



Nutrition-Sensitive Climate-Smart Agriculture (NSCSA)

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Objectives of Module

At the end of this module you will...

- ... understand Food and Nutrition Security (FNS) and its complexity and be able to correctly use the main terms and concepts
- ... better understand the linkages between climate change and food and nutrition security (FNS)
- ... be able to define what you can do to make climate-smart agriculture interventions more nutrition-sensitive

Outline

- Food and Nutrition Security: What is it all about?
- The Food and Nutrition Security Situation in Mauritius
- Climate Change and Nutrition – what are the linkages?
- Nutrition-sensitive agriculture: Why and how?
- Examples of nutrition-sensitive approaches in agriculture

Food and Nutrition Security: What is it all about?

Definition (FAO): Food and Nutrition Security (FNS)

Food and Nutrition Security exists when:

- **all people at all times** have
- physical, social and economic **access to food**,
- which is safe and **consumed** in sufficient quantity and quality to meet their dietary needs and food preferences,
- and is supported by an environment of adequate sanitation, **health services and care**,
- allowing for a healthy and active life.

Source: CFS 2012, giz

Terms and Definitions

Hunger (*undernourishment*):

A subjective sensation of an individual after a certain period without nourishment (is often used as a synonym for **lack of food, chronic calorie deficiency**)

Malnutrition with the following manifestations:

Undernutrition

= result of insufficient intake of nutritional energy and/or nutrients; also caused by inadequate health and hygienic conditions

Overweight & obesity

= result of an excess intake of nutritional energy over a longer period of time.

Micronutrient deficiencies, hidden hunger

= result of an inadequate supply of vitamins and/or minerals

Source: giz

Malnutrition – comes in many forms



Overweight or obese
(evidence of overnutrition)

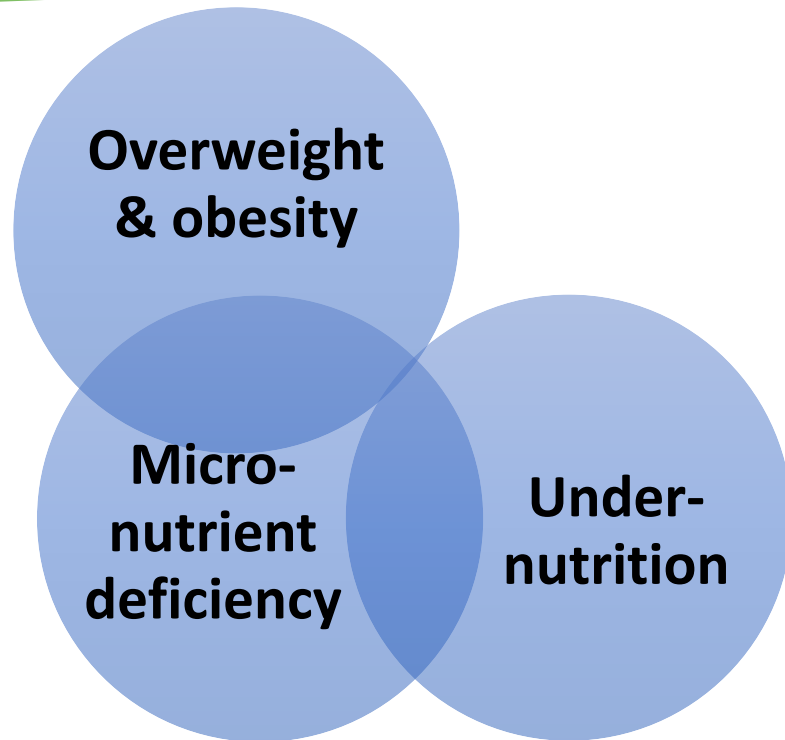
Normal
Normal weight at height

Stunted
Short for age
(chronic malnutrition)

Wasted
Low weight for age (acute malnutrition)

Source: giz

Triple Burden of Malnutrition



- **Undernutrition** and **micronutrient deficiencies** still major challenges worldwide
- **Overweight** and **obesity** are increasing rapidly, causing nutrition-related chronic diseases (non-communicable diseases)
- NCDs responsible for over 75% of deaths globally

All three problems occur, in some instances, in the same countries, societies and families

Individuals may suffer from underweight **or** overweight and micronutrient deficiencies at the same time

Global State of Malnutrition – Who is affected?



Low height for age

159 MILLION
CHILDREN WORLDWIDE



Low weight for height

50 MILLION
CHILDREN WORLDWIDE



High weight for height

41 MILLION
CHILDREN WORLDWIDE



BMI \geq 25

2 BILLION
ADULTS WORLDWIDE



MICRONUTRIENT DEFICIENCY

Iron, folic acid, vitamin A, zinc, iodine below healthy thresholds | **AFFECTING 2 BILLION PEOPLE**



NONCOMMUNICABLE DISEASES

Diabetes, heart disease, and cancers
1 IN 12 PEOPLE WORLDWIDE HAS DIABETES



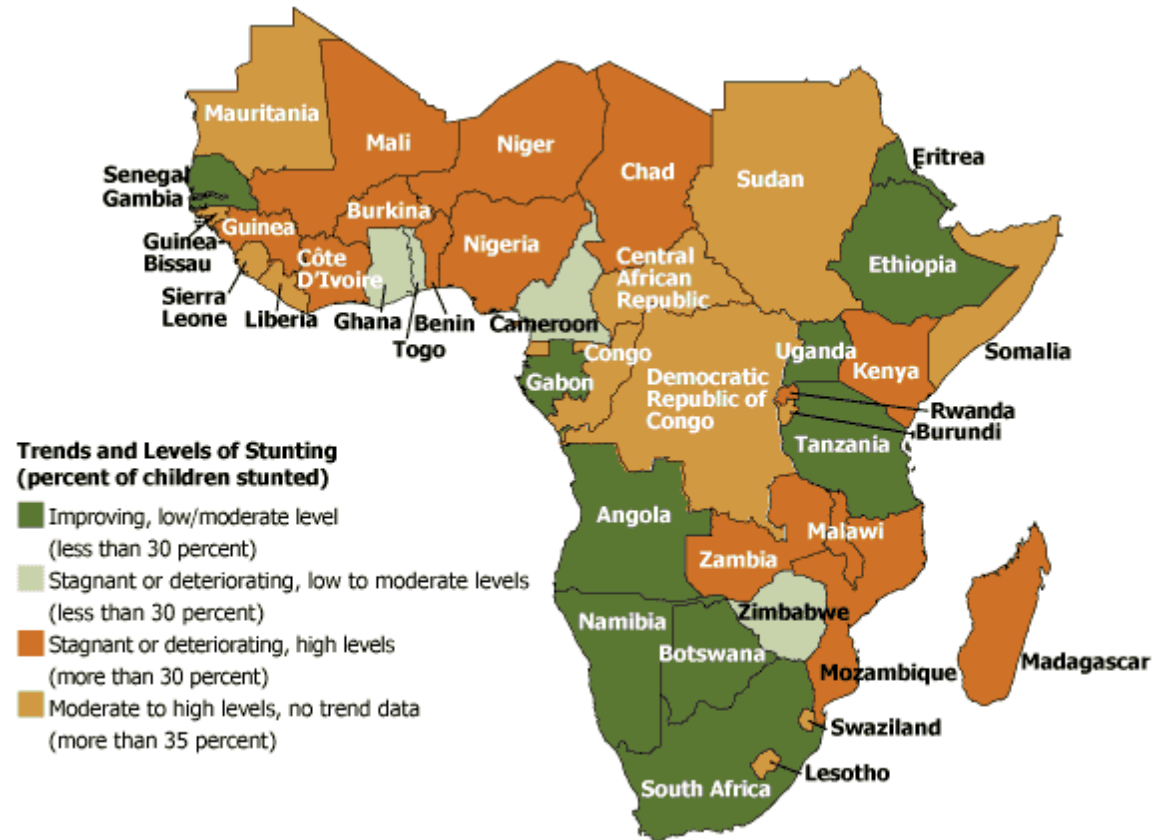
THINK YOU KNOW WHAT MALNUTRITION IS? **THINK AGAIN.** #NUTRITIONREPORT

Source: giz

Malnutrition in Africa

Africa is ranked as having amongst the highest rates in the world and SSA carries a high burden of under-nutrition with 33% of childhood deaths linked to under-nutrition.

17 countries on the continent have stunting rates above 40 percent, and 36 countries have rates above 30 percent



Malnutrition in Mauritius (May 2018)

Condition	Mauritius (%)
Wasting (Children 0-59 months)	18.3
Overweight (Children 6-59 months)	8.8
Stunting (Children 6-59 months)	27.3
Underweight (Children 6-59 months)	21.1
Undernourished population (FAO estimates 2014-2016)	5.2
Severe food insecurity (FAO estimates 2014 - 2016)	4.98
Overweight and obese population (2014)	18
Vitamin A deficiency (Children 6-59 months)	29
Anaemia among women (2016)	25.1

UNICEF, WHO and WB joint report 2018; Health Statistics Report 2014

Nutrition-Related Myths and Practices

Food quality is synonymous with food quantity



Being over weight or fat is sign of wealth or good living



Micronutrient supplements are for people with a medical condition



There are “special foods” for men and not for women and children

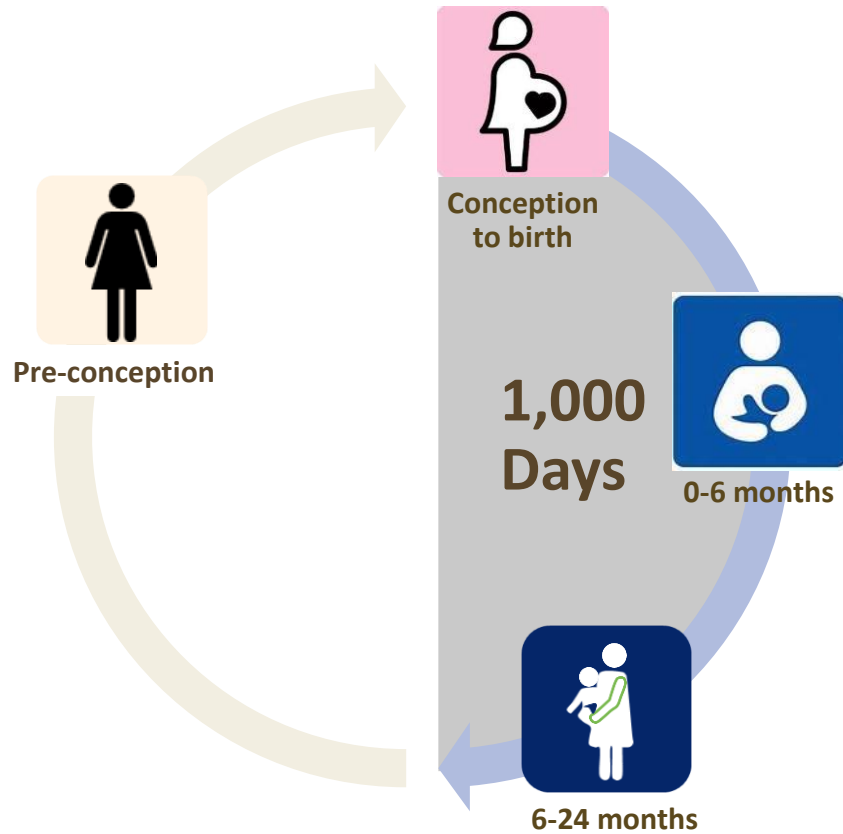


Stunting is hereditary and has nothing to do with nutrition

The Cost of Malnutrition

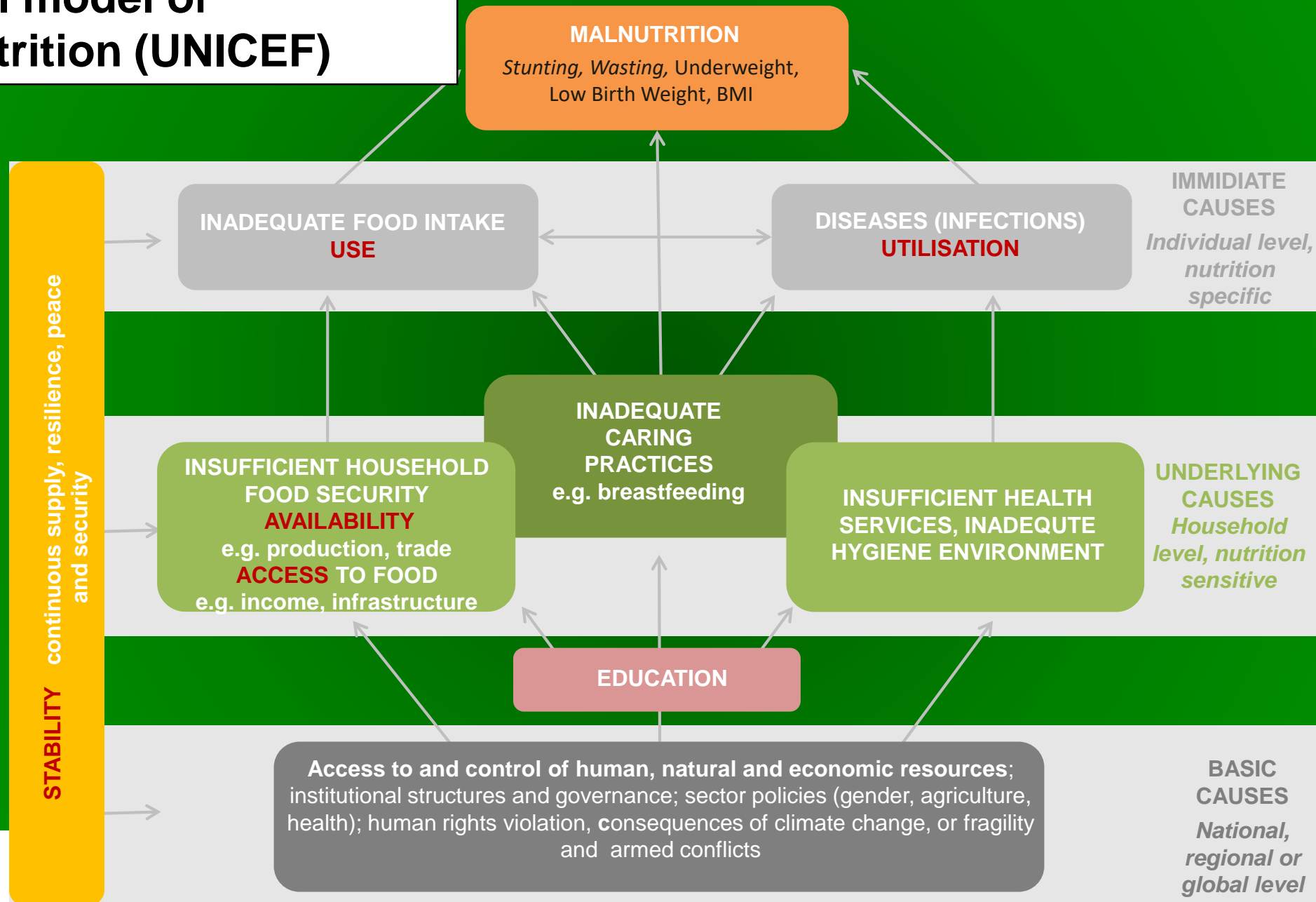
- Malnutrition and diet are the biggest risk factors for the global burden of disease, responsible for over 70% of mortalities
- Losses of 11 percent of gross domestic product (GDP) every year in Africa and Asia
- Preventing malnutrition delivers \$16 in returns on investment for every \$1 spent.
- Countries have agreed on targets for nutrition, but still a long way in reaching the targets
- While policies may be in place, countries do not always know how to design and implement effective interventions

The 1,000 day 'window of opportunity'



- Investment in first 1,000 days of life from a woman's pregnancy to her child's second birthday
- Consequences of malnutrition during this period are to a large extent irreversible
- Improving nutrition during this critical window has potential to save lives, help children develop fully and thrive, deliver greater economic prosperity

Causal model of malnutrition (UNICEF)



Source: adapted from UNICEF (1991), giz

Nutrition and Sustainable Development Goals

- Nutrition is central to achievement of SDGs
- At least 12 of the 17 SDGs contain indicators that are highly relevant for nutrition
- Improved nutrition has a positive impact on health, education, employment, female empowerment, and poverty and reduction of inequality
- Conversely, poverty and inequality, water, sanitation and hygiene, education, food systems, climate change, social protection, and agriculture affect nutrition outcomes
- Important to incorporate nutrition targets into development and social sectors, where many governments spend more than 30 percent of their budgets
- Delivering nutrition requires a multi-sectoral approach

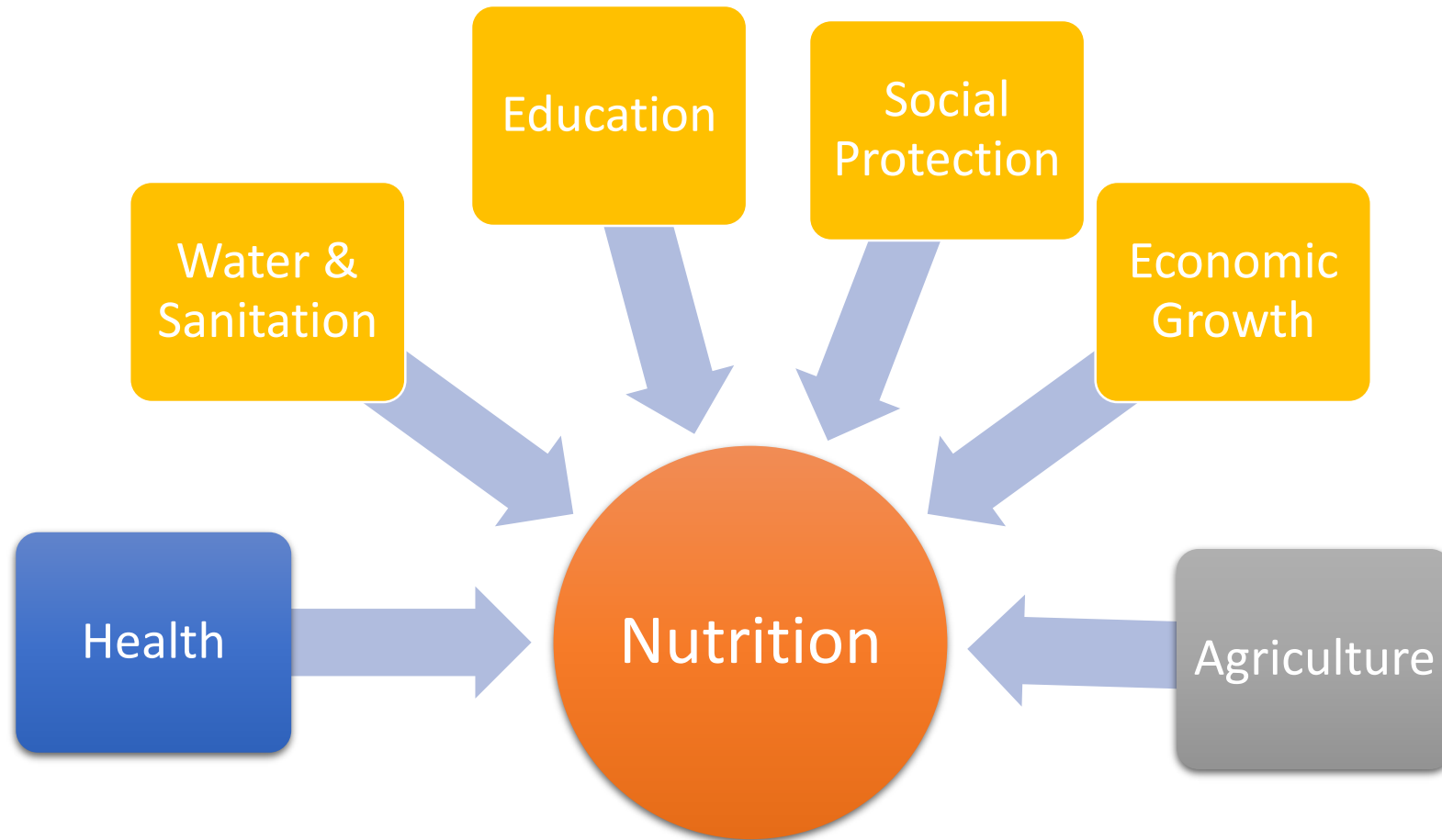
Global and Regional Nutrition Goals

- **SDG 2:**
 - End hunger
 - Achieve food security and improved nutrition
 - Promote sustainable agriculture
- **African Union Vision 2063:**
 - Healthy and well-nourished citizens
- **Malabo Declaration 2025 targets:**
 - End hunger by 2025
 - Reduce stunting to 10%
 - Underweight reduced to 5%

Nutrition-Specific vs Nutrition-Sensitive Interventions

- Address immediate causes of malnutrition
 - **Examples:**
 - Support for exclusive breastfeeding up to 6 months of age
 - Continued breastfeeding, together with appropriate and nutritious food, up to 2 years of age
 - Fortification of foods
 - Micronutrient supplementation
 - Treatment of severe malnutrition
- Address underlying causes of malnutrition
 - **Examples:**
 - Agriculture: Making nutritious and safe food more accessible to everyone, and supporting small farms as a source of income for women and families
 - Clean Water and Sanitation: Improving access to reduce infection and disease
 - Education and Employment: Making sure children have the energy that they need to learn and earn sufficient income as adults
 - Healthcare: Improving access to services to ensure that women and children stay healthy
 - Support for Resilience: Establishing a stronger, healthier population and sustained prosperity to better endure emergencies and conflicts
 - Women's Empowerment: At the core of all efforts, women are empowered to be leaders in Nutrition-Sensitive Approaches.

Addressing Malnutrition Requires a Multi-sectoral Approach



Food Systems Approach to Nutrition

- Food systems include all processes and infrastructure involved in feeding a population: growing, harvesting, processing, packaging, transporting, marketing, consumption, and disposal of food and food-related items.
- Food systems need to be nutrition-sensitive to address the underlying causes of malnutrition.
- Agriculture is but one component of the food system which helps to deliver healthy diets

Brainstorming: Healthy Diet

- **Task:**

- ✓ What constitutes a healthy diet?

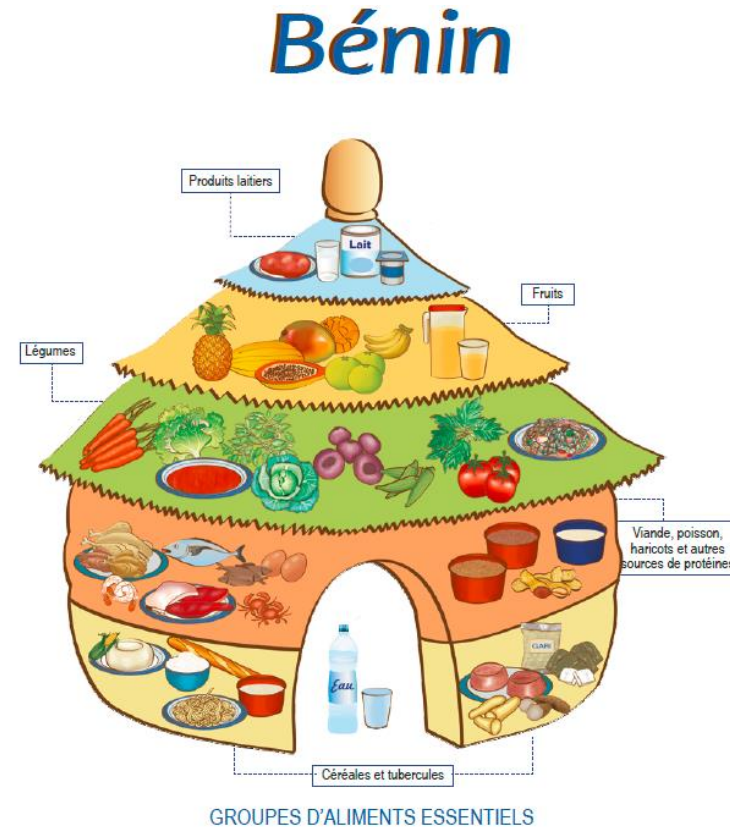
(5 min)

Healthy Diet Examples

Put the rainbow on your plate!



Source: giz



Source: www.fao.org/nutrition/education/food-dietary-guidelines

Key Messages on Healthy Diets

- **A healthy diet helps protect against malnutrition** in all its forms, as well as non-communicable diseases (NCDs), including diabetes, heart disease, stroke and cancer.
- **Healthy and sustainable diets have low environmental impacts** contribute to **food and nutrition security** and to **healthy life** for present and future generations

Source: giz

Dietary Guidelines

- More than 100 countries worldwide have developed food-based dietary guidelines, adapted to their nutrition situation, food availability, culinary cultures and eating habits.



Check for your country: www.fao.org/nutrition/education/food-dietary-guidelines/en/

The Link Between Agriculture and Nutrition

How is Agriculture Linked to Food and Nutrition Security?

- Agriculture is fundamental to food production
- Link to nutrition through food use via food availability and access is **apparent** ...



... but availability and access do not always lead to good nutrition

- Agriculture also has impacts on health-related outcomes.

Agriculture and Nutrition Disconnect

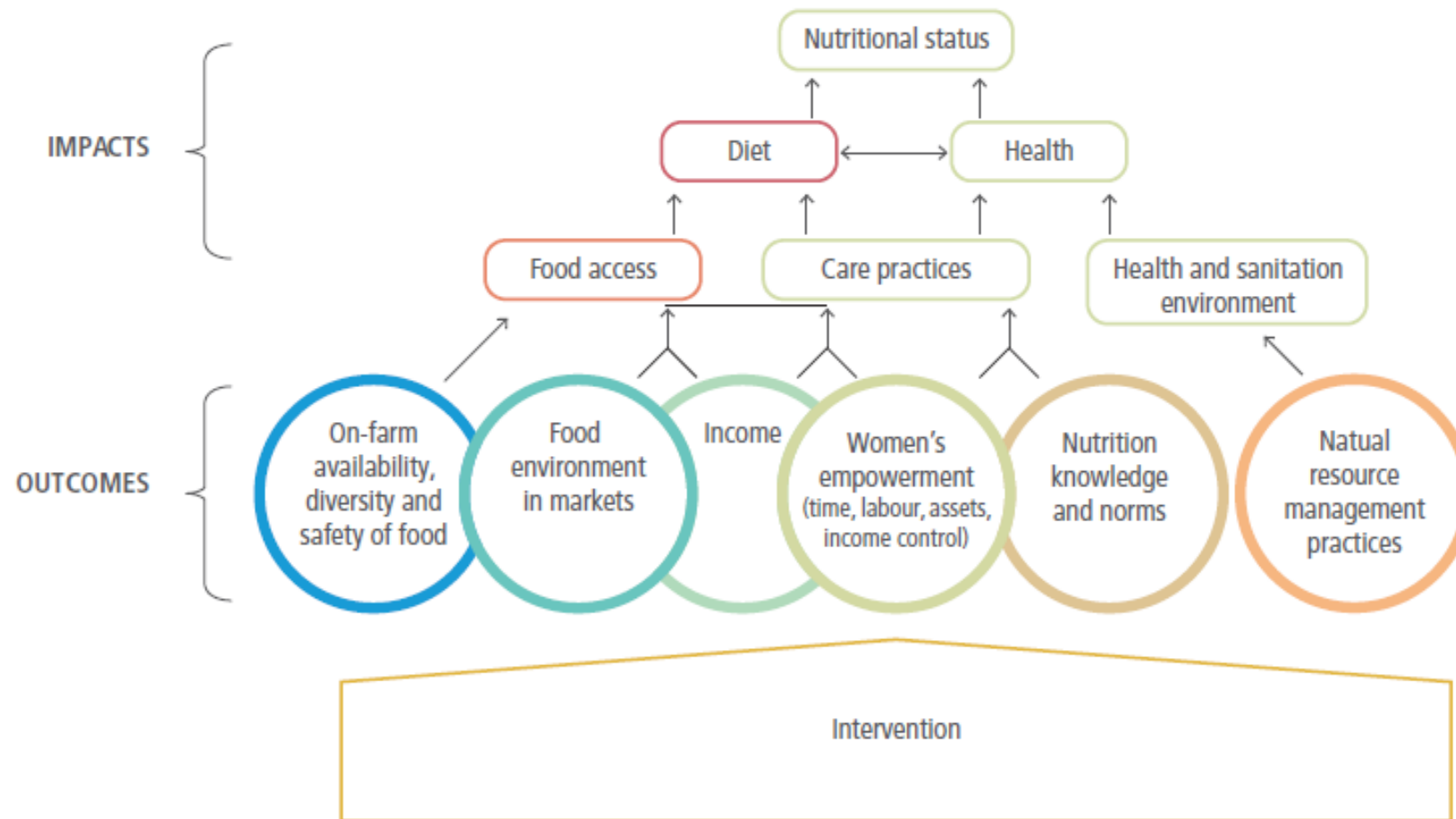
- There is a disconnect between agriculture and nutrition
- What can agriculture projects do to deliver positive nutrition outcomes?
- Traditionally, agricultural development tended focused on productivity, production and incomes rather than nutrition.
- Agriculture, including CSA, must transform to become nutrition-sensitive in order to deliver on healthy diets and SDGs.

Nutrition-Sensitive Agriculture

... an approach that

- addresses potential disconnect between agriculture and nutrition
- seeks to ensure the production of a *variety* of *affordable, nutritious, culturally appropriate* and *safe* foods
- In adequate *quantity* and *quality*
- To meet the *dietary requirements* of populations
- In a *sustainable* manner.

Pathways from Agriculture to Nutrition



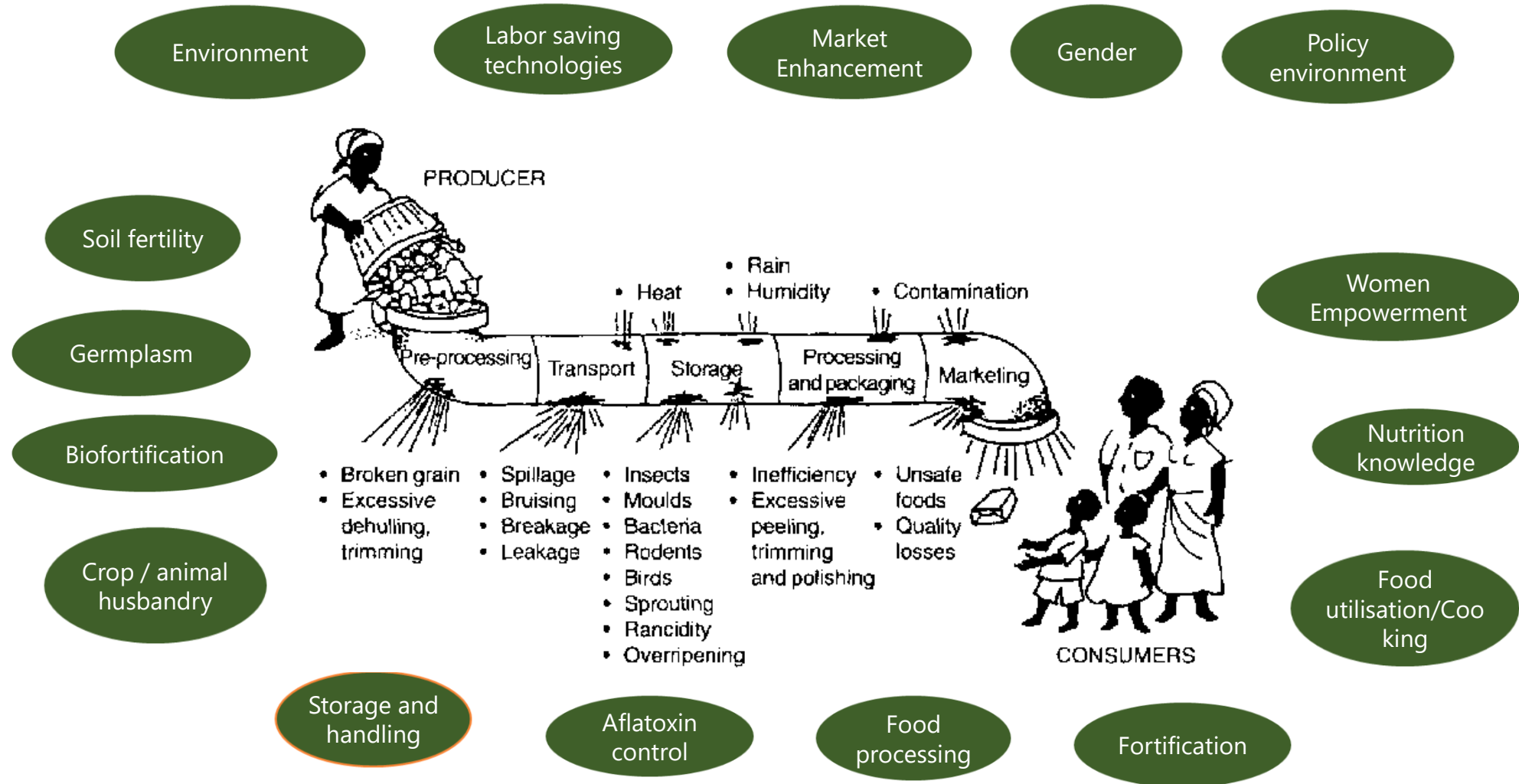
Source: giz

Opportunities for Nutrition-Sensitive Interventions

Can be anywhere along the agricultural value chain, depending on the design and objectives of project

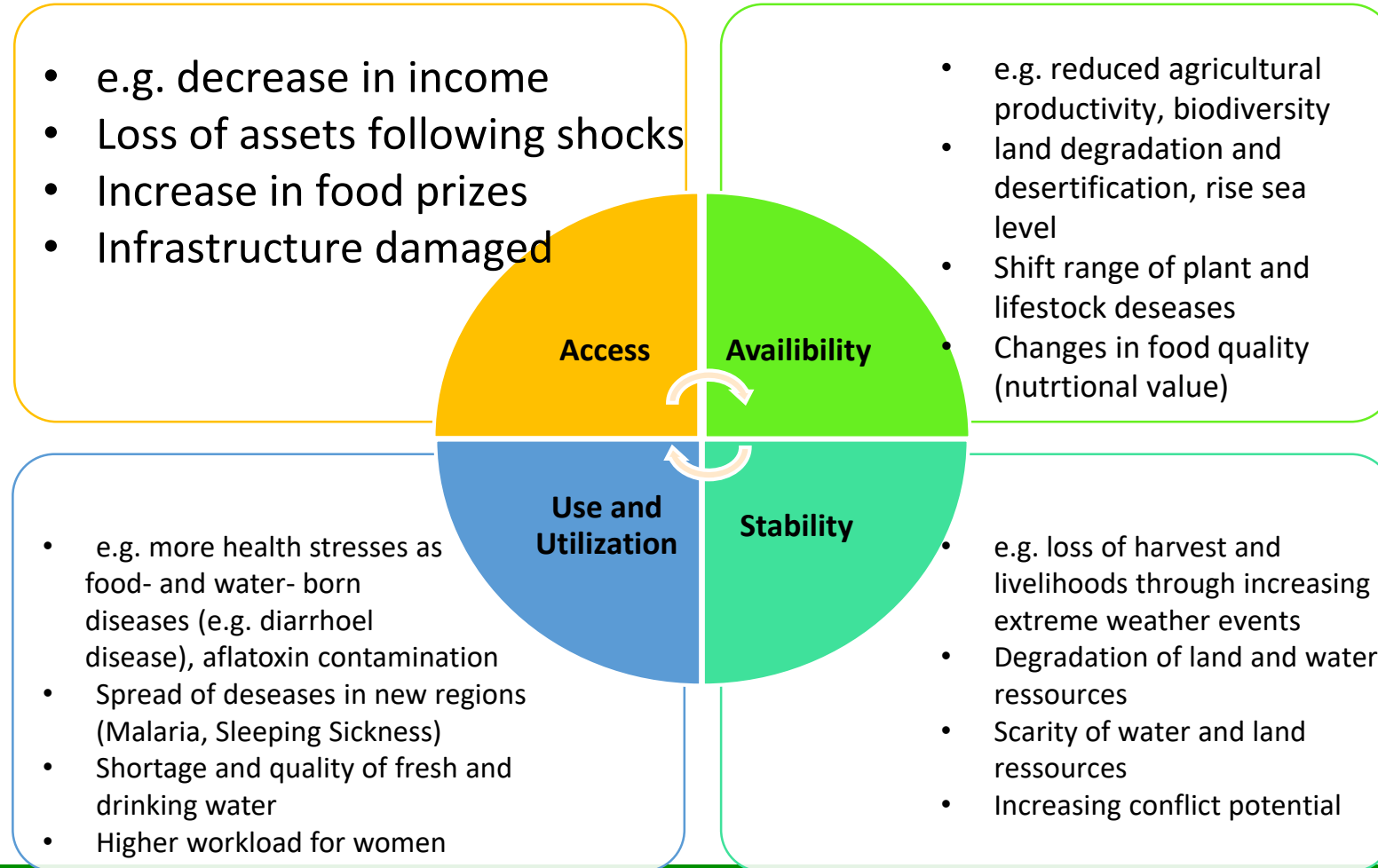


Where are Opportunities for Nutrition-Sensitive Interventions (NSIs)?



What is the Link Between Climate Change and Nutrition?

Effect of Climate Change on Food and Nutrition Security



Source: giz

The Need for Nutrition-sensitive Climate-smart Agriculture

CC will have negative effects on global food supply

- Global agricultural production could fall by 2% per decade through 2050
- Global food demand will be increasing by 14% each decade because of population growth, urbanization, and increased incomes.
- Sub-Saharan Africa and South Asia are the two regions of the world facing the highest burden of malnutrition today and will prospectively face the most serious impacts of climate change.

Source: Global Panel on Agriculture and Food Systems for Nutrition (2015)

The Need for Nutrition-sensitive Climate-smart Agriculture

CC may also negatively affect the diversity and nutritional value of foods

- Nutrient-rich foods are particularly susceptible to climate change impacts (drought, spread of pests and diseases, temperature fluctuations).
- Higher levels of CO₂ in the atmosphere may reduce the nutrient content and/or quality of various staple crops, e.g. zinc, iron and protein content in wheat, rice, field peas and soybeans
- Feedback loop between food choices and climate change adaptation – e.g. animal source foods (meat, fish, poultry, milk, and eggs) have large carbon food print but provide essential nutrients (e.g. iron, zinc, vitamin A, riboflavin, and vitamins B-6 and B-12)

Source: Global Panel on Agriculture and Food Systems for Nutrition (2015)

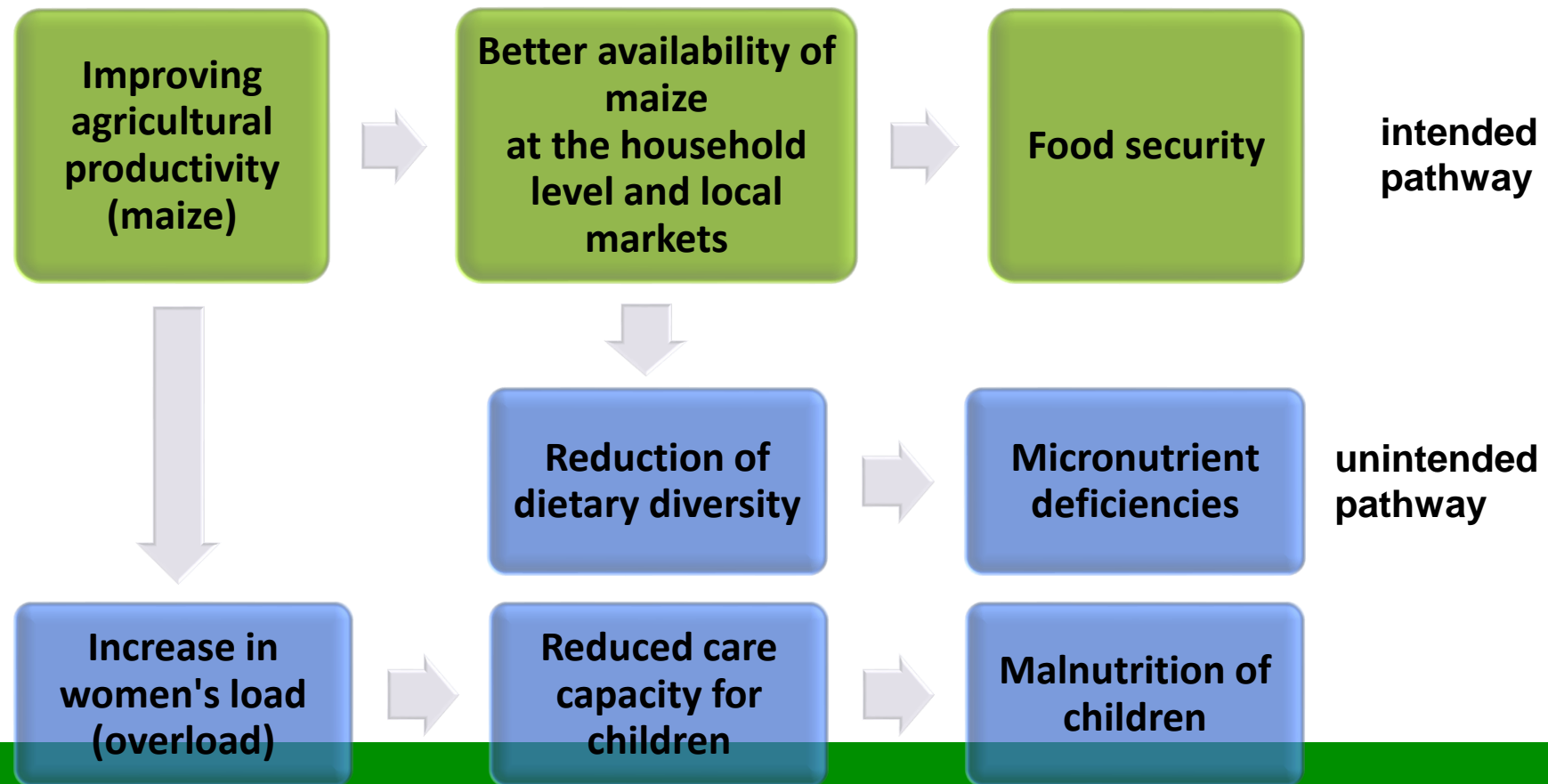
Nutrition-Sensitive Climate Smart Agriculture (NSCSA)

- Need to integrate nutrition into CSA
- Integrate the traditional objectives of agricultural development (production, productivity, food security and income) with nutrition
- Can do this at various points along the agriculture value chain

**How can agricultural extension services
contribute to nutrition-sensitive climate-smart
agriculture?**

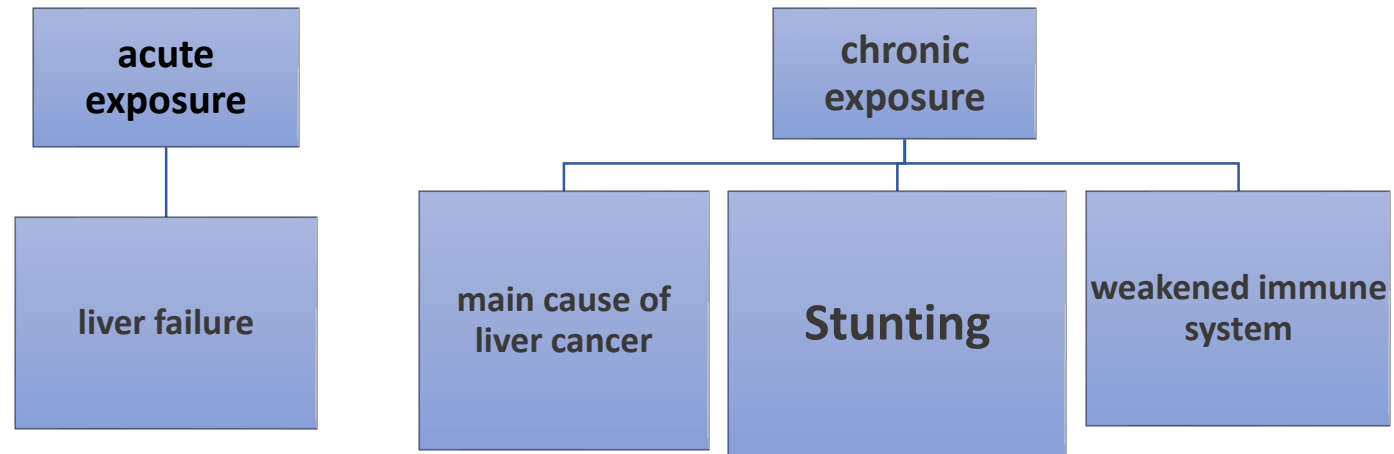
Observe “Do no harm” Principle

The most basic requirement for nutrition-sensitive programming is to **avoid possible negative impacts on nutrition.**



Food Safety is Important

e.g. Aflatoxins: natural, highly toxic byproducts of molds that affect mainly staple foods and others (maize, rice, peanuts etc.)

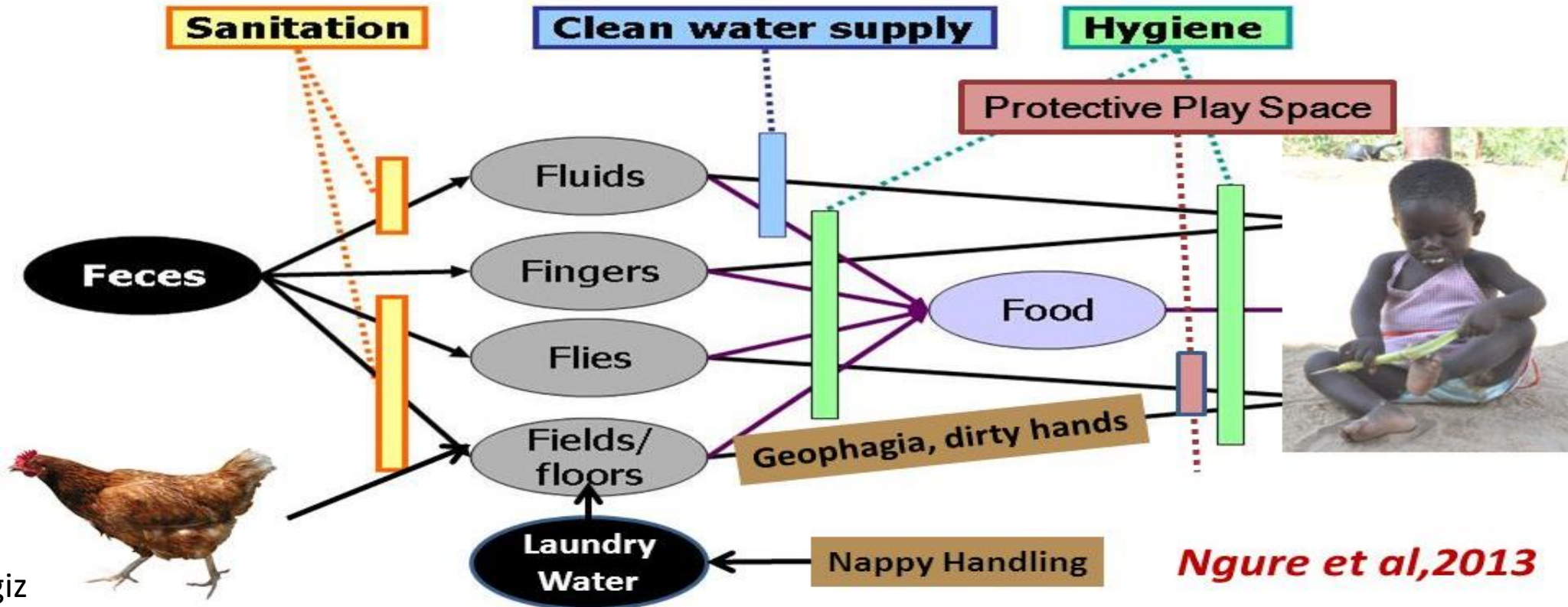


No decontamination of contaminated food with aflatoxin possible!

- Aflatoxin is considered to be one of the main causes of stunting during the first 1,000 days
- Physical + cognitive impairments
- Intake of aflatoxin by pregnant women leads to lower birth weight in newborns

Good Hygiene is Key...

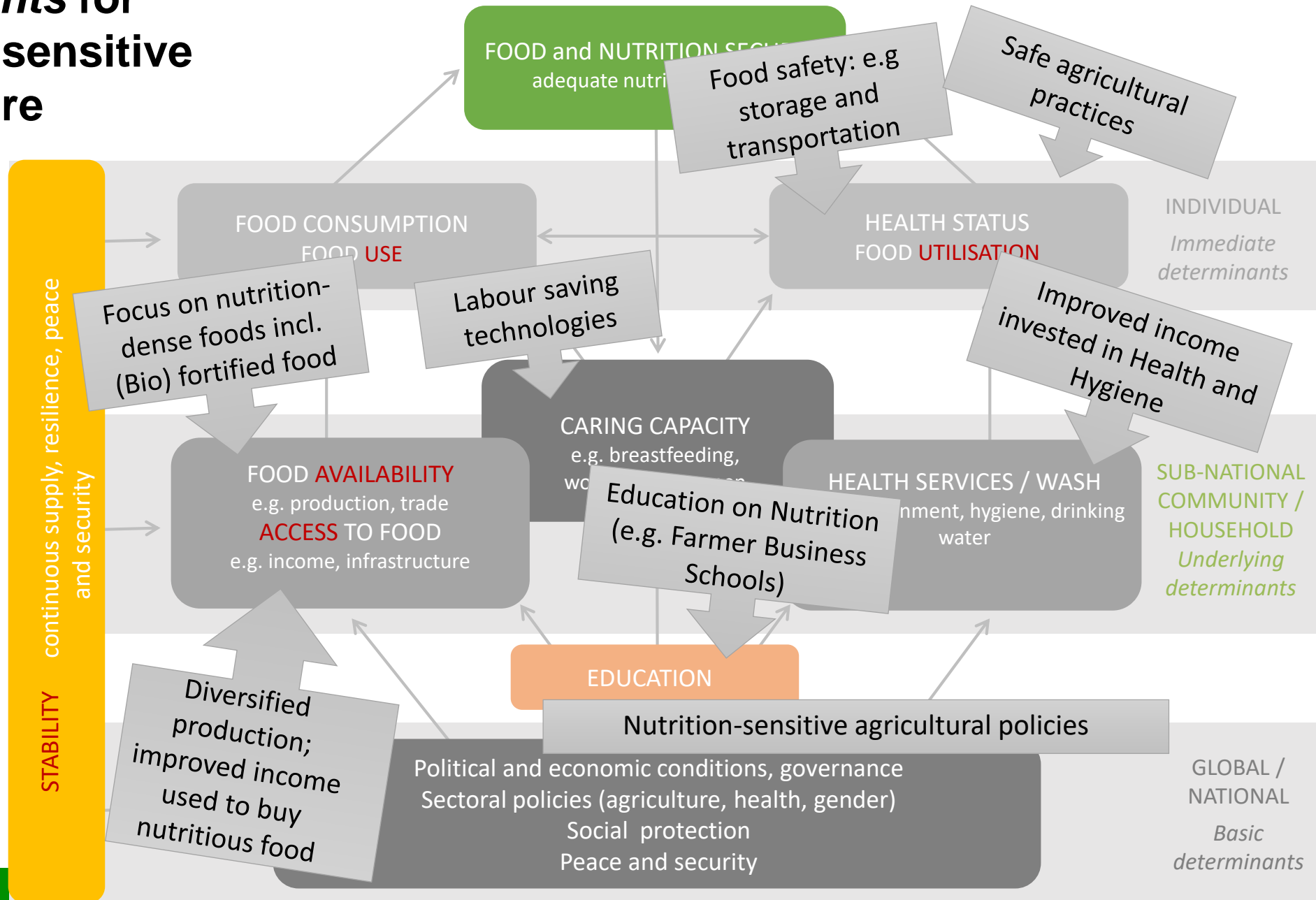
Routes of fecal disease transmission and protective barriers *for babies!*



Source: giz

Ngure et al, 2013

Entry points for nutrition-sensitive Agriculture



Source: giz

Source: adapted from UNICEF (1991)

How to Integrate NSIs into Agriculture

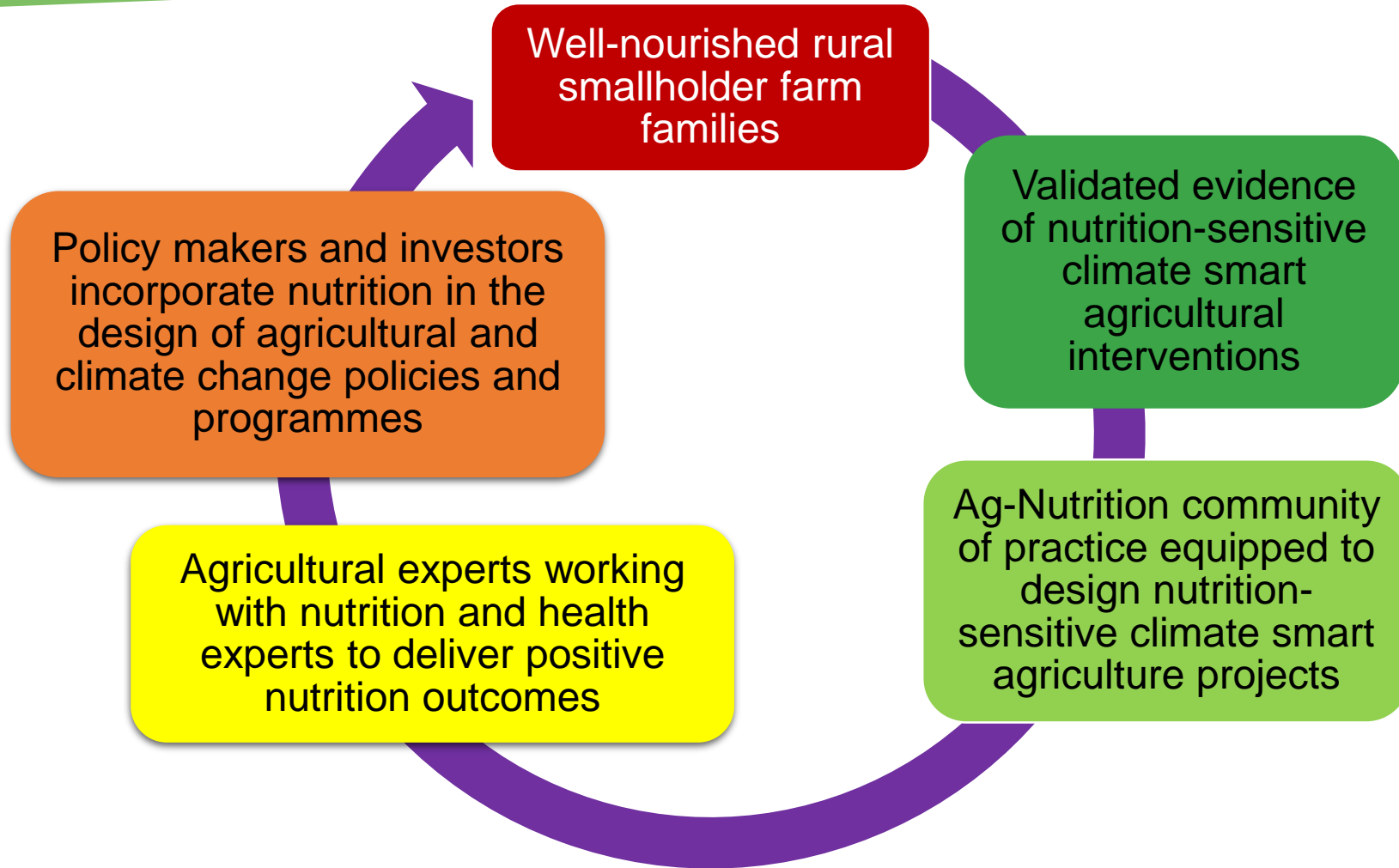
FANRPAN has developed frameworks that may be used to do the following:

1. Assess project/program suitability for integrating nutrition-sensitive interventions-identify entry points
 2. Select and design nutrition-sensitive interventions.
<http://www.atonuframeworks.fanrpan.org/>
 3. Impact evaluation of nutrition-sensitive interventions
- Available to provide technical assistance to existing and pipeline projects that would like to deliver positive nutrition outcomes

Implementation of NSIs and Evaluation of their Impact

- Partnerships for delivery of NSIs
- Capacity development of local development practitioners (public, NGO, and private extension agents)
- Delivery approaches: group sessions, demonstrations, individual household visits, community theatre
- Monitoring of implementation and assessment of impact of NSIs: process monitoring and impact evaluation

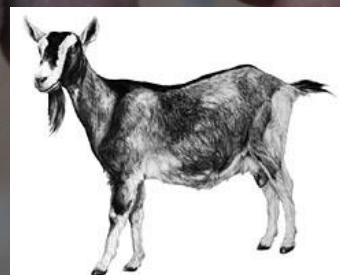
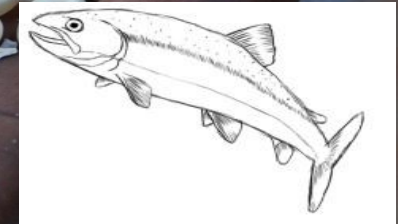
What Will Success Look Like?



Summary of What to Keep in Mind for NSCSA

- First of all: **Do no harm!**
Remember: Higher productivity does not always lead to better nutrition. Nutrition-security goes beyond food security.
- Include **hygiene, health and care** especially for children and pregnant and lactating women.
- **Young children** are the most vulnerable – their nutritional status depends mainly on whether they receive adequate **care** (including breastfeeding) → Be aware of **gender dimensions!**
- Availability of and access to diverse foods is basis for a **diverse diet**. **Diversified production** (e.g. incl. home gardens) is one key element, but be aware that this is not automatic. **Focus on nutrient-dense foods**.
- Food safety is key - consider in food production, storage and processing.

We Need a RAINBOW Revolution



Examples of Nutrition-sensitive Agriculture Approaches

Promoting the African rice value chain (CARI)

Nigeria, Ghana, Burkina Faso, Tanzania

Objective: Double the income of 125,000 rice farmers from US\$2 to US\$4 per person per day through integration into sustainable business models.

Context

- Strongly growing demand for rice, 40% to 60% covered by imports so far
- Low productivity of rice production schemes
- + Nutrient poor nutrition of rice farmers

Approaches/instruments

- Improving the supply and marketing channels for rice; Improving access to financing
- + Nutrition Education (Modul at FBS)
- + Training on improved farming practices and supporting diversification of cultivation (mainly vegetables)
- + Measures to increase income for women in rice processing activities



Source: giz

Results

- > 122.000 farmers have been integrated into sustainable business models
- Up to 60% yield increase achieved

Intended Impact *(Analysis as of June 2018)*

- Improved diversity of diets at household level (HDDS)
- Improved nutritional knowledge

Multi-
sectoral
approach

Global project Food and nutrition security, enhanced resilience

Nutrition-sensitive agriculture in Ethiopia

Knowledge on nutrition and hygiene



Pregnant and breastfeeding mothers receive training on hygiene, breastfeeding practices and the preparation of healthy and balanced food.

In addition to the cultivation of diverse foodstuffs, farmers receive trainings in small animal husbandry, storage and processing of healthy foodstuffs

Nutrition-sensitive agriculture



Intersectoral coordination

Source: giz

Zambia; project duration: 2010–2015; target group approx. 4,500 HH

Challenges

- 45% under the age of five suffering from chronic undernutrition, manifesting as stunted growth
- Lack of dietary diversity
- Poor nutritional status of pregnant and breastfeeding women

Approaches/instruments:

- Improve home gardens & small livestock rearing
- Diversifying food: crops with high nutritional value (e.g. biofortified pulses)
- Training on agriculture and nutrition
- Processing and storage of foodstuffs
- Multisectoral coordination structures (District Nutrition Coordinating Committee – DNCC)



Source: giz

Results:

- significant production increase of diverse and micronutrient rich foodstuffs
- Improved dietary diversity (IDDS) in children and mothers
- Better participation of women in decision-making processes (e.g. crop production, use of money)
- District coordination structures adopted in 14 other districts (SUN fund, FMCDP)



Community-based multisectoral training approach

[Laos, Cambodia, Myanmar, Sri Lanka, India, Sierra Leone]



Objective: Improving the nutritional situation through behavioural change, empowerment and improved coordination between agriculture, natural resource management, WASH, income generation and food education

Focus:

- Regions with ethnic minorities, low literacy, agro-ecological zones with significant distribution of wild fruits

Approaches/instruments

- Training concept includes participative "**action learning**" such as theatre, role-plays, cooking classes and recipe development.

Results:

- Increasing the diversity of nutrient-rich foods produced
- more food diversity in the consumption pattern of vulnerable groups ↑ IDDS
- Increase in exclusively breastfed children
- Improved care practices → Cooking practices, hygiene practices
- Decrease of diseases transmitted by drinking water
- More active participation of women in decision-making processes at household and village level
- Greater resilience



ATONU Project - Chickens and cereal value chains

Pathway	Nutrition-Sensitive Intervention
Production for household consumption	Introduction of improved and adapted chicken genotypes (ACGG)
	Social Behaviour Change Communication (SBCC) on nutrition education and hygiene to increase consumption of eggs and chicken meat
	Promotion of home gardens for improved dietary diversity
Income-oriented production for purchase of food	Increased expenditure on nutritious food from household incomes from sale of eggs and chicken
Women empowerment	Changes in women's time use and status (decision-making) within the household

IFAD Project - Rice and cassava value chains in Nigeria

- Promote women empowerment and increased decision-making at household level, especially targeting men inclusion
- Influence expenditure of household income on nutritious food
- Partner with relevant stakeholders (e.g. health workers and extension) to provide nutrition and WASH knowledge and skills (demonstrations)
- Promote increased shelf life and reduce post-harvest losses of seasonally abundant foods.
- Promote production and consumption of small livestock (birds, rabbits, ducks, guinea fowl, snailery, catfish etc), tropical fruits (mangoes, oranges, pawpaw, banana etc) and vegetables (spinach, bitter leaves, scent leaves)

References and further readings

- BMZ (2013): [Promoting sustainable agriculture](#)
- GIZ (2016): [Sample results models and indicators for rural development and agriculture projects](#)
- WorldBank (2013): [Improving nutrition through multi-sectoral approaches](#)
- FAO (2017): [Nutrition-sensitive agriculture and food systems in practice](#)
- IFPRI (2017): Discussion Paper: [Nutrition-Sensitive Agriculture – What Have We Learned and Where Do We Go from Here?](#)
- Herforth and Harris (2014): [Understanding and Applying Primary Pathways and Principles.](#)
- FAO e-learning course [Improving Nutrition through Agriculture and Food Systems](#)
- GloPan (2016): [Food systems and diets](#): Facing the challenges of the 21st century
- HLPE (2017): [Nutrition and food systems](#)
- FAO (2016): [Compendium of indicators for nutrition-sensitive agriculture](#)
- <https://www.fanrpan.org/projects/atonu/about?block=prj-home>
- Global Nutrition Reports – 2015, 2016, 2017



Thank you

