

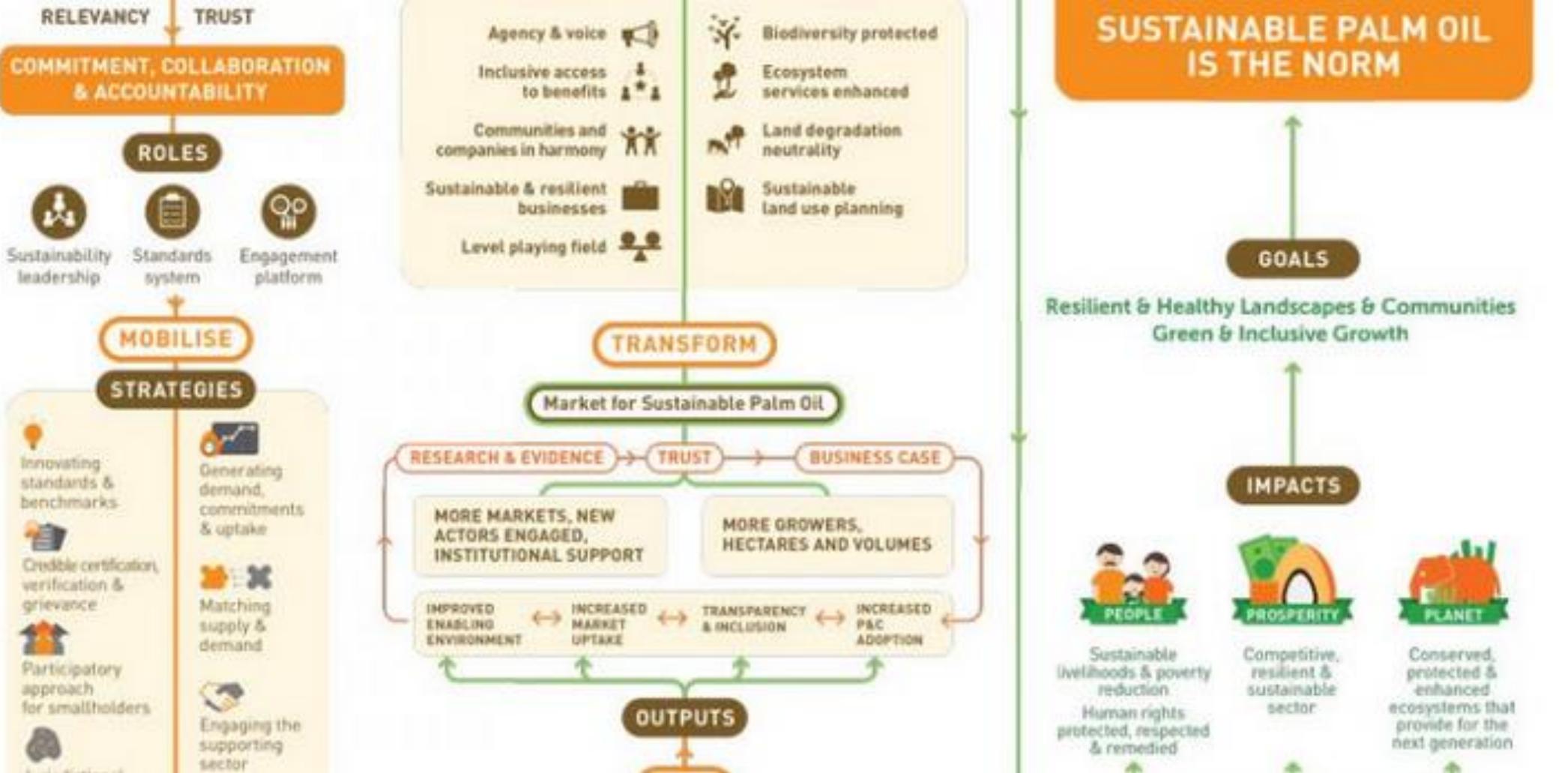


Food Systems - Introduction to concepts and indicators

Dr. Irmgard Jordan
Nairobi, Kenya
13.7.2023

What can you expect?

- What are we talking about when we say „food systems“?
- Food System transformation needs
- A video...
- Research at the Alliance Bioversity International and CIAT
 - Food environments of rural communities
 - Environmental determinants for dietary behaviour change
- Questions?



Global Food Systems – different perspectives

10,000 Years of Agricultural and Food Revolutions and their Links with Farming, Culture, and Food-Related Health

Era/Revolution	Date	Implications for food-related health
Industrial and agricultural revolution in Europe and US	Mid-18th century	energy revolutions dramatically raise output and spread foods; improved range of foods available to more people
Chemical revolution	Begins in 19th century in developed world	Significant increases in food production; beginning of modern nutrition; scandals over food safety
The oil era	20th century	Less land used to grow feed for animals as motive power; rise of impact of excess calorie intake leading to diet-related chronic diseases

Cont.: 10,000 Years of Agricultural

Era/Revolution	Date	Implications for food-related health
Green Revolution in developing countries	1960s and after	Transition from underproduction to global surplus with continued maldistribution; Overconsumption continues to rise
Modern livestock revolution	1980s and after	Rise in meat consumption associated with nutrition transition; global evidence of simultaneous under-, over-, and malconsumption;
Biotechnology	End of 20th century	Uncertain as yet; debates about safety and human health impacts and whether biotechnology will deliver food security gains on whole populations

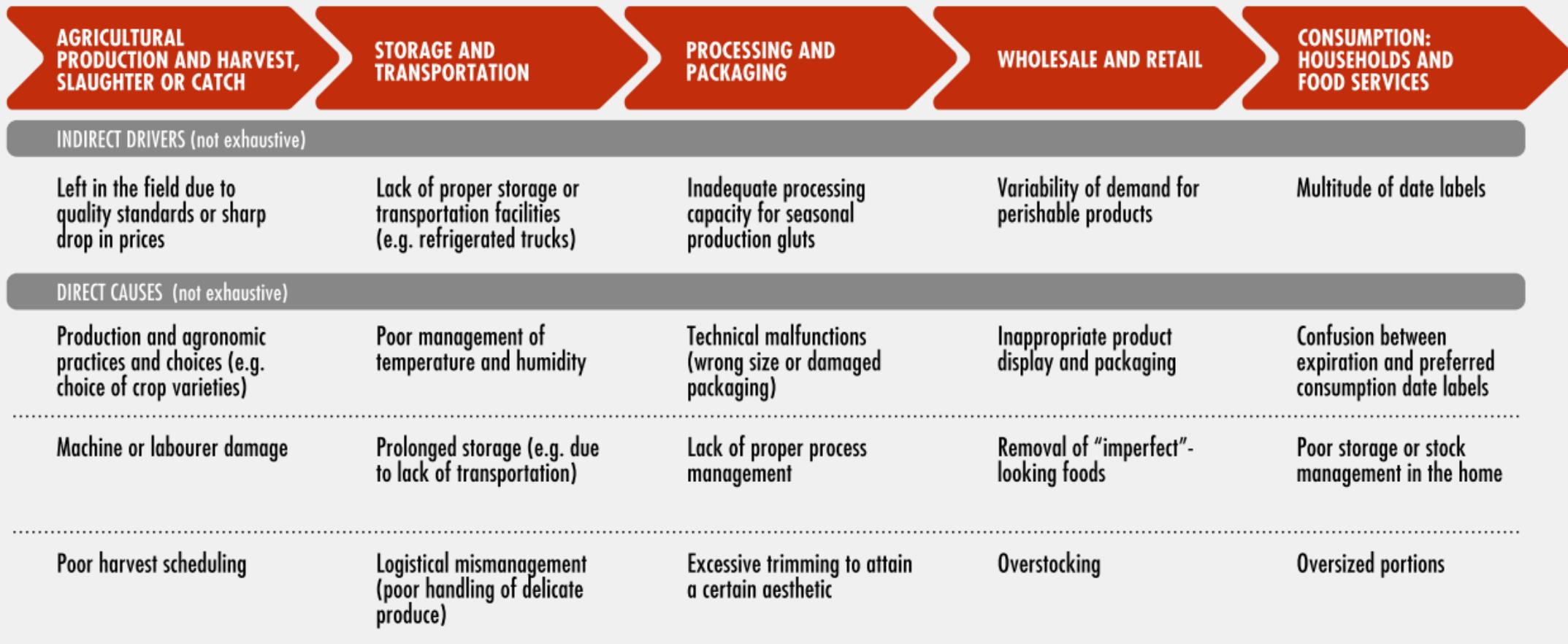
Some Features of Affluent Society's Food Purchasing in the 19th, 20th and 21st Centuries

Factor shaping food purchasing	19th Century	20th Century	21st Century
Format	Markets plus small diverse specialty shops	Supermarket	Mixture of giant hypermarket & specialty stores
Energy source for logistics	Feedstuff (animals) + human	Oil	Hydrogen, electric, solar, or human?
Majority food labor	Farm	Factory	Service
Food sourcing	Seasonal	Aseasonal	Return of seasonal?
Food range	Limited within shops but variety of shops	Enormous	Shaped by climate change, energy and water costs
Food market	Local	National/regional	Global, regional, local
Food supply chain dominant player	Farming	Food manufacturers then retailers	Farming + retailers?



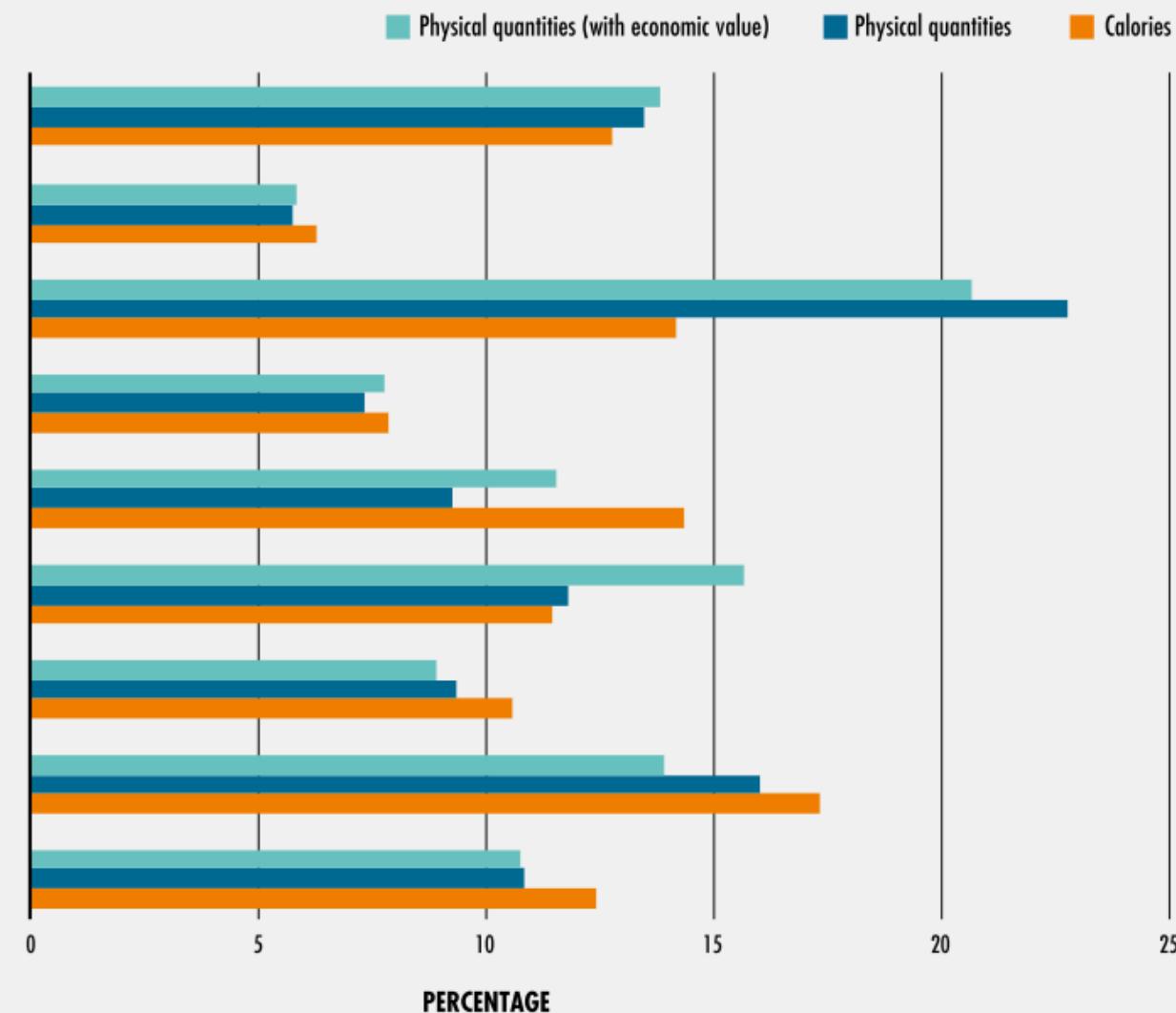
So many indicators already....
However...

FIGURE 5 POTENTIAL DIRECT CAUSES AND INDIRECT DRIVERS OF FOOD LOSS AND WASTE



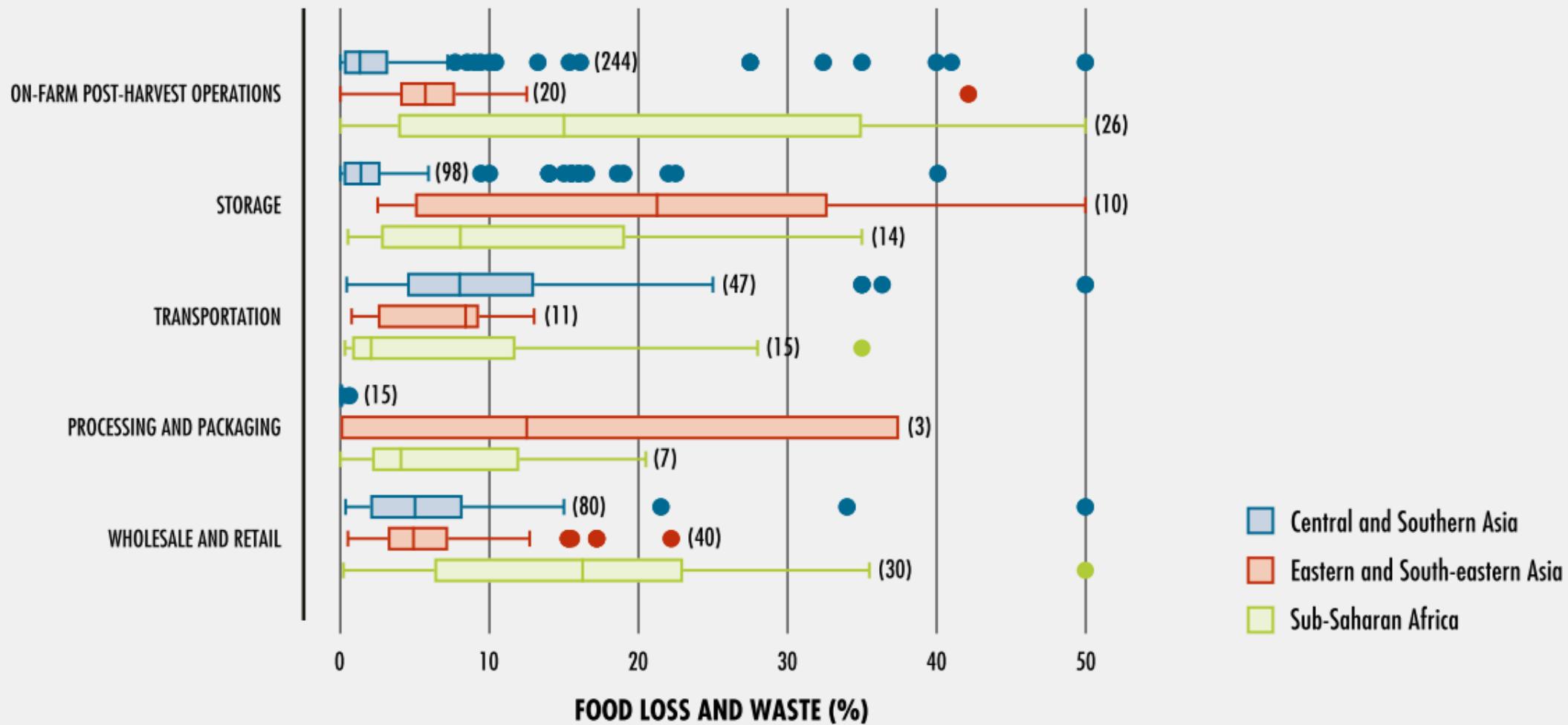
SOURCE: FAO elaboration, based on Lipinski *et al.*, 2013²⁴

FOOD LOSS PERCENTAGES IN DIFFERENT METRICS, 2016



SOURCE: FAO, 2019¹²

B. FRUITS AND VEGETABLES



NOTE: The number of observations is shown in brackets. The dates, 2000–2017, refer to when the measurements were taken; however, the date of publication was used if the study dates were not available or were unclear. For a more detailed explanation of how to interpret the diagrams, see Box 7.

SOURCE: FAO, 2019²

A food system is made up of...

- environment
- people
- institutions and processes
 - by which agricultural products are produced, processed and brought to consumers

Food systems...

- encompass activities related to: production, acquisition and utilization of foods that affect human nutrition and health (Bernstein 2002)
- Comprise subsystems such as cropping system and form part of wider livelihood systems (Graham et al. 2007)

Food System

- A **food system** gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to
- the a) **production**, b) **processing**, c) **distribution**, d) **preparation and e) consumption of food**, and **the outputs of these activities**, including socio-economic and environmental outcomes. (...)
- It identifies three constituent elements of food systems, as entry and exit points for nutrition: **food supply chains; food environments; and consumer behaviour.**

Definition of Food System(s)

Food systems 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.

The food system **is composed of sub-systems** (e.g. farming system, waste management system, input supply system, etc.) and interacts with other key systems (e.g. energy system, trade system, health system, etc.).

Therefore, a structural change in the food system might originate from a change in another system; for example, a policy promoting more biofuel in the energy system will have a significant impact on the food system.

A **sustainable food system** is a food system **that delivers food security and nutrition** for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.

This means that:

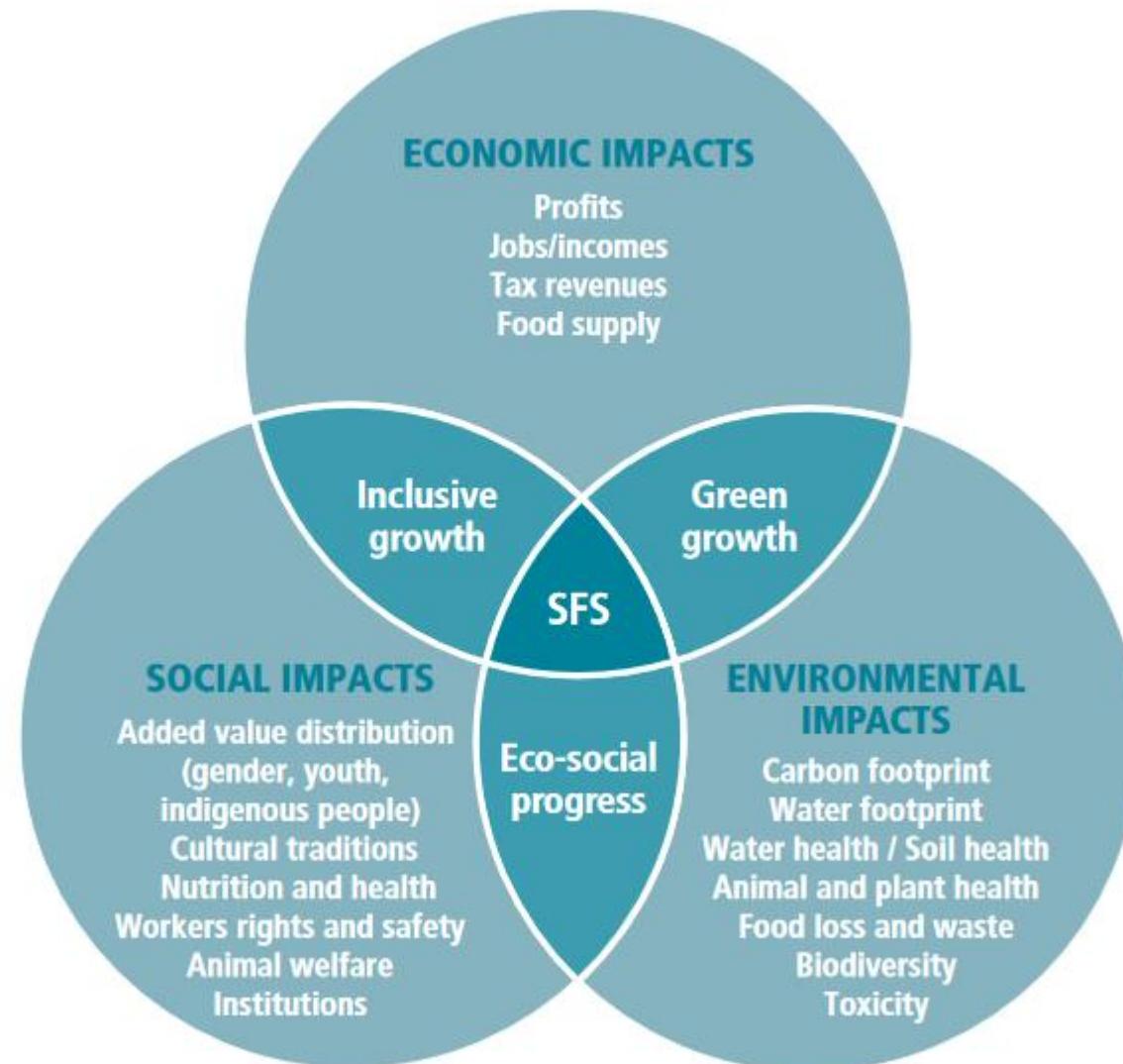
- It is profitable throughout (economic sustainability);
- It has broad-based benefits for society (social sustainability); and
- It has a positive or neutral impact on the natural environment (environmental sustainability).

Food systems depend on...

1. Natural resources as:
water, soil, seeds, livestock, agro-ecological zones (AEZ)
2. Agriculture- and food industry
3. Traders
4. Consumers' behaviour
5. National and international policies

Sustainable food systems: Concept and framework (FAO 2018)

FIGURE 2 SUSTAINABILITY IN FOOD SYSTEMS



Source: Adapted from FAO, 2014.

Visualizations of food systems frameworks

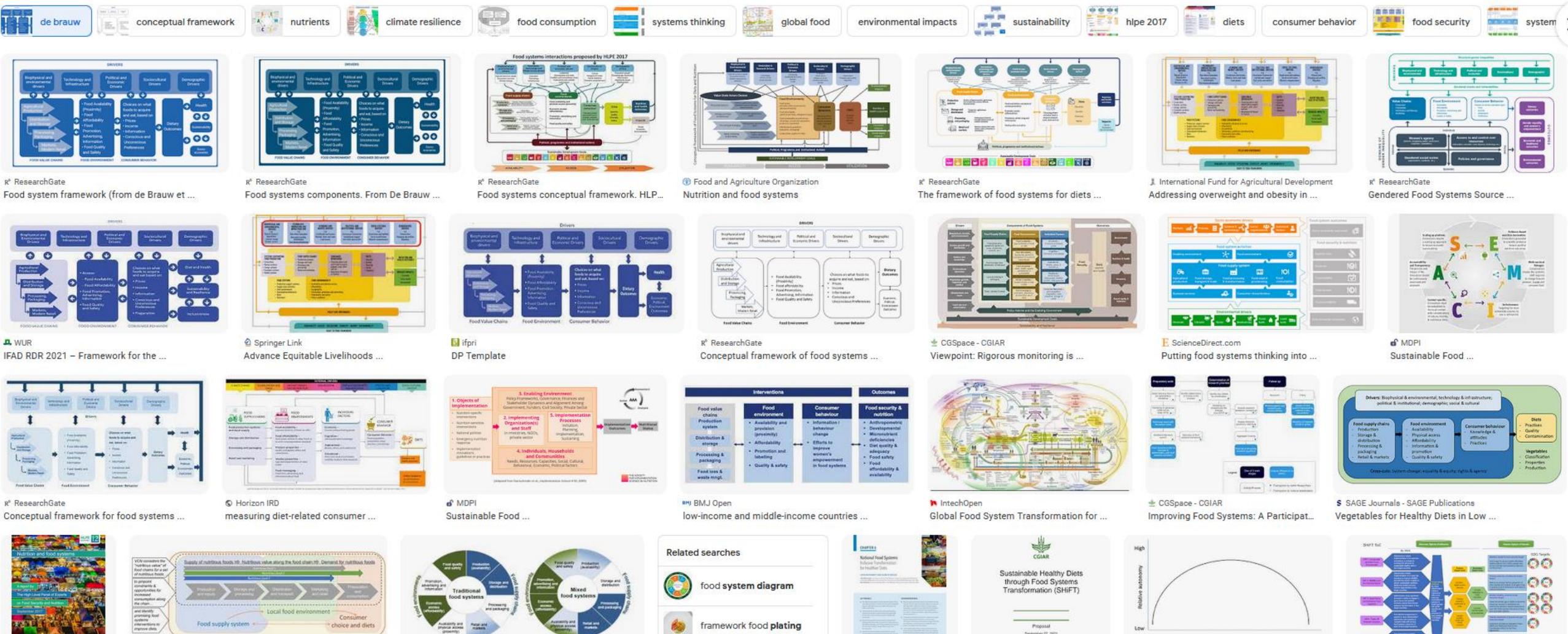
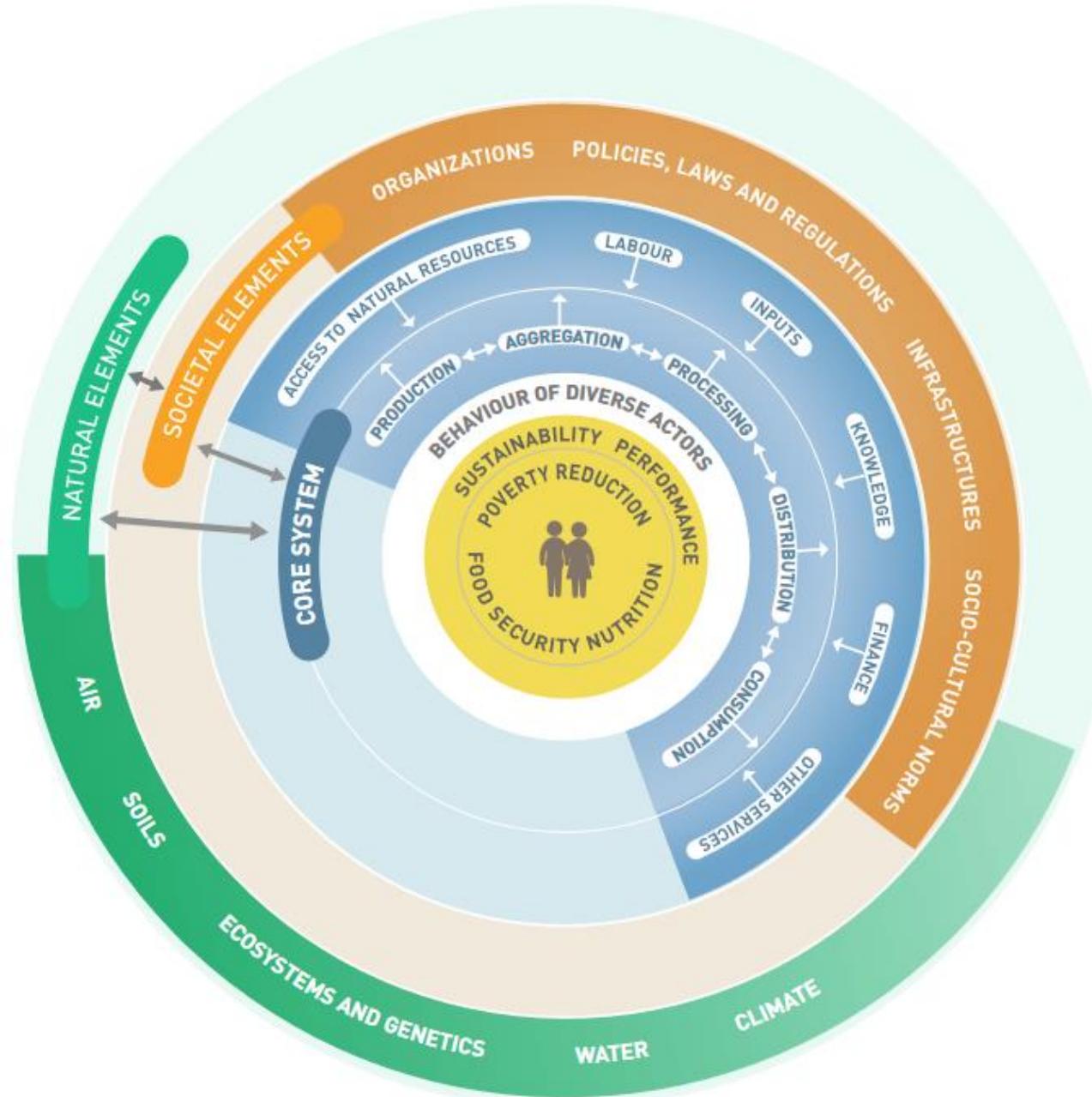


FIGURE 1 THE FOOD SYSTEM WHEEL

FAO 2018



Source: Author's own elaboration.

Challenges for today

- Food systems are not successful in feeding people
 - uneven distribution of food

→ undernutrition, overconsumption, hidden hunger
- growing world population, climate change and environmental changes

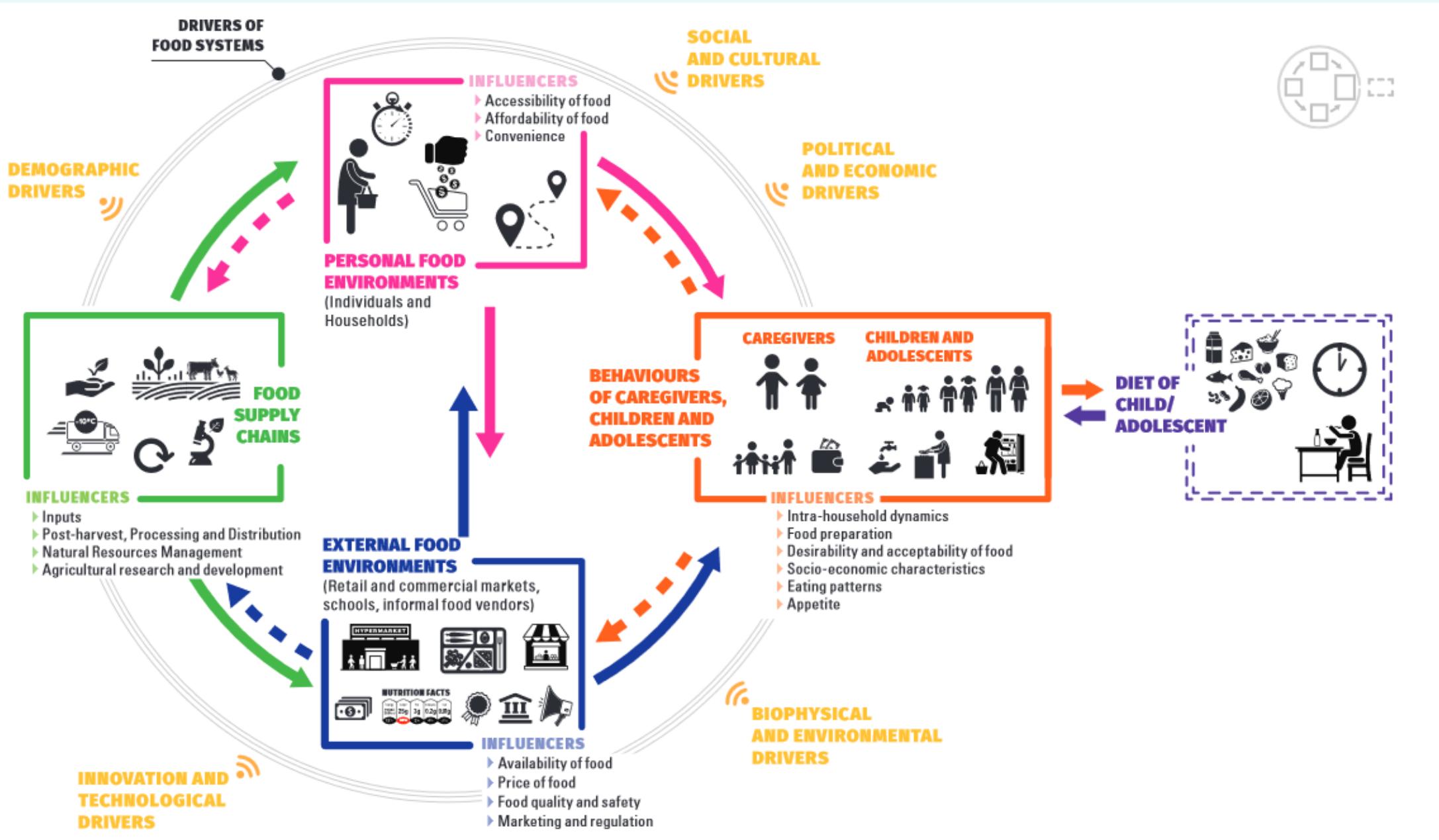


Figure 1. The Innocenti Framework on Food Systems for Children and Adolescents.²

Food Production – Contribution to Climate Change

- Developed countries: 15-28% of GHG emission from food systems
 - Agriculture: almost half of food-related GHG emission
- Indirect impact of agriculture:
 - Deforestation releases CO₂ -> Government of Kenya published recently that they want to lift the logging ban unconditionally for providing more people access to arable land and work places
 - Loss of biodiversity
 - Water scarcity and pollution
- Animal products biggest? environmental impact

THEMES	INDICATORS	SUB-INDICATORS
Climate change	1. GHGs emissions	A. Emissions B. Sequestration/loss C. Mitigation
Soil	2. Soil health	A. Soil cover B. Soil erosion C. Soil organic carbon
Water	3. Water stewardship	A. Water quality B. Water use
Biodiversity	4. Biodiversity & agrobiodiversity	A. State of biodiversity & habitat change (interim for C & D) B. Conversion of farmland to urbanization C. Composite view: state of biodiversity & habitat change D. Disaggregated views: state of biodiversity & habitat change
Inputs	5. Crop inputs use / management	A. Responsible pest control product use (pesticides) B. Responsible nutrient use (fertilizer)
Waste	6. Food loss & waste	A. Reduce B. Repurpose
	7. Packaging & waste	A. Reduce / recycle B. Reuse

National Index on Agri-Food Performance



THEMES	INDICATORS	SUB-INDICATORS
Financial viability	1. National economic contribution	A. GDP B. Employment C. Trade balance
	2. Financial vibrancy & resiliency	A. Financial performance B. Investment C. Labour D. Infrastructure E. Supply chain resiliency
	3. Innovation	A. R & D B. Regulatory approvals C. Innovation adoption
Sustainable growth	4. Sustainable finance	A. Market-based sustainable capital/investment B. Government/NGO-sourced climate solutions funding

Applicable UN Sustainable Development Goals (SDGs)



Figure 3: Proposed Index, abbreviated



Search for Indicator

- Drivers 22
- Food Supply Chains 48
- Food Environments 56
 - Food availability 17
 - Food affordability 20
 - Affordability of a healthy diet
 - Affordability of an energy sufficient diet
 - Cost of a healthy diet relative to the cost of sufficient energy from starchy staples
 - Cost of an energy sufficient diet
 - Cost of animal-source foods
 - Cost of animal-source foods relative to the starchy staples in a least-cost healthy diet
 - Cost of fruits
 - Cost of fruits relative to the starchy staples in a least-cost healthy diet
 - Cost of legumes, nuts, and seeds
 - Cost of legumes, nuts, and seeds relative to the starchy staples in a least-cost healthy diet
 - Cost of nutrient adequacy as a percent of household food expenditure
 - Cost of nutrient adequacy at purchasing price parity prices for food

Percent of the population who cannot afford a healthy diet (%)

[Metadata](#) [Download \(CSV\)](#)

No Filters

[Edit Filters](#)

Timeframe

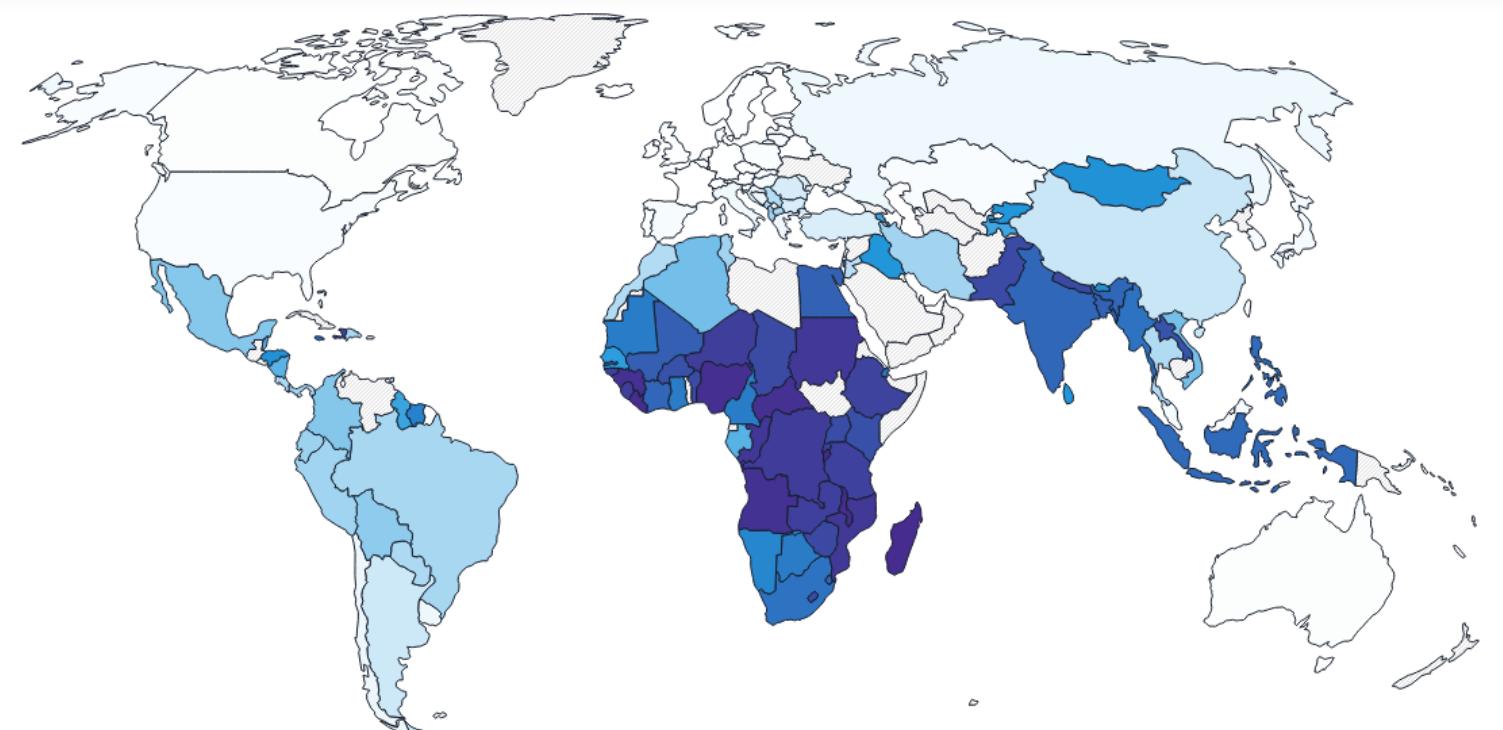
2017

2018

2019

 Display latest available data

2020

[Reset Zoom](#)

Percent of the population who cannot afford a healthy diet
in %

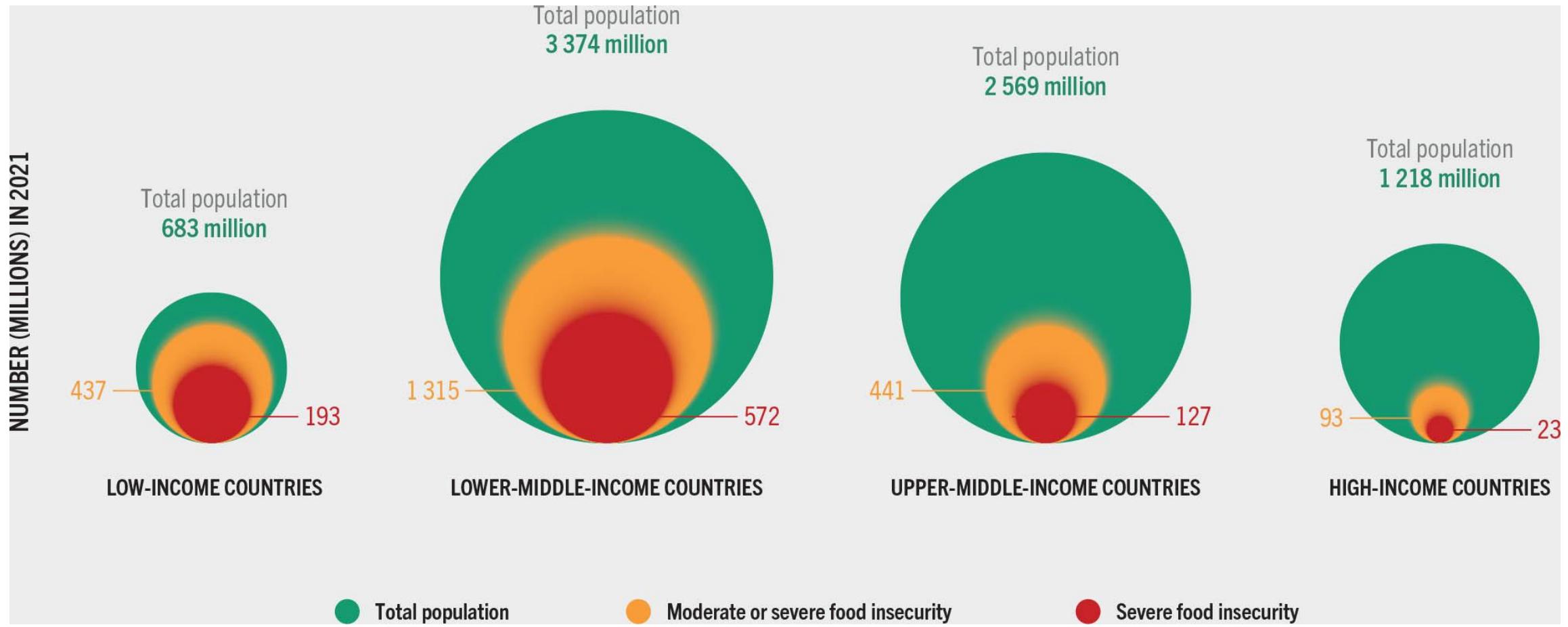
0% 97%

Food Systems Dashboard

- <https://www.foodsystemsdashboard.org/>
- The FSD was developed by The Global Alliance for Improved Nutrition, The Columbia Climate School, and The Food and Agriculture Organization of the United Nations with collaborators at Harvard University, City University London, University of Michigan, Michigan State University, **The Alliance of Bioversity International and CIAT**, The International Food Policy Research Institute, Glocolearning, and The Agriculture-Nutrition Community of Practice. Past collaborators include Johns Hopkins University and University of Michigan

State of Food insecurity 2022 (FAO)

<https://www.fao.org/3/cc0639en/online/sofi-2022/food-security-nutrition-indicators.html>



A photograph showing a large stack of white plastic buckets filled with different types of beans. The beans are sorted by color: red, green, yellow, and pink. The buckets are stacked in several rows, creating a textured pattern. In the background, there are some papers and a person's arm visible, suggesting a market or a storage area.

Where can transformation happen?

Food Environment...

"Food environment refers to the physical, economic, political and socio-cultural context in which **consumers engage with the food system** to make their decisions about acquiring, preparing and consuming food."

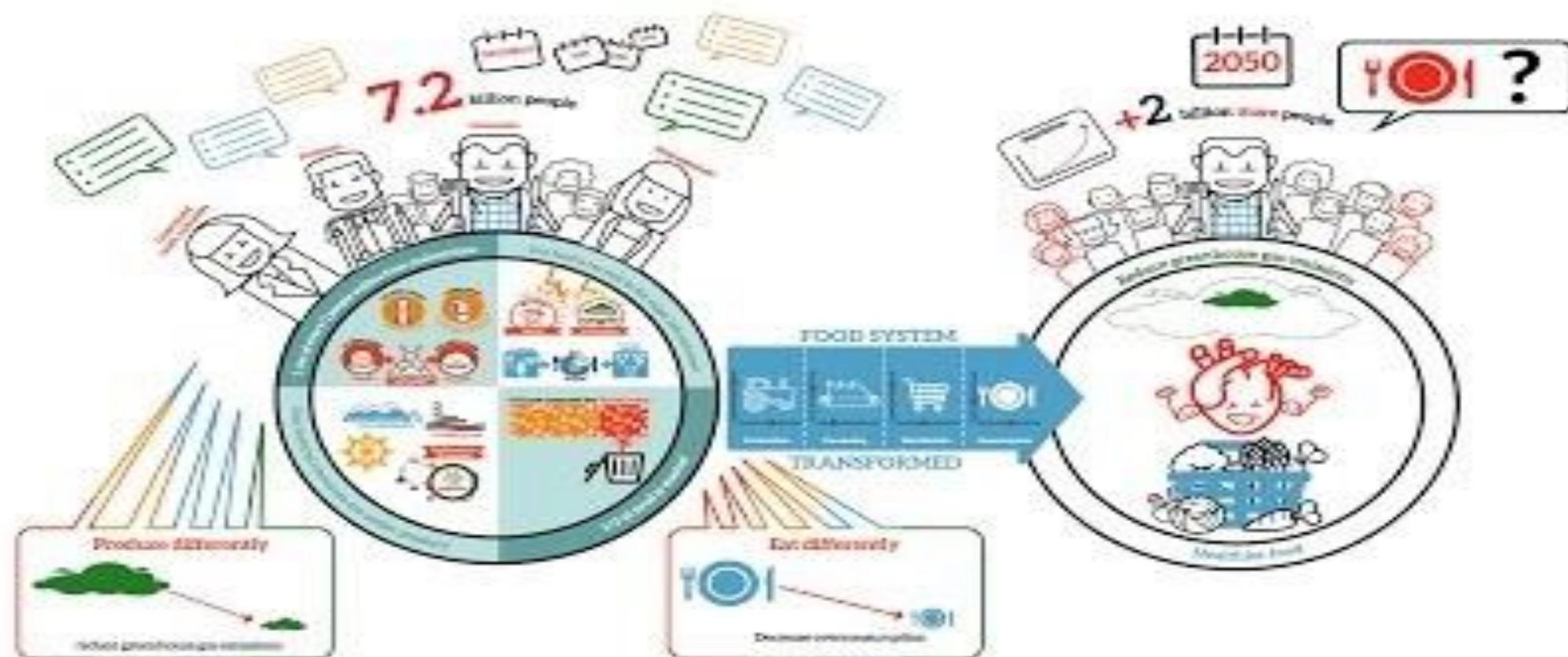
HLPE 2017

The food environment consists of...

- “food entry points” or the physical spaces where food is purchased or obtained;
- features and infrastructures of the built environment that allow consumers to access these spaces;
- personal determinants of consumer food choices (including income, education, values, skills etc.); and
- surrounding political, social and cultural norms that underlie these interactions.”

Consumer behaviour? HLPE concluded

- “The processes whereby food is selected, purchased, prepared and presented for consumption **vary across regions, countries and cultures**, but also across communities, households and individuals.
- Many people **lack the culinary skills** to obtain the best nutritional outcomes from the food available to them, even if its constituent elements are nutritious.
- **Convenience foods** that require little-to-no preparation **may well be preferred** in such instances, although they may be far less nutritious than home-cooked food.
- **Cost is also a key concern**, and some consumers may be more likely to purchase lower-cost foods purely for budgetary reasons.
- **Others**, by contrast, **are able to actively consider health, animal welfare or the environment when making food choices.**”



<https://www.youtube.com/watch?v=VcL3BQeteCc&t=2>



Food environment and Consumer Behaviour- insights into FECB research activities

The Alliance and OneCGIAR

- Member of the **Consultative Group on International Agricultural Research**
- <https://www.cgiar.org/>
- <https://www.cgiar.org/research/center/alliance-bioversity-ciat/>

CGIAR

- is a global partnership that unites organizations engaged in research for a food-secure future. The CGIAR System Organization is an international organization headquartered in Montpellier, France.
- Our research is carried out by 13 Research Centers who are members of CGIAR and is dedicated to reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources.

The Alliance

<https://alliancebioversityciat.org/>

Explore our research areas

Our research is cross-disciplinary at its core, but you can start your discovery from a few central issues that drive our actions



Healthy sustainable
diets



Multifunctional
landscapes



Climate action



Agrobiodiversity



Digital inclusion



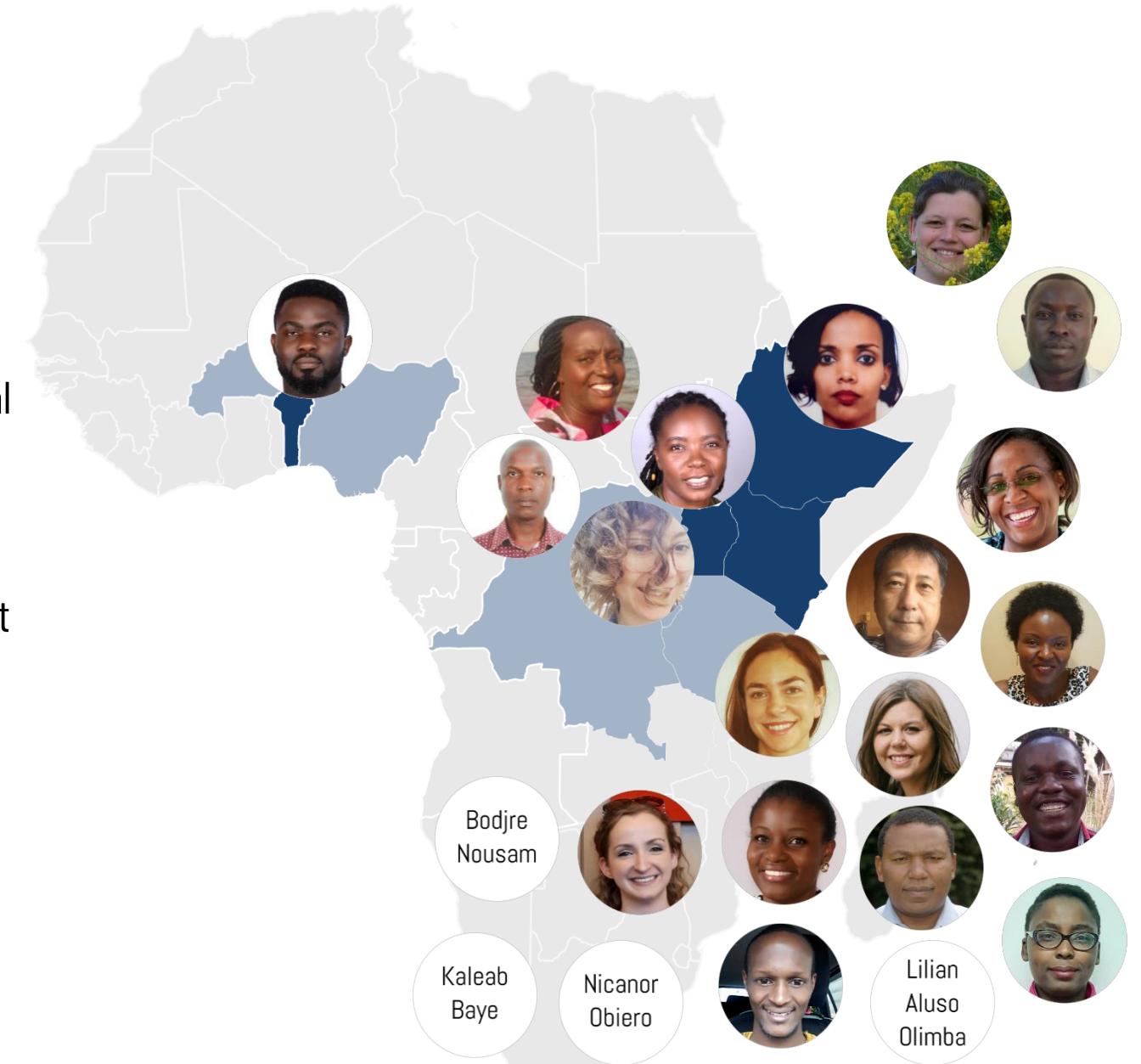
Improving crops



Gender and
inclusion

FECB team in Africa

- About 25 staff (including consultants)
- Where: Kenya, Uganda, Ethiopia, Benin with additional projects running in DRC, Rwanda, Tanzania, Burkina Faso, Nigeria.
- Expertise: Nutritionists with agricultural or public health backgrounds, Socio-economists, Policy analyst and behavior change psychologist, Ethnobotanists, Food quality and food safety experts, agriculture economist, data scientist



Diets, health and sustainability

- Diets are the essential link between food systems, nutrition and health outcomes: poor diet quality is a core driver of the malnutrition crisis. Conversely, **a healthy diet is the first step towards ensuring more sustainable, equitable livelihoods.** (ABC)
- [.] Dietary patterns that promote all dimensions of individual's health and well-being [with] low environmental pressure and impact [] (FAO 2019)

ABC (2022) <https://alliancebioversityciat.org>

FAO and WHO (2019) Sustainable healthy diets: guiding principles. Rome. Available at:
<http://www.fao.org/3/ca6640en/ca6640en.pdf> (Accessed: 15 October 2020).

What we hope to learn and way forward

- The project will generate knowledge to understand
 - 1) whether the integrated **community-based approach** developed in Vihiga County can be successfully applied in different contexts
 - 2) the conditions and terms under which the approach delivers the expected impact.
- Local and national scaling strategies will be developed for integration of the approach into NGO and government extension work.
- Recommendations will be made for sustainable harvesting and/or domestication of wild agrobiodiversity in Turkana

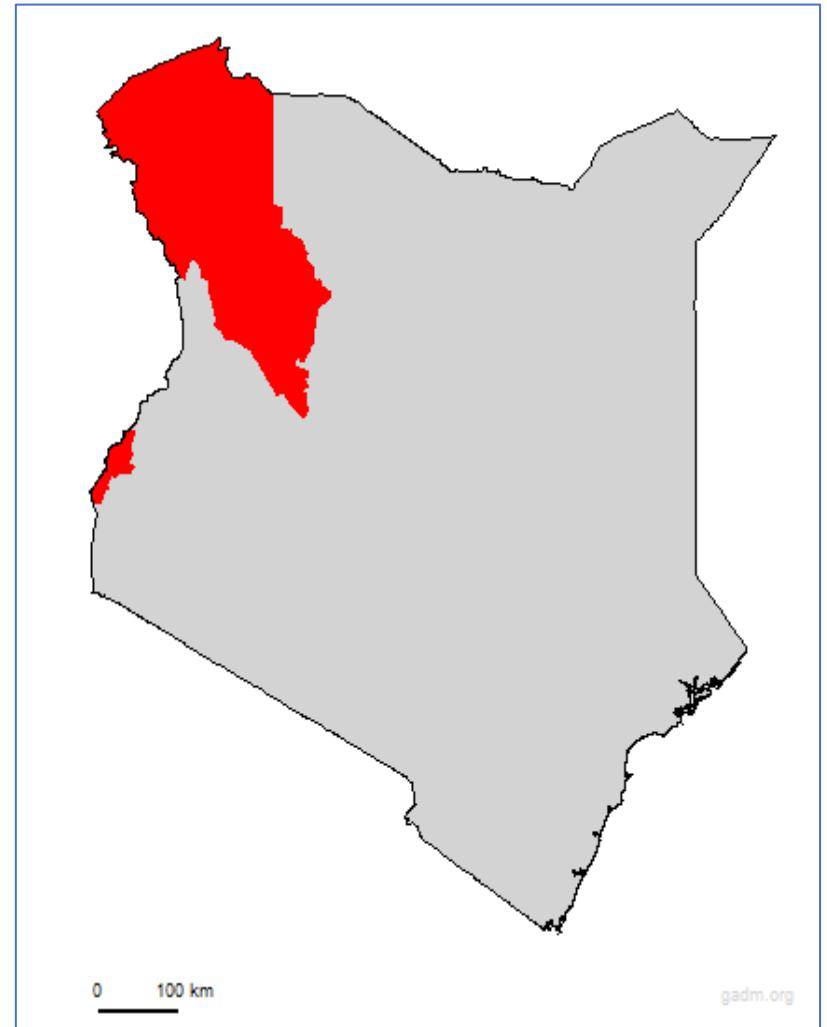


Food Systems transformation projects

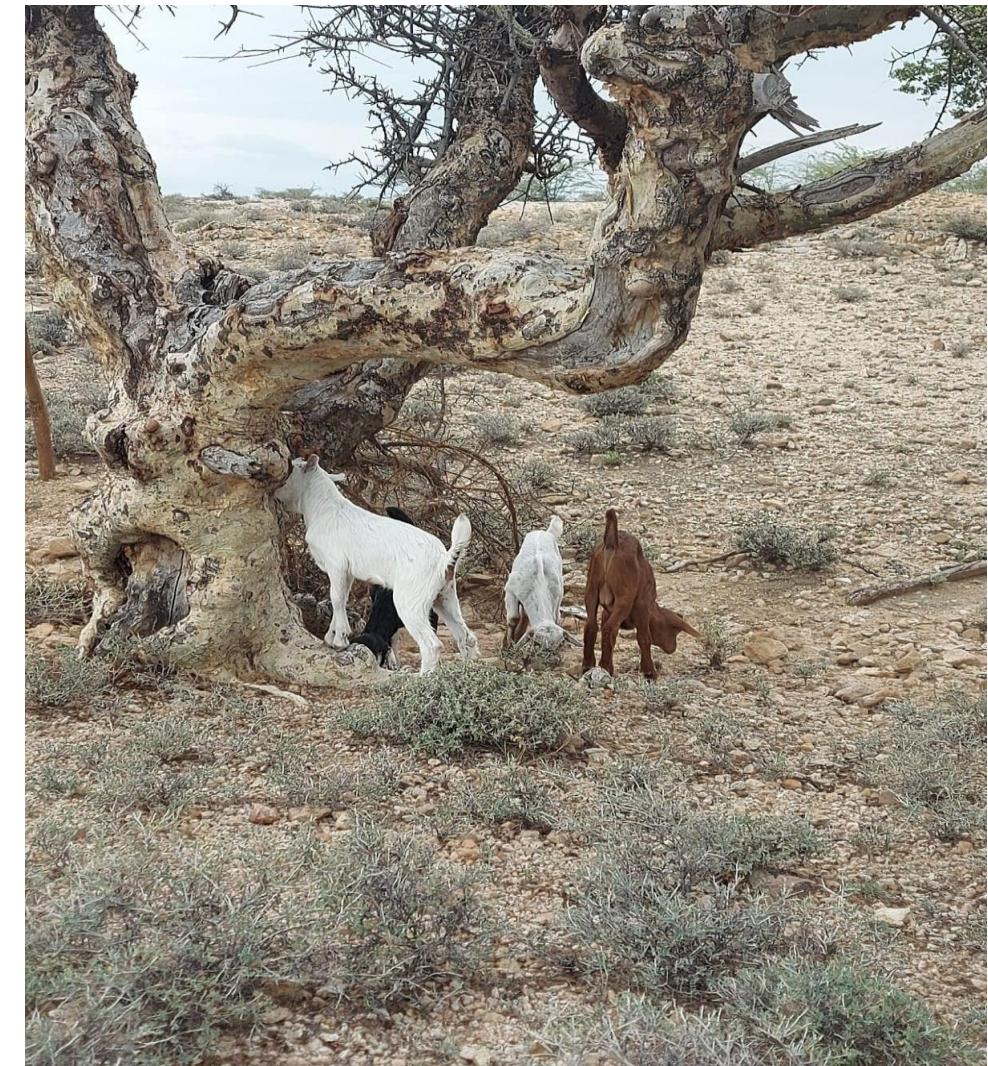
Findings from studies in Turkana and Busia County, Kenya

Expected results

- Based on former experiences, we expect that a co-creation approach will lead to an increase in
- a) mean dietary diversity scores of young children and percentage of children meeting minimum dietary diversity within the intervention communities as well as
- b) mean dietary diversity scores of women participating in the agri-nutrition groups.



Study sites: Busia and Turkana County



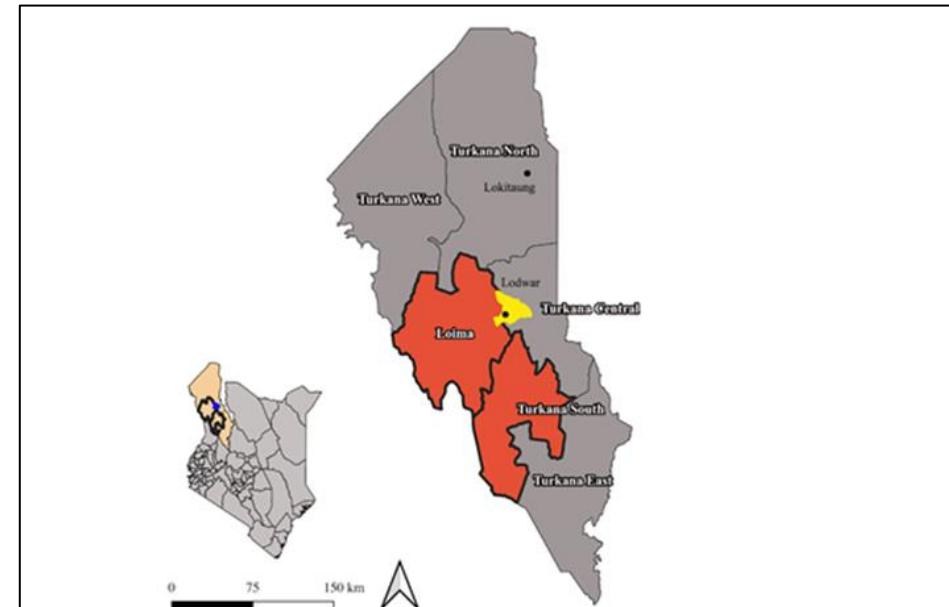
Turkana study design

Baseline Survey (August 2020)

17 community health units (CHUs) in Turkana South and Loima sub-counties

Food environment assessment (e.g. vendor geocoding)

Household survey with 357 women (≥ 18 years) and children aged 3-36 months (demographics, agriculture, assets, income, food security, dietary intake and child anthropometrics)



Project Implementation Monitoring

Monthly monitoring of Community Health Volunteers work from each of the 10 CHUs, 2 CHVs each by Save the Children

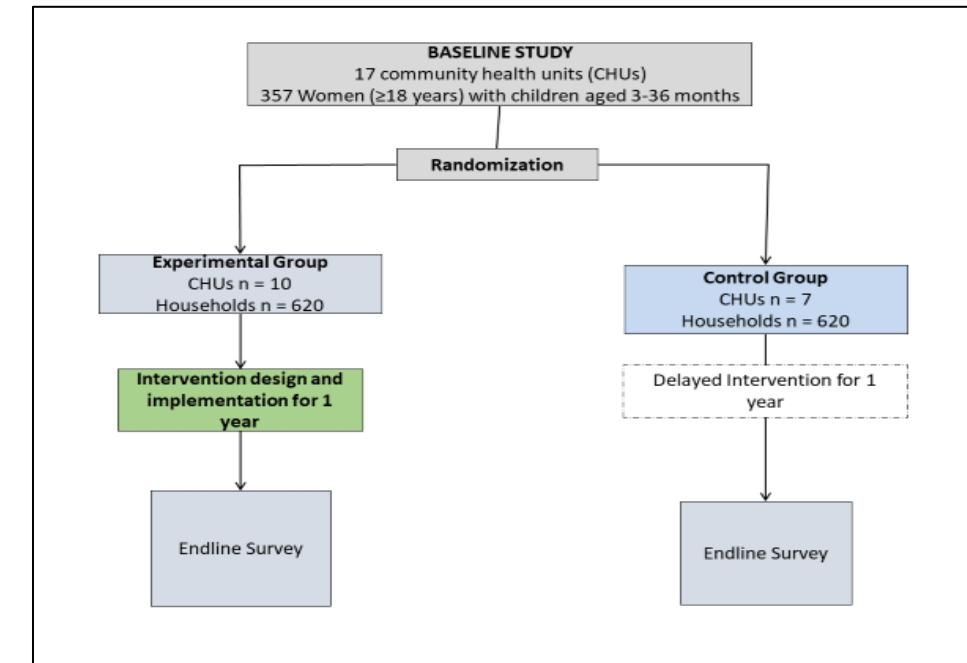
Field monitoring visits,

7 field visits in March, April, June, July, August, September, October 2021

Endline Survey

Was planned for late April/May 2022 – postponed to January 2023

Both qualitative and quantitative methods



Food Environment observed in Turkana

- Six main food sources were mentioned including non-conventional methods
 - direct purchase from markets and shops
 - own farm production
 - food aid donations
 - gifts from family and friends
 - wild food harvesting
 - Barter trade- exchanging with other community members.
- Factory packaged foods are liked - are “of good quality, safe, hygienic and free from contamination”



Applying the ProColor Tool in the ImproDiet-Co Project in Turkana

- Food Environment Study in August 2020
 - Household level data
 - Market/ vendor level data
- Aim: to assess the fruit and vegetable color diversity in the food environments of the households in Turkana
- General color categorization:

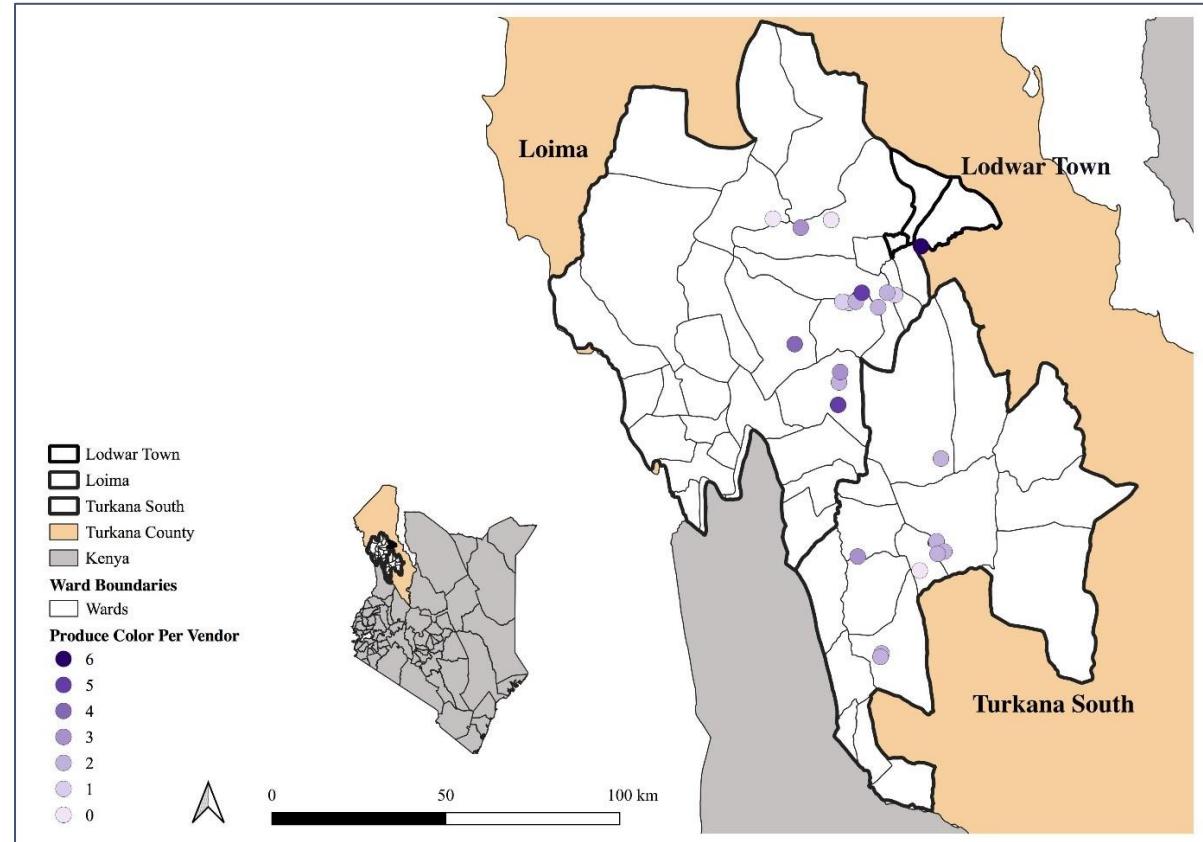
Color	Examples
Dark Leafy Green	Spinach Amaranth Sukuma Wiki
Green (other)	Avocado Broccoli Kiwi Peas
Red	Beetroot Guava Strawberry Tomato
Yellow, Orange	Carrots Apricots Pineapple Pumpkin Sweet Potatoes Yellow Maize
Purple, Blue	Eggplant Plums Grapes Blueberries
White, Brown	Garlic Onions Chives Dates Mushrooms

Source: Bioversity International, unpublished



Food Environment

- 384 food and/or drink vendors mapped
- 44% of the vendors offered fruits and vegetables
- 42% of the vendors offered dark green leafy vegetables, mainly restaurants (76%) and roadside vendors (65%).



Study site and available number of fruits and vegetables in various "colours" based on ProColor tool

Prevalence of vendors selling fruits or vegetables (ProColor Tool*, n=170)

	Share of female vendors (%)	Number of vendors [†]	TOTAL Color Category Diversity [§]	Dark Leafy Green (%)	Green (Other) (%)	Red (%)	Yellow/Orange (%)	Purple/Blue (%)	White/ Brown (%)
Home**	0	1	4.0	100.0	100.0	100.0	0.0	100.0	0.0
Wholesale	12	3	2.3	0.0	0.0	66.7	66.7	0.0	100.0
Supermarket	43	4	4.3	25.0	75.0	100.0	75.0	75.0	75.0
Street Hawker	75	6	1.3	0.0	16.7	33.3	50.0	0.0	33.3
Open Air Market	72	7	2.4	28.6	71.4	85.7	28.6	0.0	28.6
Mobile Vendor	35	14	2.2	28.6	35.7	71.4	14.3	35.7	35.7
Restaurant	62	21	2.4	76.2	33.3	66.7	23.8	23.8	19.0
Roadside Vendor	92	51	3.8	64.7	74.5	74.5	82.4	51.0	31.4
Kiosk/Retail shop	62	63	2.7	22.2	42.9	81.0	52.4	39.7	34.9
Total incl. home vendor		170	2.9	41.8	51.2	75.3	54.1	38.2	33.5
Total excl. home vendor		169	2.9	41.4	50.9	75.1	54.4	37.9	33.7

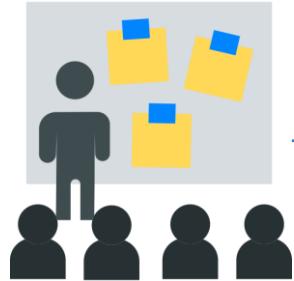
*ProColor Tool: Kennedy et al. (2019); dark leafy green: e.g. spinach, amaranth, Ethiopian kale; green (other): e.g. avocado, broccoli, peas; red: e.g. beetroot, guava, strawberry, tomato; yellow/ orange: e.g. Carrots , Apricots, Pineapple, Pumpkin, Sweet Potatoes, Yellow Maize; purple/ blue: eggplant, plums, grapes, blueberries; white/ brown: garlic, onions, dates, mushrooms;

** vendor who sold food at his/her home; [†] all vendors sell any fruit or vegetable; [§] the number of color categories represented by at least one item (max = 6)

Prevalence above 50% have been highlighted signaling the most offered “colors” by the different vendor types.



Co-creation of the intervention



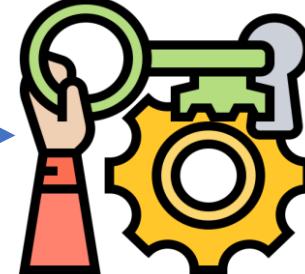
Workshop 1: Basic Nutrition Education, manual 1



Workshop 2: Dissemination of baseline survey



Workshop 3: Perceived Barriers to Dietary Diversification



Workshop 4: Identifying Solutions to the barriers



Workshop 5: Defining solutions into activities



Kick - Off Event

Activity	WHEN	WHO	RESOURCES	COMMENTS
Site Identification	A week after the workshop	Every individual	Space	- Every individual to look for his/her space - Being prodding
Training	1 st week of Nov	Bioversity Save the Mother Nature members of Agroforestry	Training materials Training farm or demonstration place Trainers	- Bioversity should be ready to train - All participants should be present
Fencing	A week after the training	Individual	Panga, Poles, Axe Fencing woods	- Every individual should be committed responsible for her own garden
Ploughing	A week after fencing	Individual	Rake, Sow	- Every members should make sure all the resources are available
Planting	A week after ploughing	Individual	Seeds, Manure, Rape, Sow	- Every individual should plant in her own space
Watering	Immediately after planting	Individual	Watering can/jacket, bucket, pump	- Watering should be done early in the morning - Watering should not exceed 200 liters/hour
Weeding	When weeds start to grow	Individual	Scallop, hoe, saw, bucket	- Weeding should be done early in the morning - It is recommended to use organic weeding
	1 month after sowing	Individual		- Harvesting should be done only when it is ripe

10 Community Action Plans developed in 10 CHUs involving 394 participants, more than two thirds women

- Kitchen gardens alone – 6 CHUs
- Kitchen gardens + VSL – 4 CHUs
- Kitchen gardens +VSL + Poultry rearing – 2 CHUs



Workshop 6: Completion of the Community Action Plans

Wild edible plants

While wild food harvesting is common in the study area, they are considered low value foods by the community.



Preliminary Results

- The adoption rate is satisfactory across all the communities.
- Based on anecdotal evidence from the project monitoring, we expect significant increase in:
 - Increased availability, access to and consumption of nutrient rich vegetables in the community
 - diversified livelihoods and opportunities for income generation and empowerment of women
 - mean dietary diversity scores of young children & women and percentage of children meeting minimum dietary diversity within the intervention communities
 - Improvement in food security and health of the community
 - Improvement on care for women and children
- Other project impacts
 - Greater involvement and interest by the county government
 - Approach adopted by other actors for regular programming.

The screenshot shows a news article from the Alliance Bioversity International and CIAT website. The top navigation bar includes links for English, Alliance, and Menu. Below the header, there are logos for Bioversity International and CIAT. The main content features a photograph of two people in a field with a large crop of leafy greens. The headline reads "How Turkana's communities are cooking up the shift to healthier, more biodiverse diets". The article is dated January 4, 2022. At the bottom, there are categories: Healthy sustainable diets, Home Gardens, Kenya, livelihoods, and nutrition.

<https://alliancebioversityciat.org/stories/turkana-kenya-gardens>

Observations



Kitchen garden intervention –
2021/22



drought in 2022





Busia County

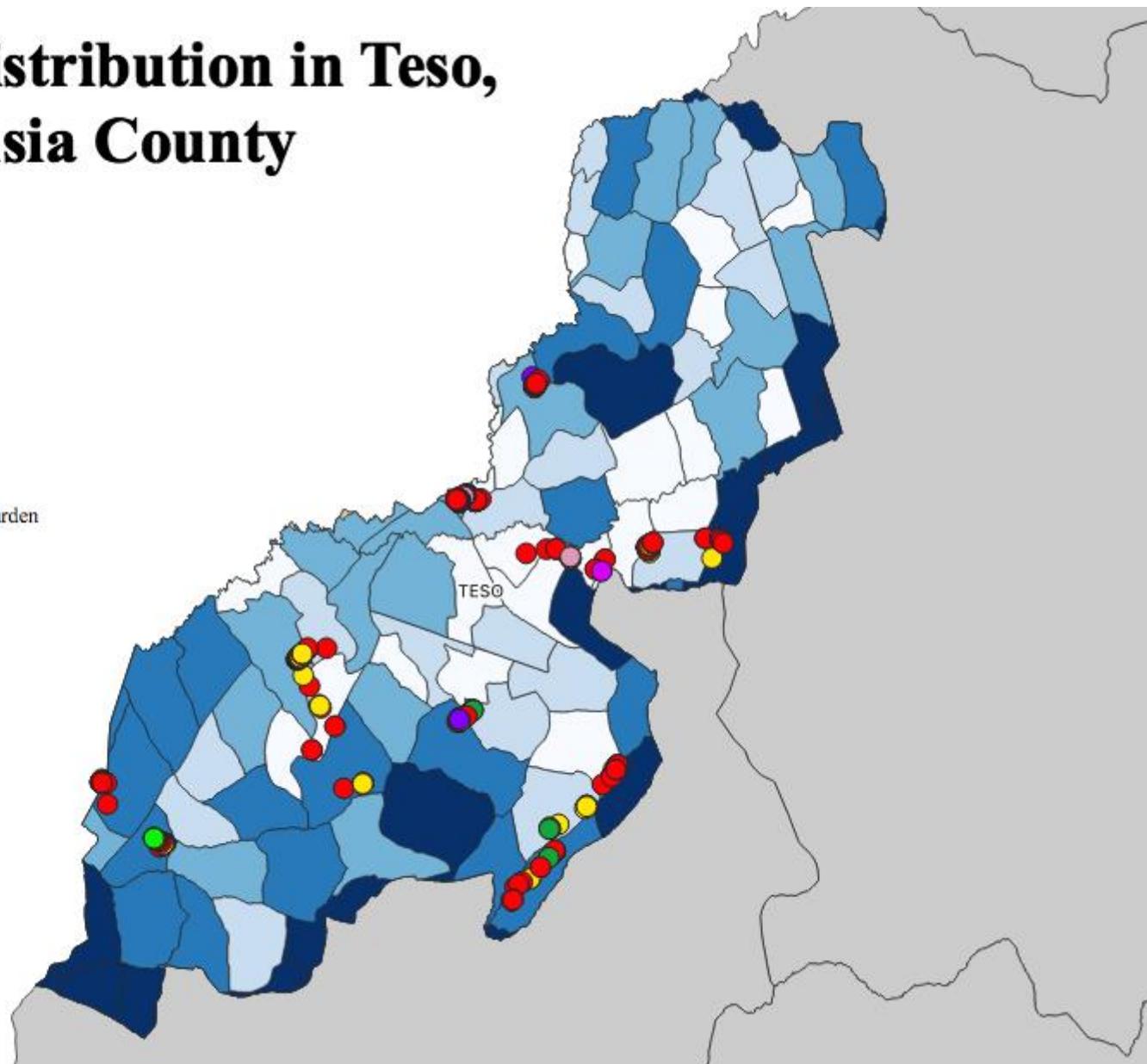
Vendor Distribution in Teso, Busia County

Vendor Types

- Direct from Farm/Kitchen Garden
- Kiosk/Retail shop
- Mobile Vendor
- Open Air Market
- Restaurant
- Roadside Vendor
- Street Hawker
- Supermarket
- Wholesale



0 5 10 km



Vendors selling fruits or vegetables (ProColor Tool*, n=334)

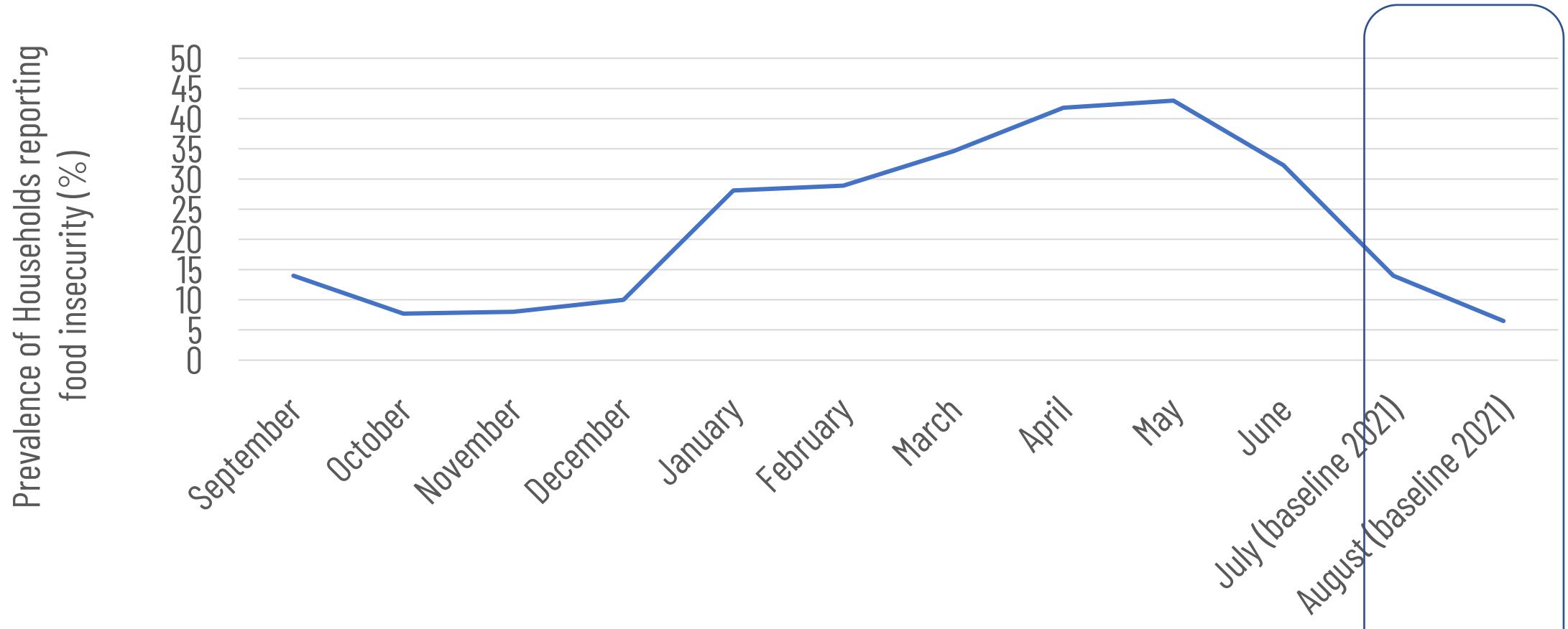
	Number of vendors	Number of vendors, selling any fruits & vegetables [†]	TOTAL Color Category Diversity ^{\$}	Dark Leafy Green (%)	Green (Other) (%)	Red (%)	Yellow/ Orange (%)	Purple/ Blue (%)	White/ Brown (%)
Home**	2	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	25	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Supermarket	8	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Street Hawker	19	19	1.5	5.3	10.5	32.6	21.1	5.3	73.7
Open Air Market	208	125	2.3	41.6	12.8	67.2	22.4	60.8	24.8
Mobile Vendor	19	10	1.6	20.0	20.0	10.0	30.0	20.0	60.0
Restaurant	44	31	1.8	90.3	9.7	32.3	12.9	19.4	16.1
Roadside Vendor	187	115	2.7	44.4	20.0	62.6	41.8	52.2	47.8
Kiosk/Retail shop	199	34	2.6	26.5	14.7	82.4	23.5	82.4	29.4
Total incl. home vendor	711	334	1.4	25.3	9.7	31.9	16.9	26.7	28.0
Total excl. home, wholesaler and supermarket	676	334	2.1	32.6	12.5	41.0	21.7	34.3	36.0

*ProColor Tool: Kennedy et al. (2019); dark leafy green: e.g. spinach, amaranth, Ethiopian kale; green (other): e.g. avocado, broccoli, peas; red: e.g. beetroot, guava, strawberry, tomato; yellow/ orange: e.g. Carrots , Apricots, Pineapple, Pumpkin, Sweet Potatoes, Yellow Maize; purple/ blue: eggplant, plums, grapes, blueberries; white/ brown: garlic, onions, dates, mushrooms;

** vendor who sold food at his/her home; [†] all vendors sell any fruit or vegetable; ^{\$} the number of color categories represented by at least one item (max = 6)

Prevalence above 50% have been highlighted signaling the most offered "colors" by the different vendor types.

Hunger periods - 12 months prior to baseline

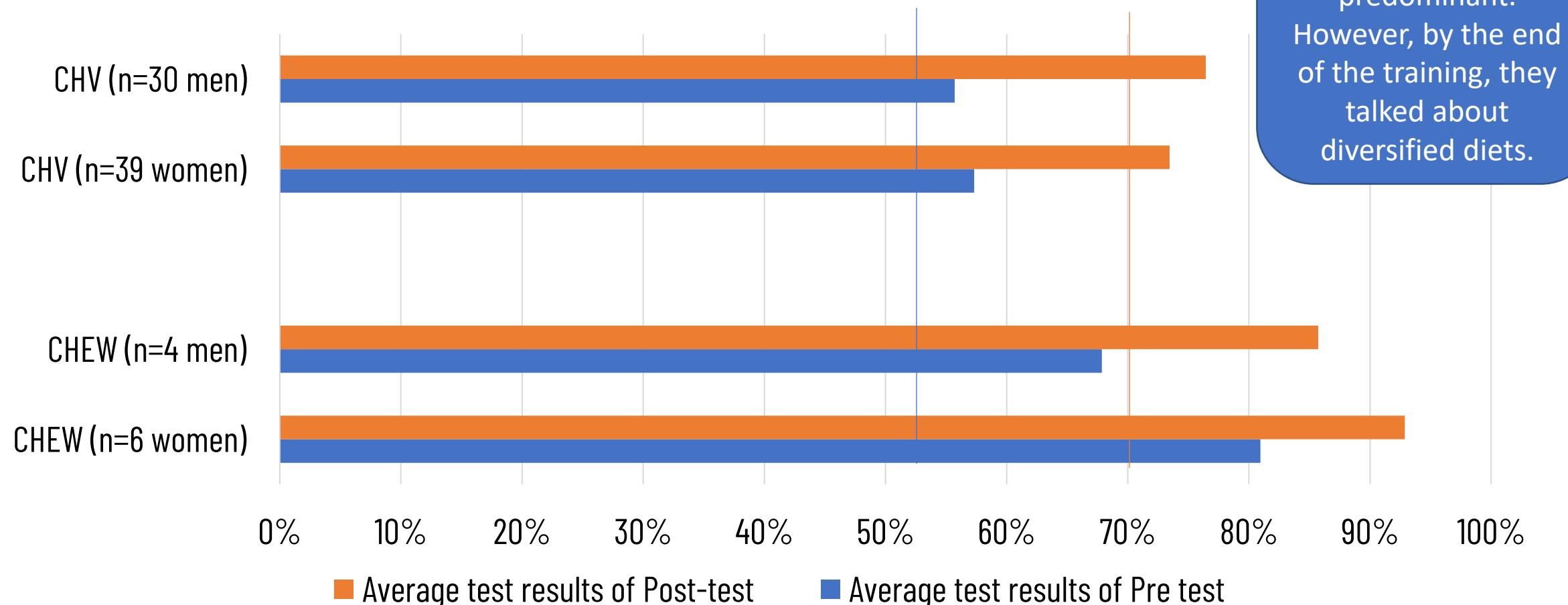


Nutrition Education for Community Health Volunteers

By the end of the training, participants will be able to—

1. Identify various forms of malnutrition (underweight, wasting, stunting, overweight and obesity)
2. Describe what makes a healthy diverse diet for women, children, and other family members.
3. Appreciate the role of home food production in ensuring consumption of diverse diets.
4. Appreciate the potential role of wild and underutilized plant species in increasing the diversity of diets to improve nutrition.
5. Gain practical skills in offering nutrition education, counselling, and cooking demonstrations in the community.
6. Understand their role in promoting good nutrition practices in the communities where they come from.

Pre- and post-test results (CHWs training Busia 2021)



At the beginning of the training, the term “balanced diet” was more predominant. However, by the end of the training, they talked about diversified diets.

CHV: Community Health Volunteer, CHEW: Community Health Extension Worker

Practical Experience and tastings



Porridge enriched with orange juice



Some participants were astonished by the fact that porridge can as well be enriched using cooking oil.

[...] **they all** agreed that the enriched porridge samples would be accepted by children due to their improved taste.

Observer, women, 30 years

Next steps to take towards transformation

- Transformation = change the unwritten rules

All activities from preparation of food up to serving is my wife's responsibility. (Man, 44 years, wife is the beneficiary)

This kitchen belongs to my wife. I cannot go dictate her on what she should prepare for the family.
(man, 60 years, wife is the beneficiary)

The mother decides for children under the age of 5 because she knows what the child likes and the timing when they will eat well, the man has no time to be involved.

Man, husband of a beneficiary

- Next step: Innovative approach to engaging men in improving the nutrition status of the most vulnerable (mothers and children) in a sustainable way.

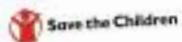
Gender sensitive nutrition education.

Nutrition education manual



Participatory Community Nutrition Education

Training Manual for Community Health Workers



Training Structure

The Facilitator Guide includes 7 sessions covering 4 days:

Day (9am-4pm)	Morning Session	Afternoon Session
1	1. Introduction	2. Nutrition throughout the life cycle
2	3. Dietary diversity	4. Food sources
3	5. Cooking workshop	
4	6. Linking agriculture and nutrition	7. Role of CHVs in nutrition education and Graduation

Note: The tea and lunch breaks should aim at offering a diverse diet covering different food groups. Mashing fruits and enriched porridges may be part of it.

Details of each session are described in the following sections and include:

- Learning objectives
- List of materials needed (training aids and handouts)
- Advance preparation (presented in the actual session but should have be done prior)
- Time allotted
- Suggested activities and methodologies, based on each learning objective with instructions for the facilitator(s)
- Key information with explanation of content.

The manual is for facilitators to use as guidance when they prepare and execute the training; it is not intended to be given to participants.

The participatory approach

- The integrated participatory community-based approach is a research in development study approach.
- Throughout the research process there is partnership between the different actors involved including the community members to co-create sustainable interventions.
- The collaborative process serves to empower communities, strengthen their problem-solving capacity, and ensure the contextual specificity of the interventions thereby promoting co-learning.
- Working with local communities, NGOs and the county government to co-create interventions with long-term impact on the diets, nutrition, incomes and general livelihoods of the communities is required.

Availability and sustainable harvesting of wild edible plants in Turkana County, Kenya

Wyclife Agumba Oluoch^{1,3*}, Cory W. Whitney^{1,2}, Céline Termote^{4}, Hannes Gaisberger^{5}, João de Deus Vidal^{3}, Tobias Fremout^{5}, Christian Borgemeister^{1}, Christine B. Schmitt^{1,3}

¹Center for Development Research (ZEF), University of Bonn, Genscherallee 3, 53113 Bonn, Germany

²Department of Horticultural Sciences, University of Bonn, Auf dem Hügel 6, 53121 Bonn, Germany

³Section of Geography, University of Passau, Innstrasse 40, 94032 Passau, Germany

⁴Alliance of Bioversity International and International Center for Tropical Agriculture, Nairobi, Kenya

⁵Alliance of Bioversity International and International Center for Tropical Agriculture, Rome, Italy





Education and Training for Sustainable Agriculture and Nutrition in East Africa

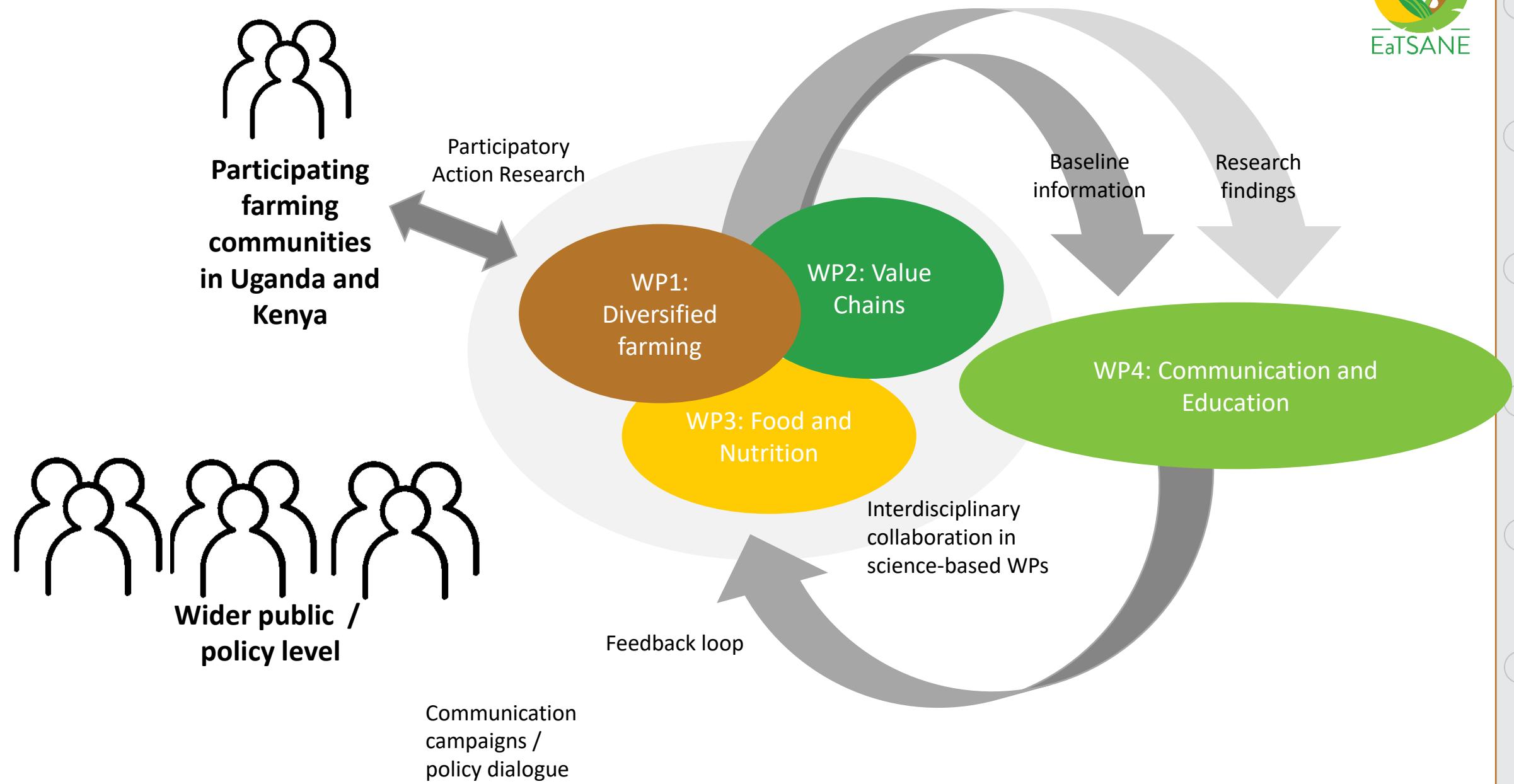
Nutrition Team (WP3):

Irmgard Jordan, Daisy Alum, Jill Ferry, Maria Gracia Glas,
Annet Itaru, Margaret Kabahenda, Paulina Kossmann,
Eleonore C. Kretz, Christine Lambert, Lydia M. Waswa

Three more teams:

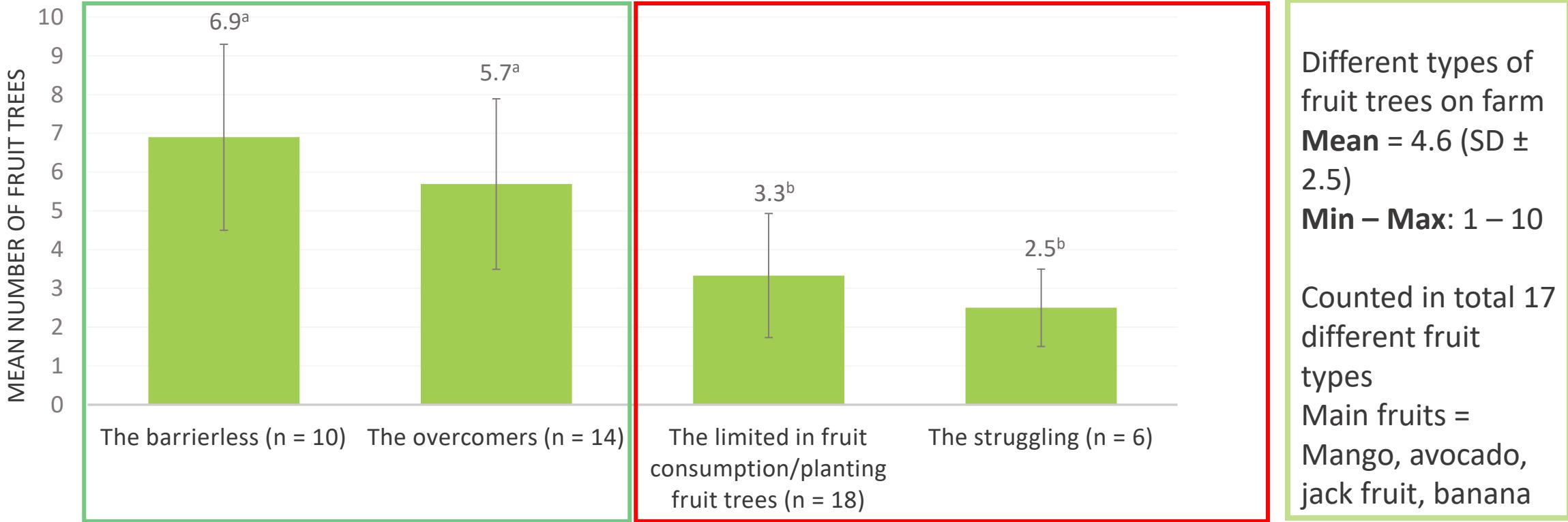
crop production - diversified farming (WP1),
value chain (WP2) and
communication and education (WP4)





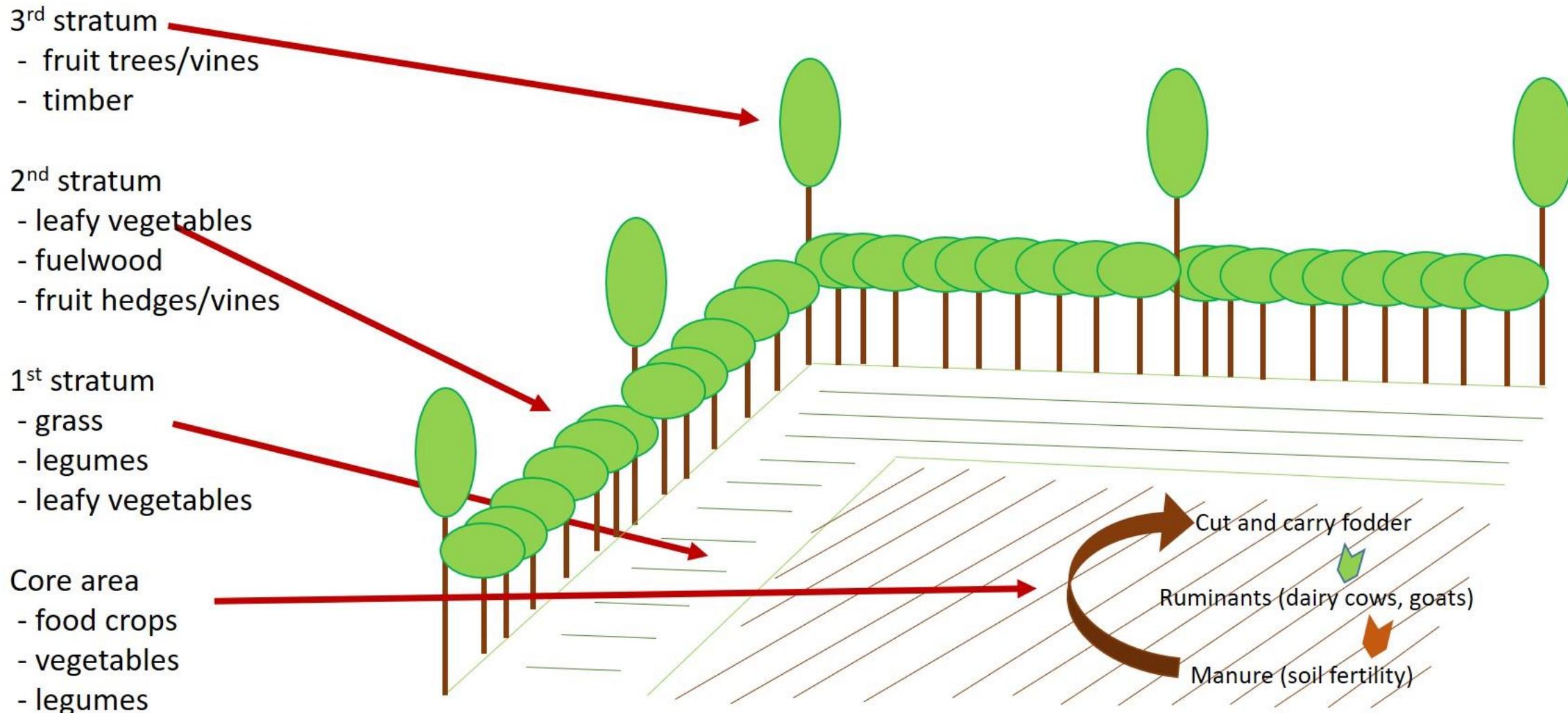
Fruit trees in the homestead important determinant for behaviour change

Mean numbers of fruit trees on farm per cluster group (Teso South, Kenya)



Three Strata Food System design (adapted from Nitis et al. 1993)

Based on the idea of Nitis et al.: Three strata forage system (TSFS)





Thanks!

Resources (if not mentioned on the slide itself)

- FAO (2018) Sustainable food systems: Concept and framework [Internet]. Rome, Italy: Food and Agriculture Organization of the United Nations; 2018 p. 8. Available from: <https://www.fao.org/3/ca2079en/CA2079EN.pdf>
- UNICEF, GAIN. Food Systems for Children and Adolescents [Internet]. UNICEF; 2019 [cited 2023 Jul 12]. Available from: <https://www.gainhealth.org/sites/default/files/publications/documents/convening-paper-series-3-food-systems-for-children-and-adolescents.pdf>
- A4NH. Food systems profile - Vietnam - food systems for healthy diets - A4NH [Internet]. Washington DC, USA; Hanoi, Vietnam; 2021 Apr [cited 2022 May 23] p. 20. Available from: https://cgspace.cgiar.org/bitstream/handle/10568/113417/TransectProfile_6Apr2021.pdf?sequence=1&isAllowed=y
- <https://www.wri.org/resources/charts-graphs/people-eating-more-protein-wealthy-regions>
- OECD (2019) Meat consumption (indicator). doi: 10.1787/fa290fd0-en
- https://www.who.int/nutrition/topics/3_foodconsumption/en/index4.html
- https://biooekonomierat.de/fileadmin/Publikationen/berichte/Hintergrundpapier_zur_Proteinproblematik_final.pdf
- Oxford Martin School, Oxford University (2019) Meat: the Future series. Alternative Proteins. White Paper, prepared for the World Economic Forum's Meat: the Future dialogue series. http://www3.weforum.org/docs/WEF_White_Paper_Alternative_Proteins.pdf
- Beach et al., Lancet Planet Health 2019; 3:e307-17
- Henchion et al. (2017) <http://dx.doi.org/10.3390/foods6070053>
- Bernstein AD (2002) *Food systems for improved human nutrition: linking agriculture, nutrition, and productivity*, P. K. Kataki & S. C. Babu, eds. New York: Food Products Press.
- FAO (2013) <http://www.fao.org/getinvolved/WorldFoodDay/en/>
- Garnett T (2013) Food sustainability: problems, perspectives and solutions. *The Proceedings of the Nutrition Society*, 72(1), pp.29–39.
- Garnett T (2011) Where are the best opportunities for reducing greenhouse gas emissions in the food system (including the food chain)? *Food Policy*, 36, pp.S23–S32.
- Graham RD, Welch RM, Saunders DA, et al. (2007) Nutritious Subsistence Food Systems. In *Advances in Agronomy*. Elsevier, pp. p1-74. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0065211304920019> [Accessed November 21, 2013].
- HLPE (2017) Nutrition and food systems. A report by the High Level Panel of Experts to CFS. September 2017 <http://www.fao.org/cfs/cfs-hlpe/en/>
- Lang T, Heasman M. (2015) Food Wars: The Global Battle for Mouths, Minds and Markets. Routledge.
- Monteiro C (2010) The big issue is ultra-processing. *World Nutrition*, (November 1,6), pp.237–259.