEN

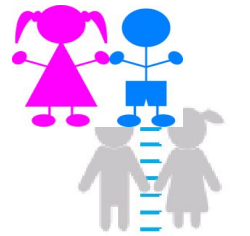
22.7% of Men age 15-49 years are anaemic (<13.0 g/dl)



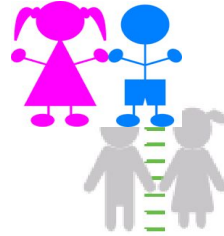
45% of child deaths linked to undernutrition.

INDIA ENIGMA

In 2014, more than half of all stunted children under 5 lived in Asia and more than one third lived in Africa.



Asia 57%



Africa 37%

20 X

% of children under 5 who are underweight in India as how it should be!

In 2014, almost all wasted children under 5 lived in Asia and Africa.



Asia 68%

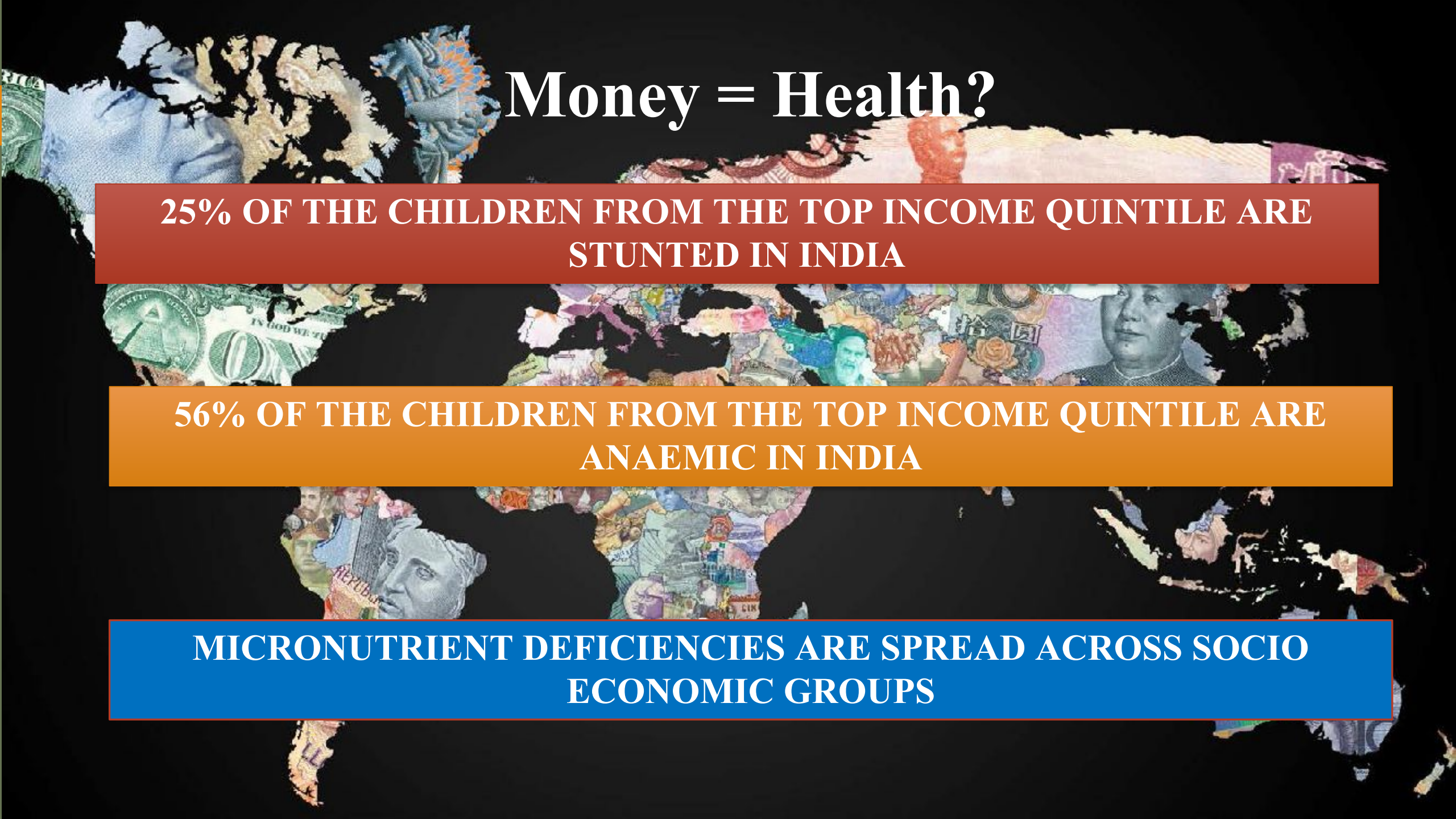


Africa 28%

9X

% of children under 5 who are wasted in India as how it should be!

India's stunting problem represents the largest loss of human potential in any country in human history!



Money = Health?

25% OF THE CHILDREN FROM THE TOP INCOME QUINTILE ARE STUNTED IN INDIA

56% OF THE CHILDREN FROM THE TOP INCOME QUINTILE ARE ANAEMIC IN INDIA

MICRONUTRIENT DEFICIENCIES ARE SPREAD ACROSS SOCIO ECONOMIC GROUPS

SDG: 17 Goals, 169 Targets, 306 National Indicators



NITI Aayog

(National Institution for Transforming India)
Government of India



UNITED NATIONS

The Reality Check continues!

- India has made rapid strides in improving rates of under- and malnutrition. **Between 2006 and 2016, stunting in children below five years declined from 48% to 38%.**
- Yet, India continues to have one of the **world's highest child undernutrition rates,** impacting the child's health and development, performance in school and productivity in adult life.
- With nearly 195 million undernourished people, India shares a **quarter of the global hunger burden.**
- **Nearly 47 million or 4 out of 10 children in India** are not meeting their full human potential because of chronic undernutrition or stunting.



The BIG Challenges!

The government has large food security and anti-poverty programs but there are critical gaps in terms of inclusion and exclusion errors. Women and girls are particularly disadvantaged.

- ❑ Slowing agriculture growth,
- ❑ climate change,
- ❑ land degradation and shrinking bio-diversity.
- ❑ Large tracts of farmlands in India have become barren due to imbalanced fertilizer use and excessive use of a single fertilizer, urea.
- ❑ Food Wastage
- ❑ Public-private partnerships?

Government of India Programs and Initiatives

- With a **5X increase in food grain production** from 50 million tons in 1950-51 to about 250 million tons in 2014-15, India has moved away from dependence on food aid to become a net food exporter.
- In 2016, the government launched a number of programs to **double farmers' incomes by 2022**.
- They include: the National Food Security Mission, Rashtriya Krishi Vikas Yojana (RKVY), the Integrated Schemes on Oilseeds, Pulses, Palm oil and Maize (ISOPOM), Pradhan Mantri Fasal Bima Yojana, the e-marketplace,
- A massive irrigation and soil and water harvesting program to increase the country's gross irrigated area from 90 million hectares to 103 million hectares by 2017.
- mid-day meals at schools, public distribution system.
- The National Food Security Act (NFSA), 2013, aims to ensure food and nutrition security for the most vulnerable, making access to food a legal right.



The 2 probable solutions/ support ways from a nutrition perspective



Food
Fortification

Bioavailability

SAMPOORNA POSHAN, SWASTH JEEVAN



**FOOD FORTIFICATION - A STRATEGY TO FIGHT
'MICRONUTRIENT MALNUTRITION'**

FORTIFIED
SAMPOORNA POSHAN
SWASTH JEEVAN

RICE

Iron, Folic acid, Zinc,
Vitamin B12, Vitamin A,
Thiamin, Riboflavin, Niacin,
Pyridoxine



MILK

Vitamin A and Vitamin D



OIL

Vitamin A and Vitamin D



WHEAT FLOUR

Iron, Folic acid, Zinc,
Vitamin B12, Vitamin A,
Thiamin, Riboflavin, Niacin,
Pyridoxine



SALT

Iodine or double fortified
with Iodine and Iron



Food Fortification: 5 Chosen Staples

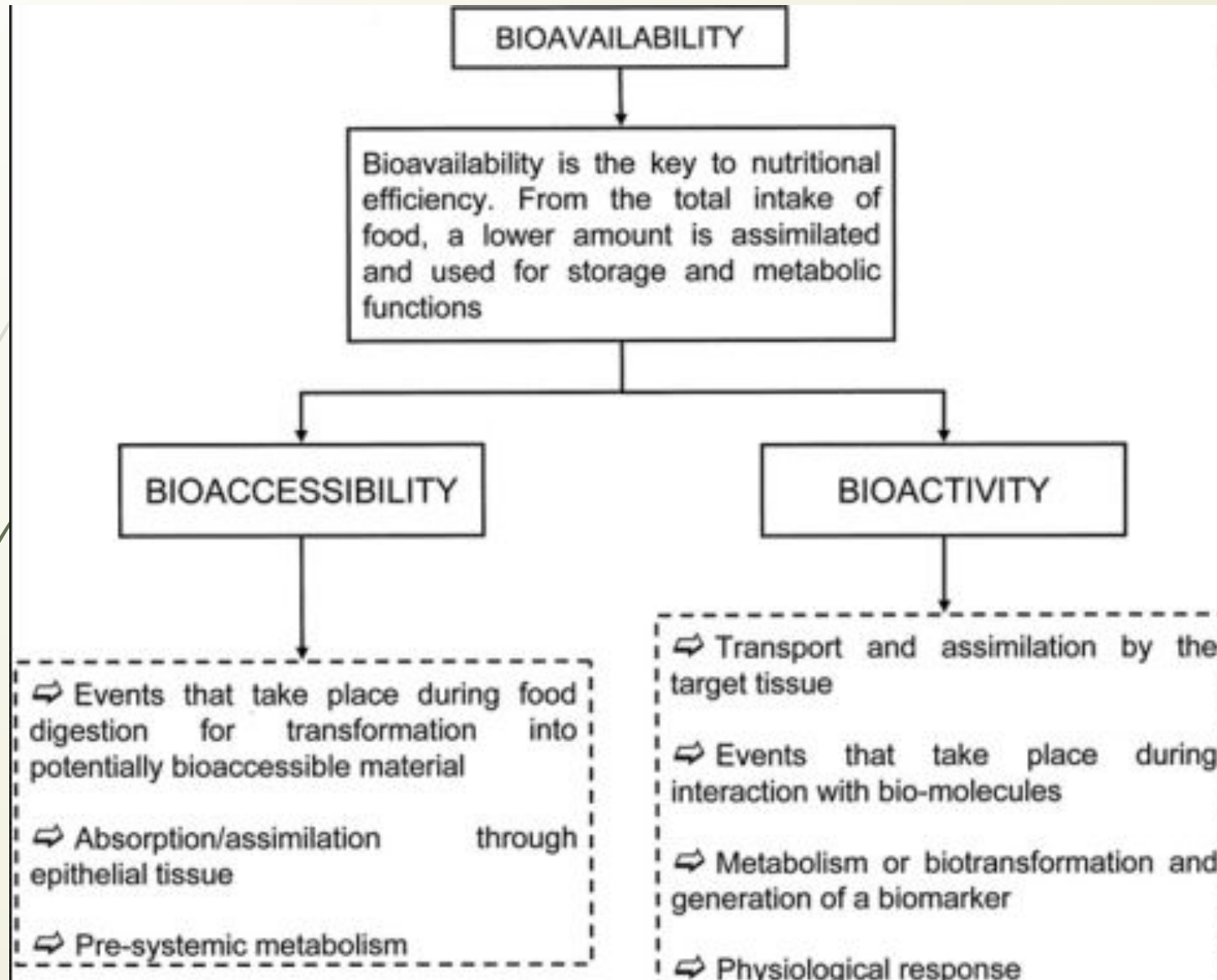
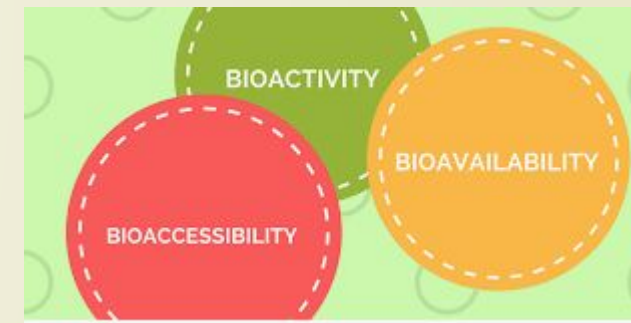
National Food Fortification Initiatives



Fortification: Implementation Roadmap

FSSAI	Set Standards, Create Logo
Role	Setup a dedicated Hub: Food Fortification Resource Centre
Alignment	Alignment & Advocacy – Industry & Zonal Consultations Nudge & Facilitate - Both Open Market and State Governments
Ensuring Supply	Ensuring open market availability Linking Govt Safety Net Programs to Fortified Supplies
Creating Demand	Building Consumer Awareness Joint Marketing Campaigns
Training	For Food Safety Officers For Labs
Enforcement	Compliance with Standards Monitoring & Evaluation

What is Bioavailability?





Why is Bioavailability important to be studied?



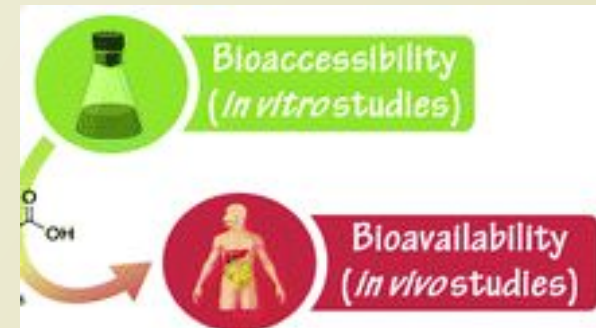
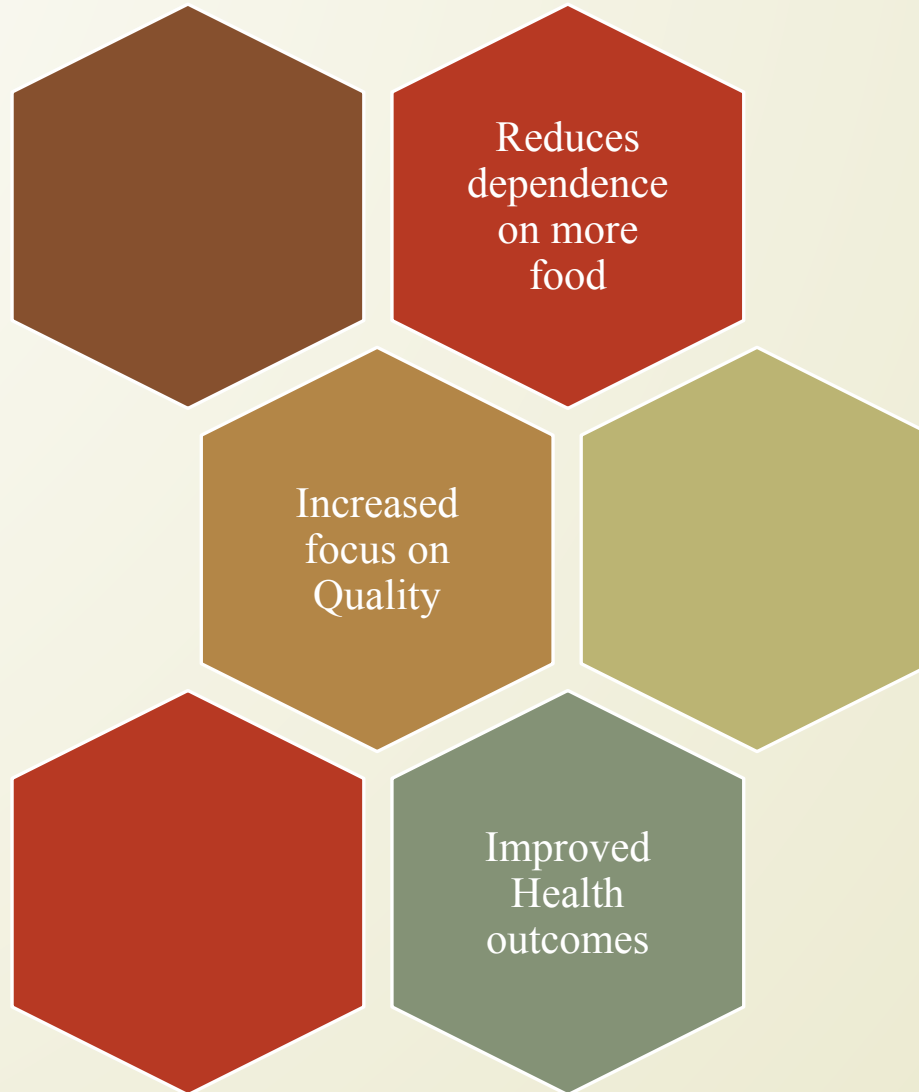
Deepest & still
unresolved

Today's solution
'as sold' & not 'as
consumed'

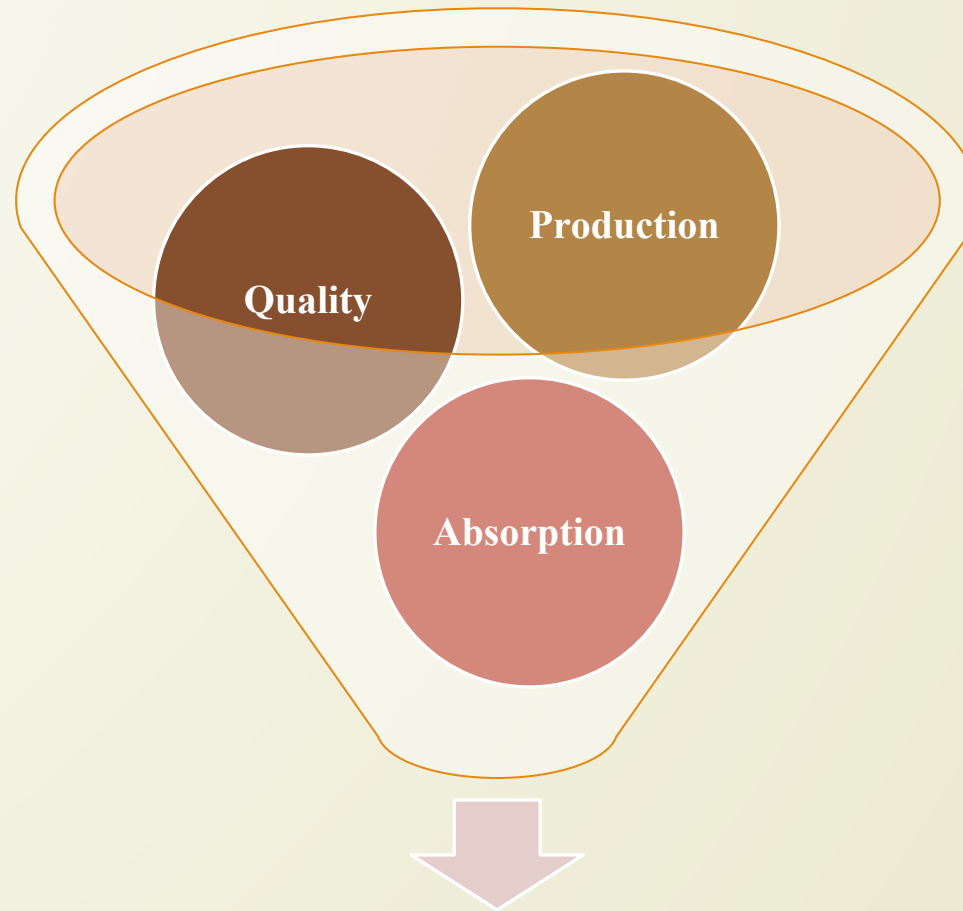
Extremely
sensitive

Right now only at
quantity: %RDA
levels

How Bioavailability may help in food Security?



Food Security is EVERYONE's business and Moral Duty!!



Food For ALL!



*Thank
you*