

EXPERT WORKSHOP

Operationalizing sustainable healthy diets in the context of climate change;

Looking at Animal Source Foods as part of sustainable healthy diets in LMICs.

#climate&nutrition #ASF&LMIC #NWGN #NFP



WELCOME



ELLEN MANGNUS

Moderator

AGENDA

PART I - INFORMATIVE

TIME	ITEM	INFO / SPEAKER
12.00	Registration & Networking	Join us for a nice cup of soup & sandwiches and connect with fellow participants
12.30	Official Welcome	Moderator Ellen Mangnus
12.35	Opening Remarks	Arine Valstar – NWGN Co Chair & Ivo Demmers NFP Executive Director
12.45	Setting the Scene	René van Hell - Ministry of Foreign Affairs – Director Inclusive Green Growth Department
13.00	Keynote Speech	Saskia Osendarp – Executive Director Micronutrient Forum
13.15	Climate & Nutrition (I-CAN)	Lawrence Haddad – GAIN Executive Director & World Food Prize Laureate
13.30	Q&A with audience	
13.45	Sustainable production aspects of animal sourced food	Marcel van Nijnatten - Ministry of Agriculture, Nature and Food Quality Coordinator Food Security Unit
13.55	Consumer Behaviour & Influence	Dhanush Dinesh – Founder and Director of Clim-Eat
14.05	Sustainable Livestock Production	Jan van der Lee – Senior Researcher Sustainable Livestock Systems, Team lead Livestock International, Wageningen University & Research
14.15	Q&A with audience	
14.25	Closing part 1 & Breakout Instructions	Moderator Ellen Mangnus
14.30	Break	

AGENDA

PART II - INTERACTIVE

TIME	ITEM	INFO / SPEAKER
14.50	Group work and Table Discussions	Through these interactive sessions, all participants can exchange ideas, learn from each other's experiences, and contribute to meaningful outcomes. Each table will have a facilitator.
15.30	Break	
15.50	Group feedback and panel discussion 1	Focus on discussions concerning sustainable livestock production
16.15	Group feedback and panel discussion 2	Focus on discussions of the other topics
16.40	Closing of panel discussion	Moderator Ellen Mangnus
16.45	Event closing	Arine Valstar – NWGN Co Chair & Ivo Demmers NFP Executive Director

Drinks and Networking till 18.00

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OPENING REMARKS



Arine Valstar

NWGN Co-chair



Ivo Demmers

NFP Executive Director

SETTING THE SCENE



René van Hell

Director Inclusive Green Growth at
Ministry of Foreign Affairs of the Netherlands

KEYNOTE SPEECH



Saskia Osendarp

Micronutrient Forum Executive Director



Micronutrient FORUM



Climate change, healthy sustainable diets and nutrition: -is there a role for Animal Source Foods?-

March 14, 2024

Saskia Osendarp, PhD

Executive Director, Micronutrient Forum

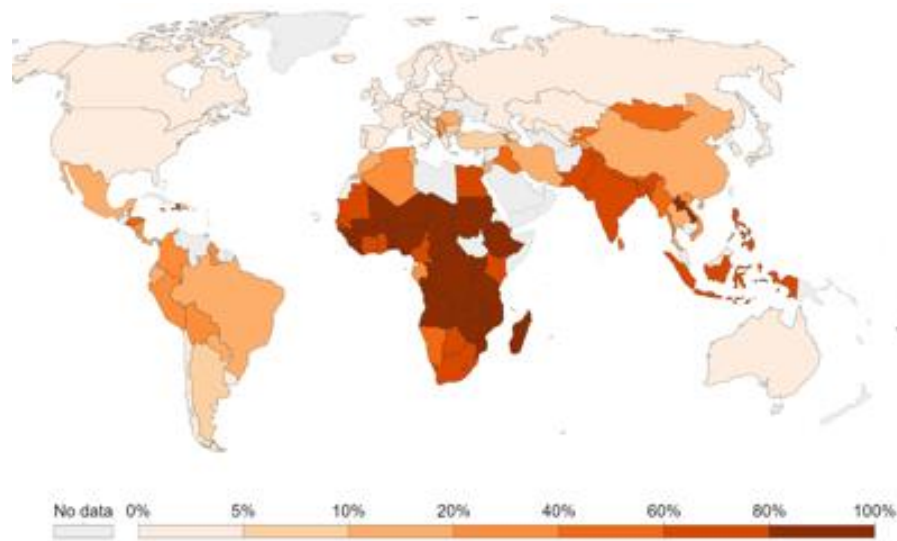


Outline

- 1. The climate change and nutrition crises** are intertwined with dire consequences for future health, development and social capital.
- 2. Pathways are complex, bi-directional and highly context specific.**
- 3. The role of Animal Source Foods** in the climate-nutrition context is complex.
- 4. Holistic and context specific approaches** are needed across agro-food, water, health and social protection systems.

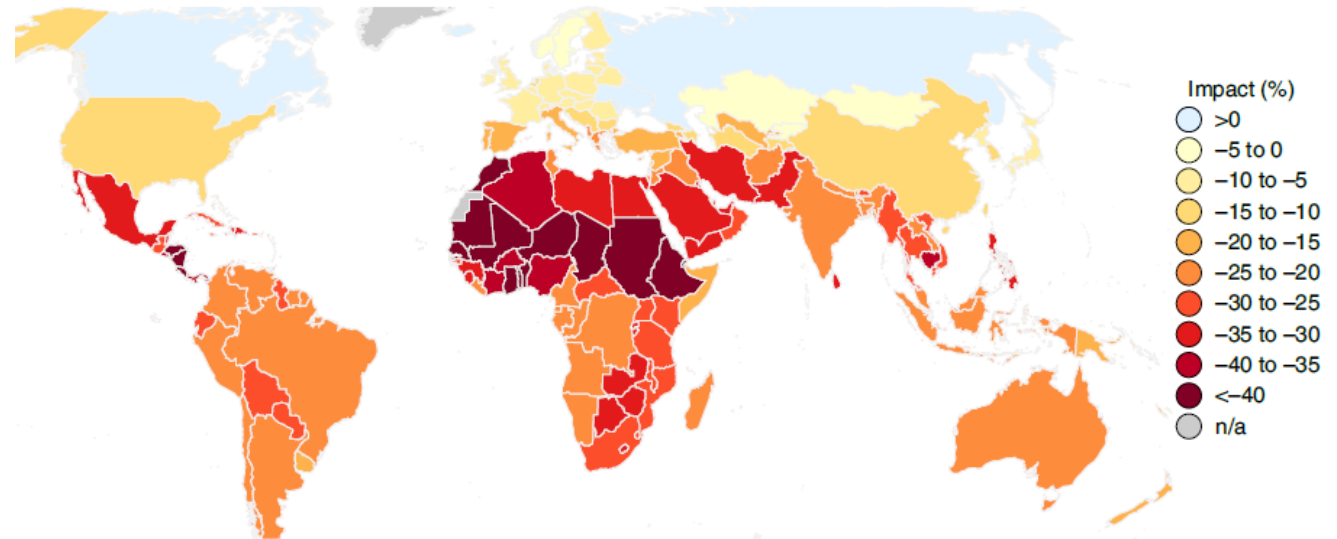
Climate change and access to healthy diets

Share of population that cannot afford a healthy diet today



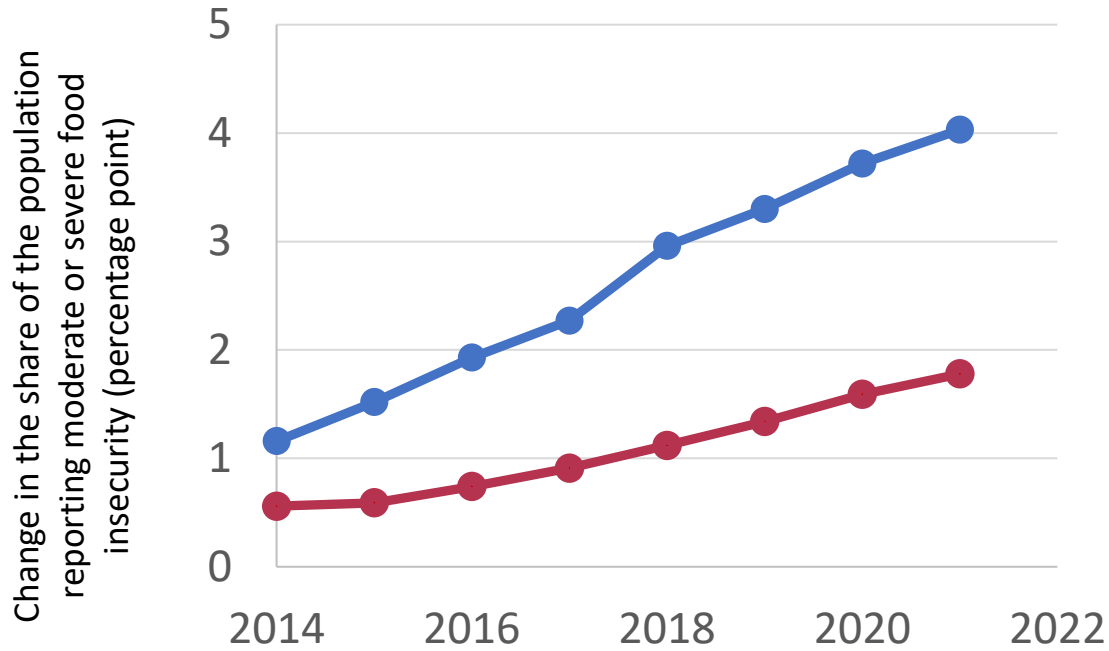
An estimated three billion people suffer from micronutrient deficiencies

Effects of climate change on agricultural productivity



Productivity declines mean lower food availability, higher prices, lower incomes for farm families

Extreme heat and drought increase food insecurity



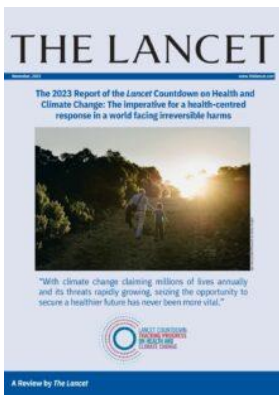
127 million

Compared with 1981–2010, the higher frequency of heatwave days and drought months was associated with **127 million more people** reporting moderate or severe experience of food insecurity in 2021.

Even if temperature rise is limited to 2°C, **525 million** additional people could be experiencing moderate or severe food insecurity linked to heatwaves by mid-century

● Heatwaves ● Droughts

Percentage point change in the share of people reporting moderate or severe food insecurity due to heatwave drought months

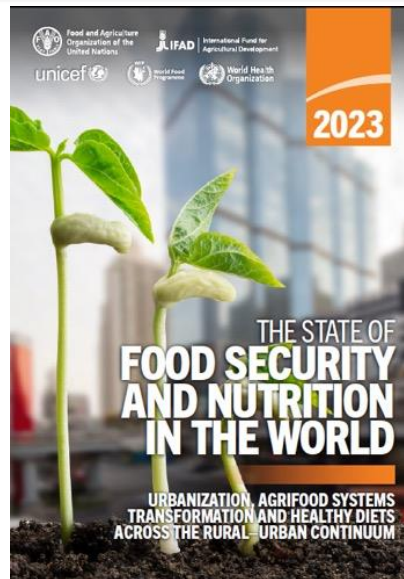


Leading to soaring hunger and malnutrition figures

122 million more people pushed into hunger since 2019 due to multiple crises, reveals UN report

Latest research shows around 735 million people currently facing hunger, compared to 613 million in 2019

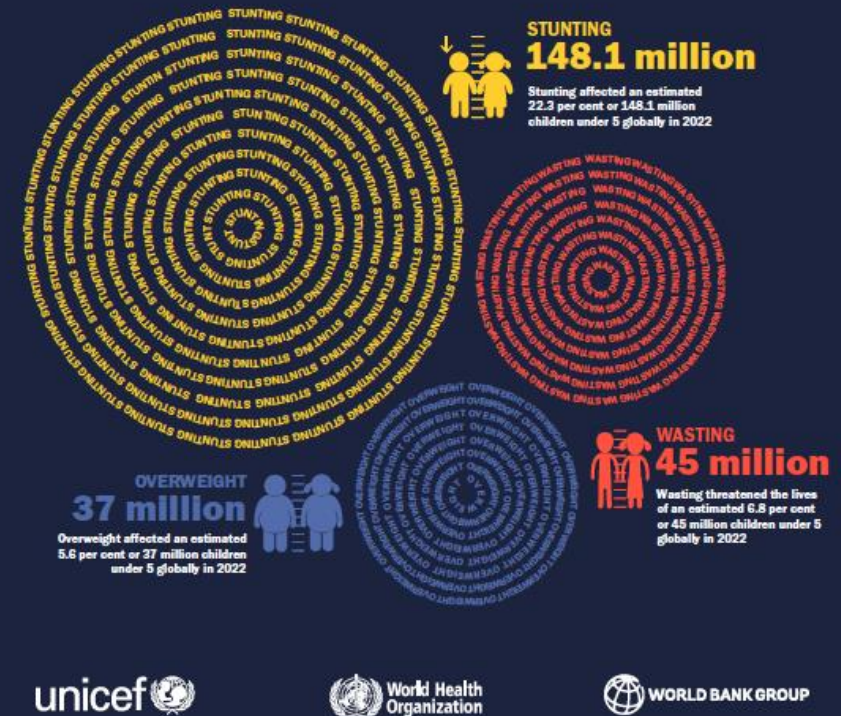
12 July 2023 | Joint News Release | Rome/New York/Geneva | Reading time: 6 min (1741 words)



Levels and trends in child malnutrition

UNICEF / WHO / World Bank Group
Joint Child Malnutrition Estimates

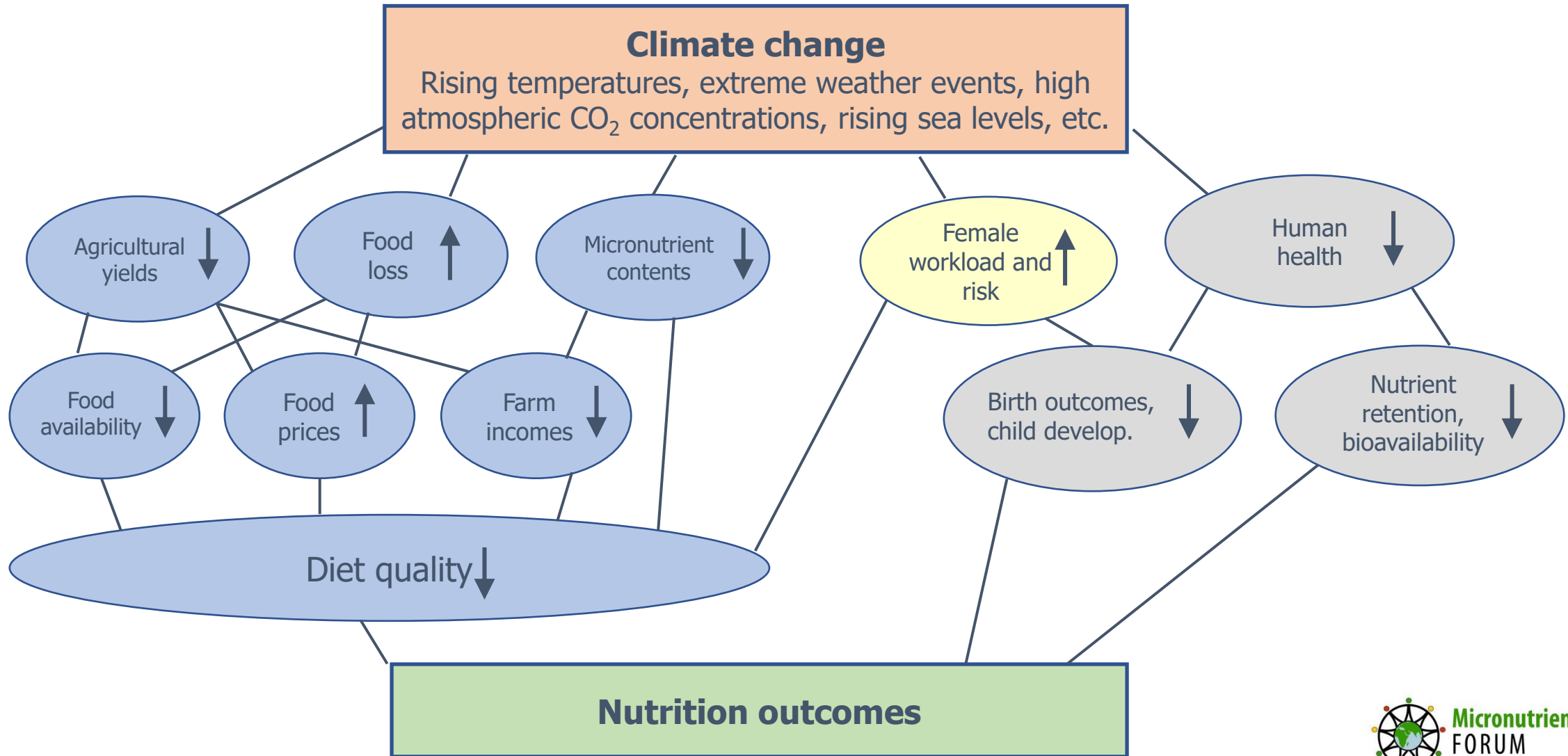
Key findings of the 2023 edition



Pathways



Climate change affects nutrition outcomes



Climate change impacts on nutrition



Climate change—higher temperatures, atmospheric carbon dioxide, and ground-level ozone, among other factors—**will reduce the nutrient value of many nutritious crops** as well as staple crops and animal source foods.



An increasing number of **extreme weather events**—including droughts, floods, heat waves, and storms—**are reducing yields and pushing down food production.**



Climate change is decreasing the number and diversity of pollinators, which are essential for production of nutritious foods like fruits, vegetables, nuts, and seeds.



Rising sea levels will threaten agricultural land coastal zone, and reduce rice production in the low-elevation



Ocean and freshwater warming, ocean hypoxia, destruction of coral reefs, and loss of mangrove forests are reducing ocean and inland fisheries catch.

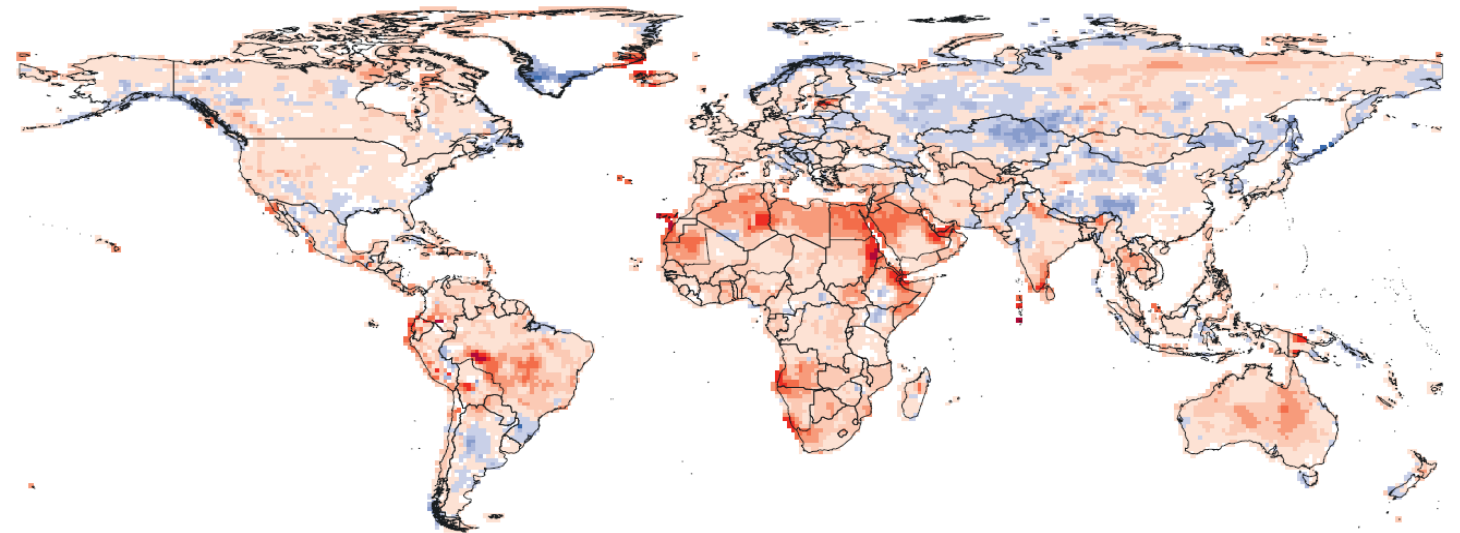
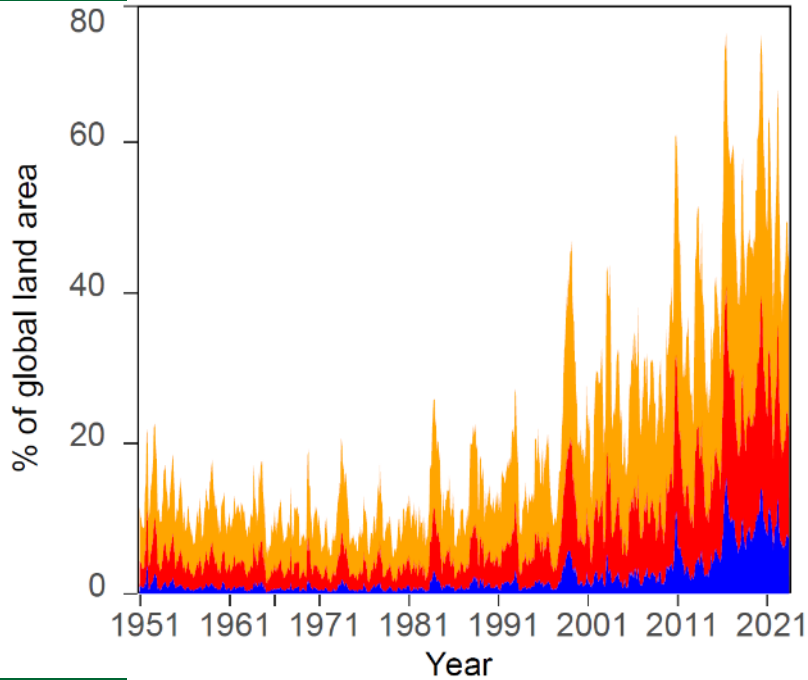


Climate change-induced rises in the prevalence of waterborne diseases and other health conditions will **increase the micronutrient needs of individuals.**

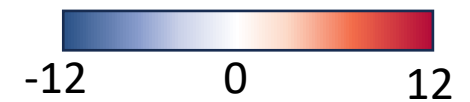
Extreme weather events threatening food production

+29%

29% more of the global land area was affected by extreme drought each year in 2013–22 than in 1951–60



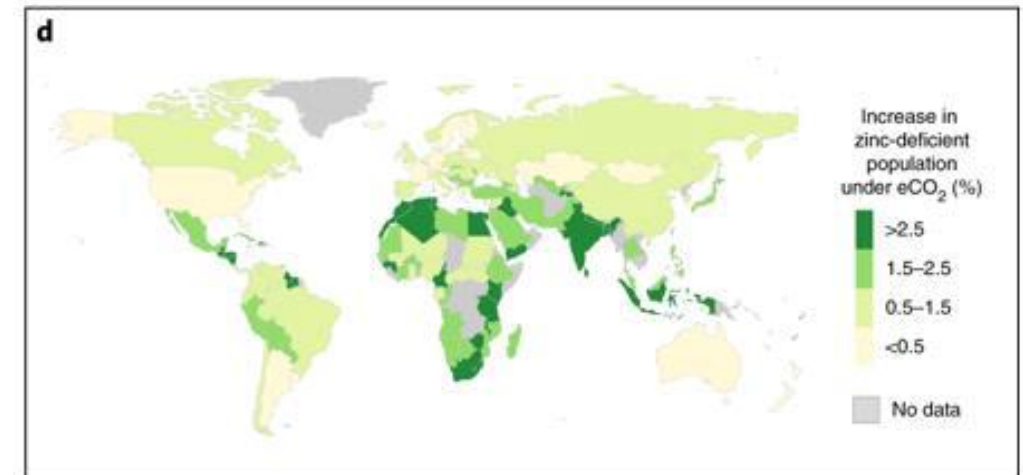
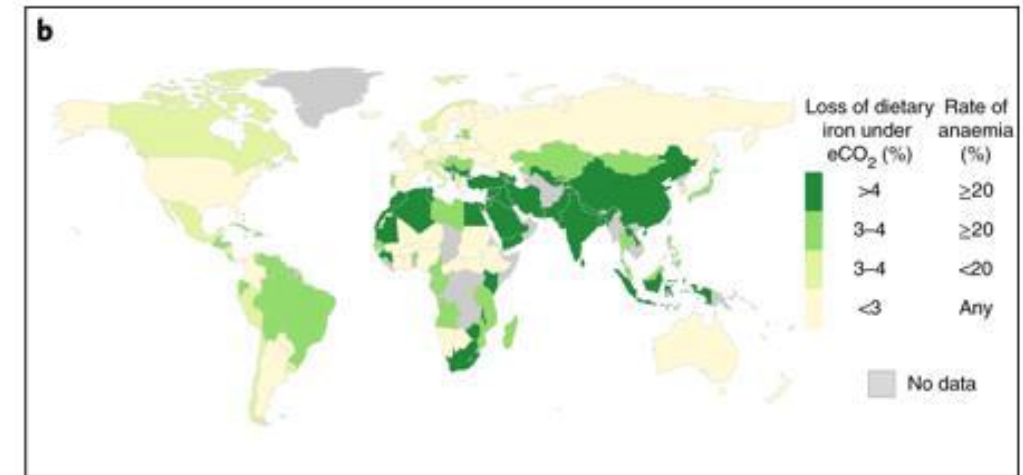
Change in months in extreme drought 1951-1960 to 2013-2022



Negative impact of CO₂ emissions on nutritional quality of food crops

Rising CO₂ levels will likely cause plants to lose nutritional value

- Under rising CO₂ levels, many food crops have iron and zinc contents that are reduced by 3-17% compared with current conditions
- Elevated CO₂ could cause an additional 175 million people to be zinc deficient
- 1.4 billion women of childbearing age and children under 5 live in countries with greater than 20% of anemia prevalence and would lose >4% of dietary iron

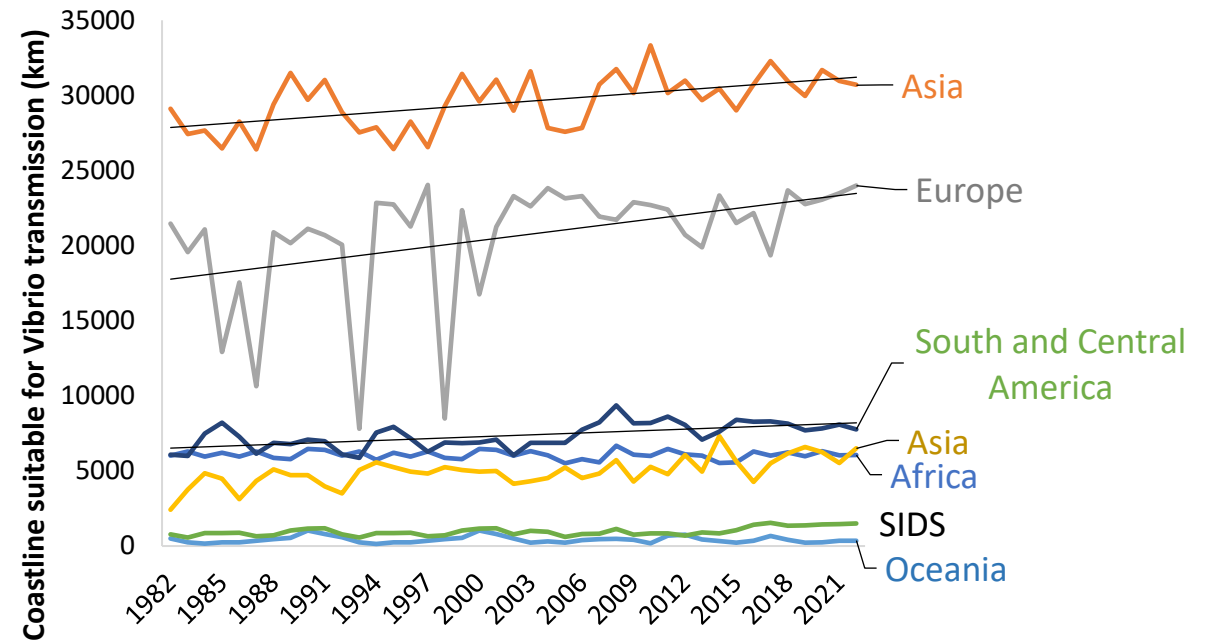


Climate change increases the risk of infectious diseases

Climate change is altering the environmental distribution of food, water, air, and vector-borne infectious diseases – many of which threaten nutrient utilization.

In 2022, a record **10%** of the global coastline showed conditions suitable for vibrio transmission (**12.7% more than in 1982–2010**), putting 1.4 billion people at risk, and leading to a record 610,000 estimated vibriosis cases.

↑12.7%

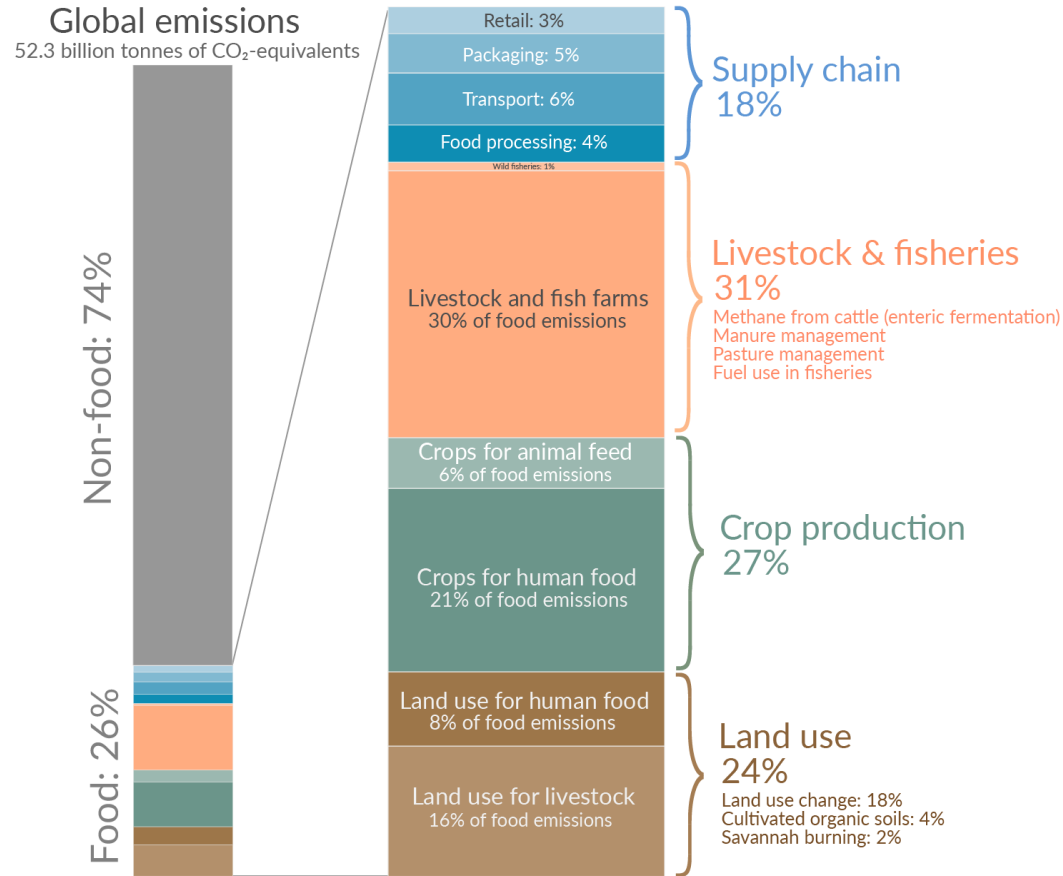


Length of coastline suitable for Vibrio transmission

Food production is responsible for one-quarter of the world's greenhouse gas emissions

Global greenhouse gas emissions from food production

Our World in Data



Data source: Joseph Poore & Thomas Nemecek (2018). Reducing food's environmental impacts through producers and consumers. Published in *Science*.

Licensed under CC-BY by the author Hannah Ritchie (Nov 2022).

Diet and Health Co-Benefits

57%

From 2000 to 2020, agricultural emissions increased by 22%. In 2020, **57%** of agricultural emissions came from red meat and dairy production.

12.2 million

In 2020, **12.2 million deaths** were attributable to dietary risks that could be reduced through balanced, low-emission diets.



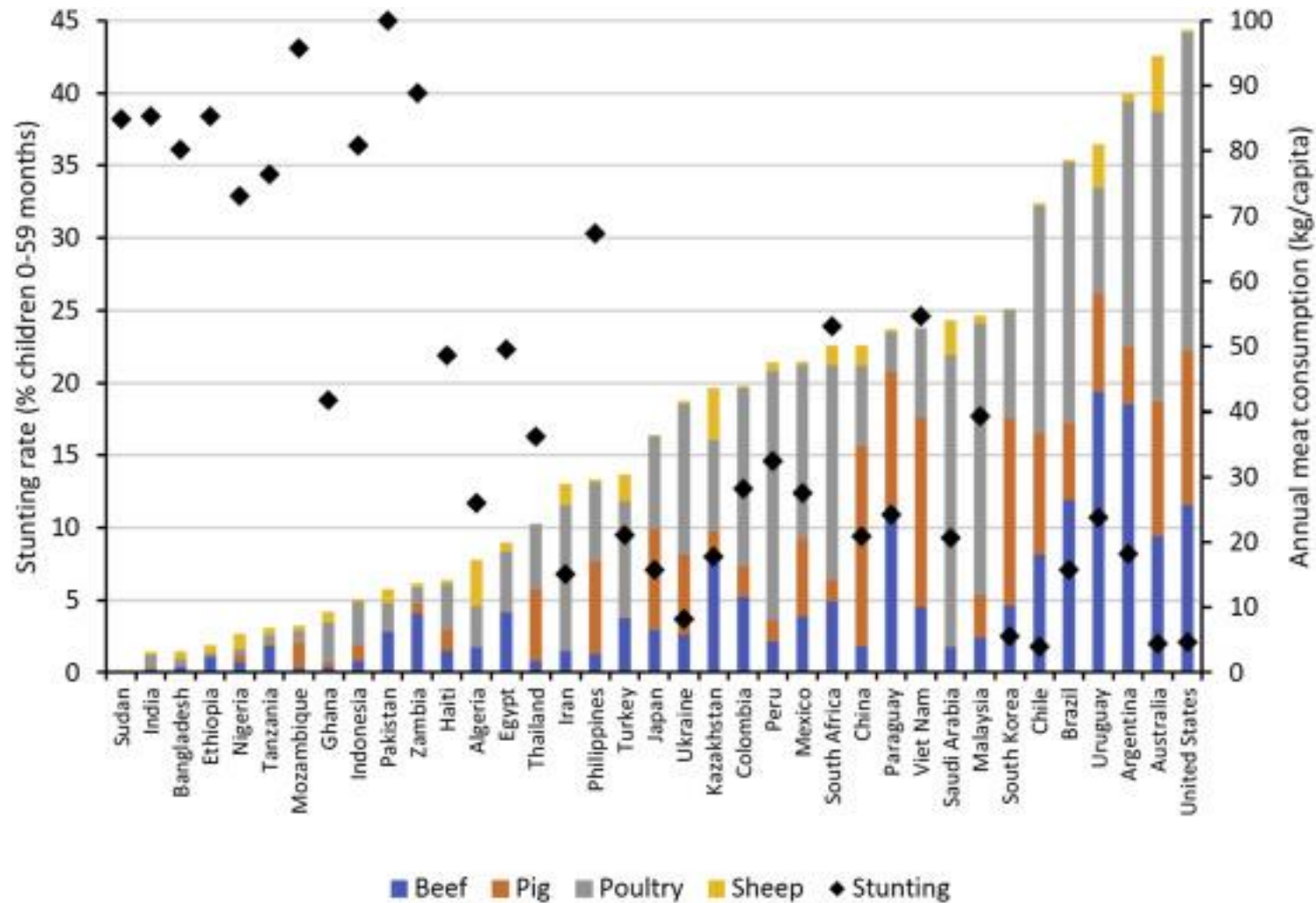
Deaths attributable to carbon-intensive diets

BUT.....CONTEXT MATTERS

Role of Animal Source Foods

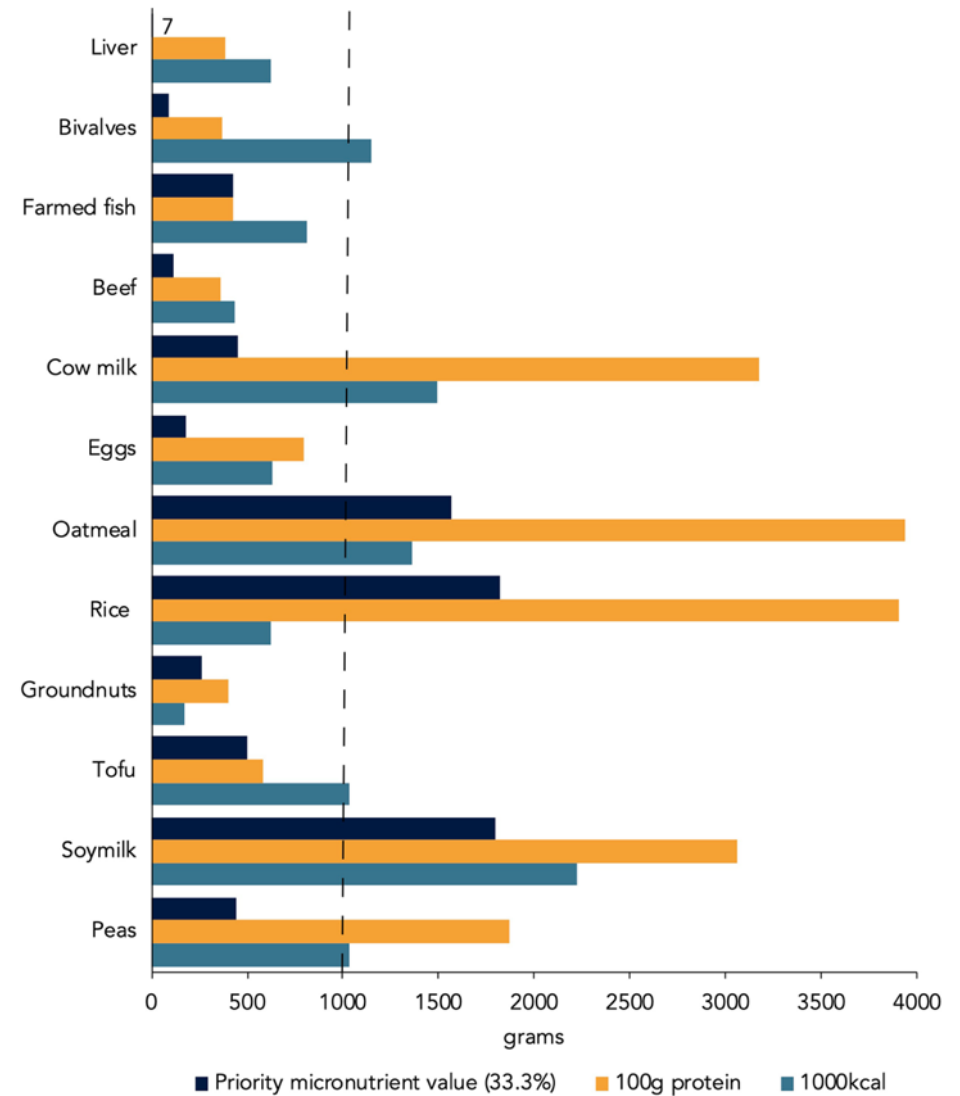


Animal Source Foods and malnutrition: perspective matters



Animal source foods are a good source of protein and micronutrients

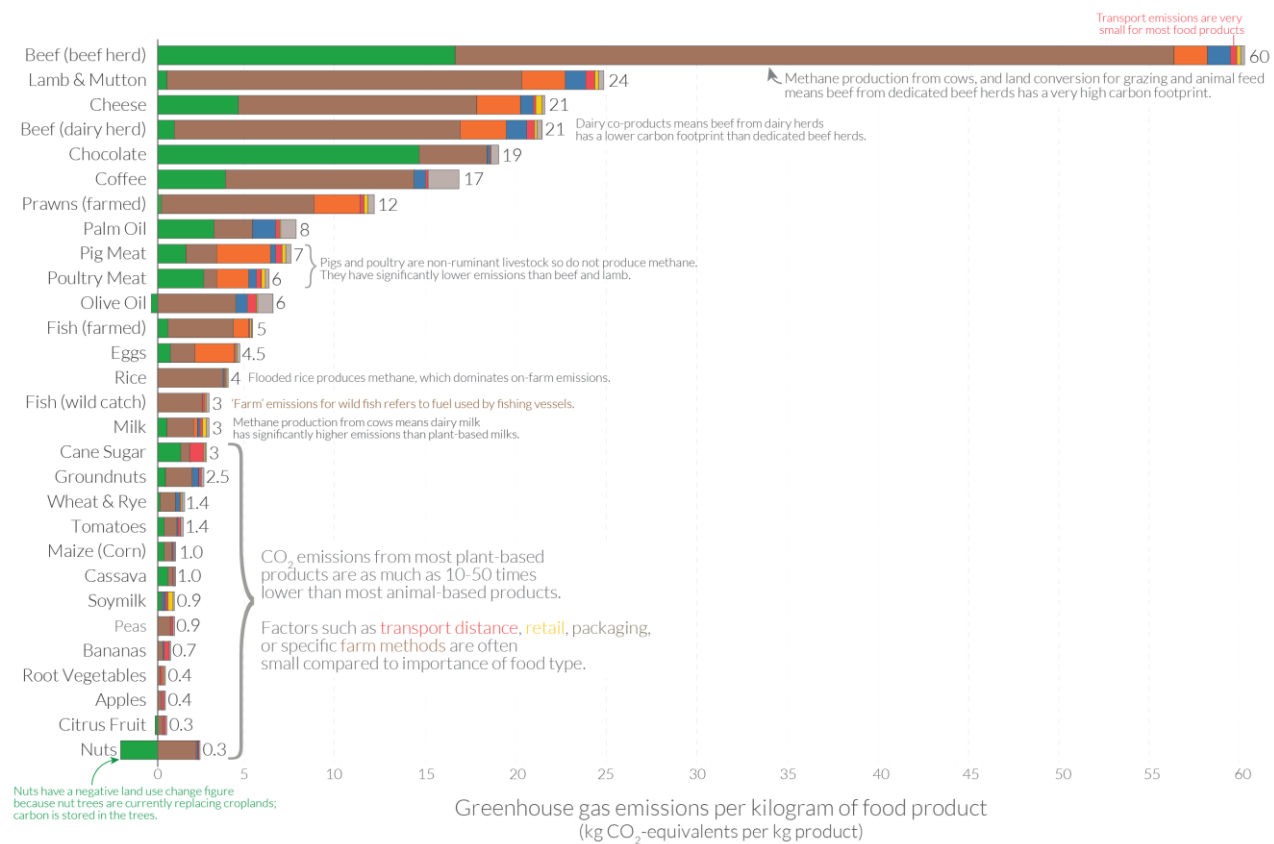
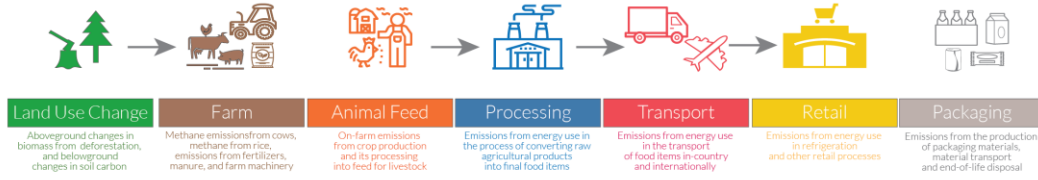
Portion sizes required to meet micronutrient needs, protein needs and energy needs



Overall, animal-based foods tend to have a higher footprint than plant-based

Food: greenhouse gas emissions across the supply chain

Our World in Data



Note: Greenhouse gas emissions are given as global average values based on data across 38,700 commercially viable farms in 119 countries. Data source: Poore and Nemecek (2018), Reducing food's environmental impacts through producers and consumers. *Science*. Images sourced from the Noun Project. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie.

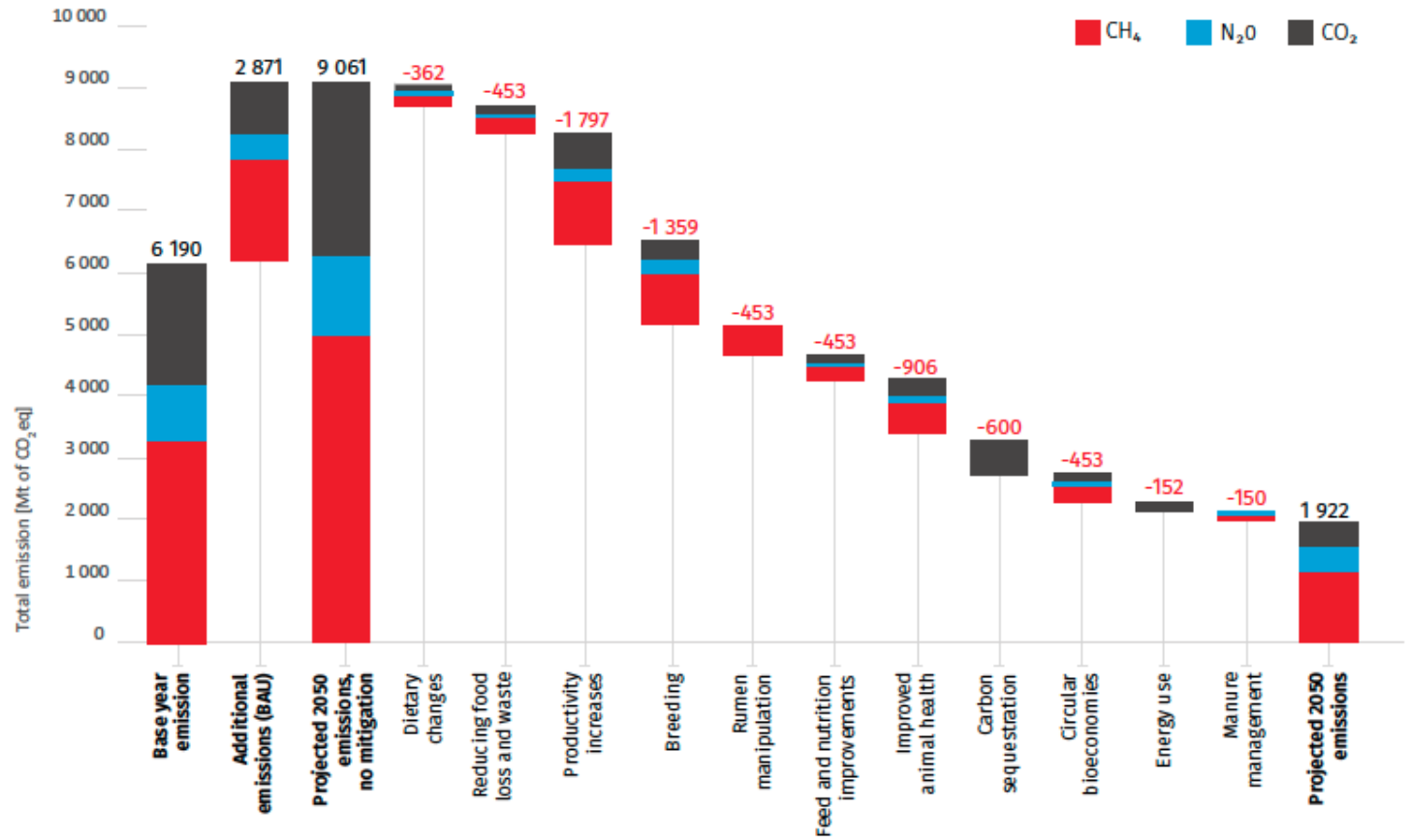
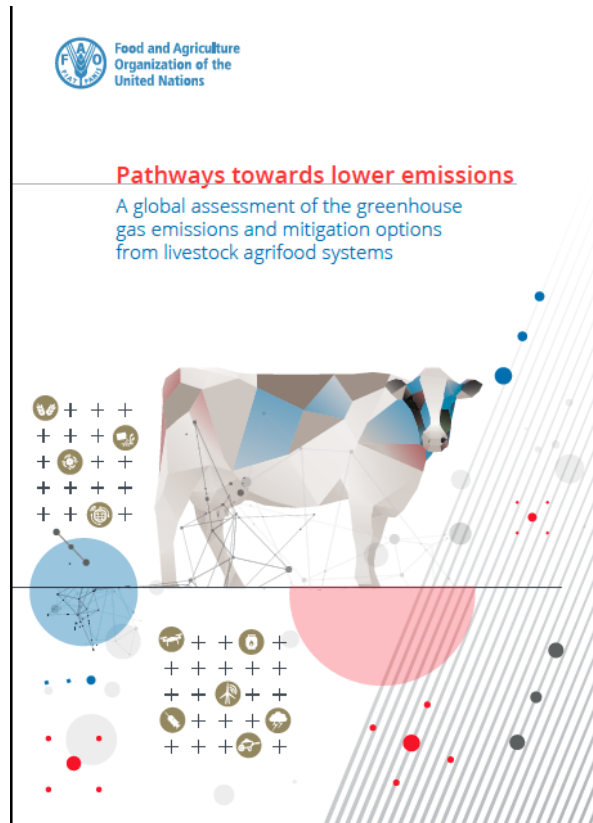


Solutions



Sustainable live stock production

Projected emissions from livestock systems from baseline to 2050 for different mitigation measures.



Improve adaptation strategies in food production

- **Particular relevance for smallholders:**
- Hardier crops (role of new genomic breeding techniques)
- Improved agronomy (agroforestry, cropping diversity, conservation agriculture, etc.)
- Other adapted technologies
- Improved access to rural services (information, credit, insurance, etc.)



Alternative sources of protein and micronutrients



Nutrition Research Reviews (2018), **31**, 248–255

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doi:10.1017/S0954422418000094

Insects as sources of iron and zinc in human nutrition

Martin N. Mwangi^{1†}, Dennis G. A. B. Oonincx^{2†}, Tim Stouten², Margot Veenenbos², Alida Melse-Boonstra¹, Marcel Dicke² and Joop J. A. van Loon^{2*}

¹Division of Human Nutrition, Wageningen University and Research, PO Box 17, 6700 AA Wageningen, The Netherlands

²Laboratory of Entomology, Wageningen University and Research, PO Box 16, 6700 AA Wageningen, The Netherlands

- The levels of protein, iron and zinc in eleven edible insects species are similar or higher than in other animal food sources (per 100 g product)
- Bioavailability of nutrients from insects varies
- Promising but needs more evidence

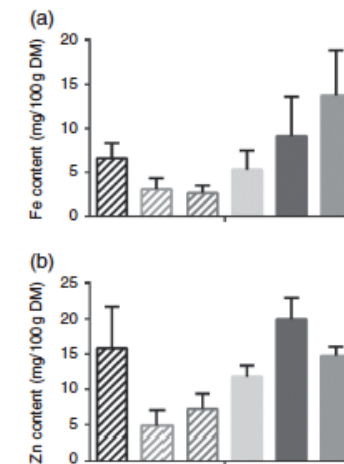
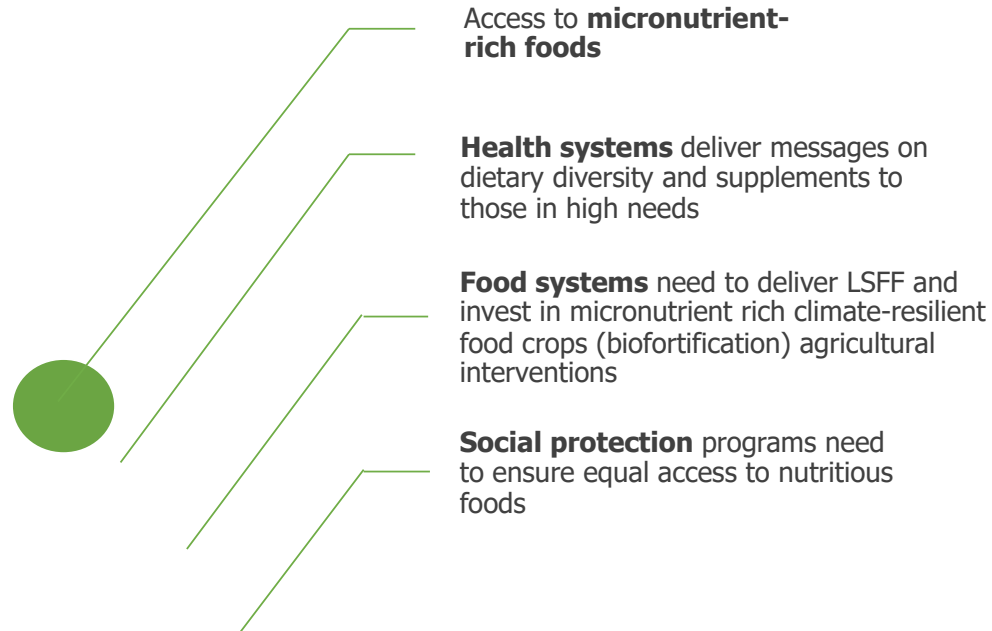


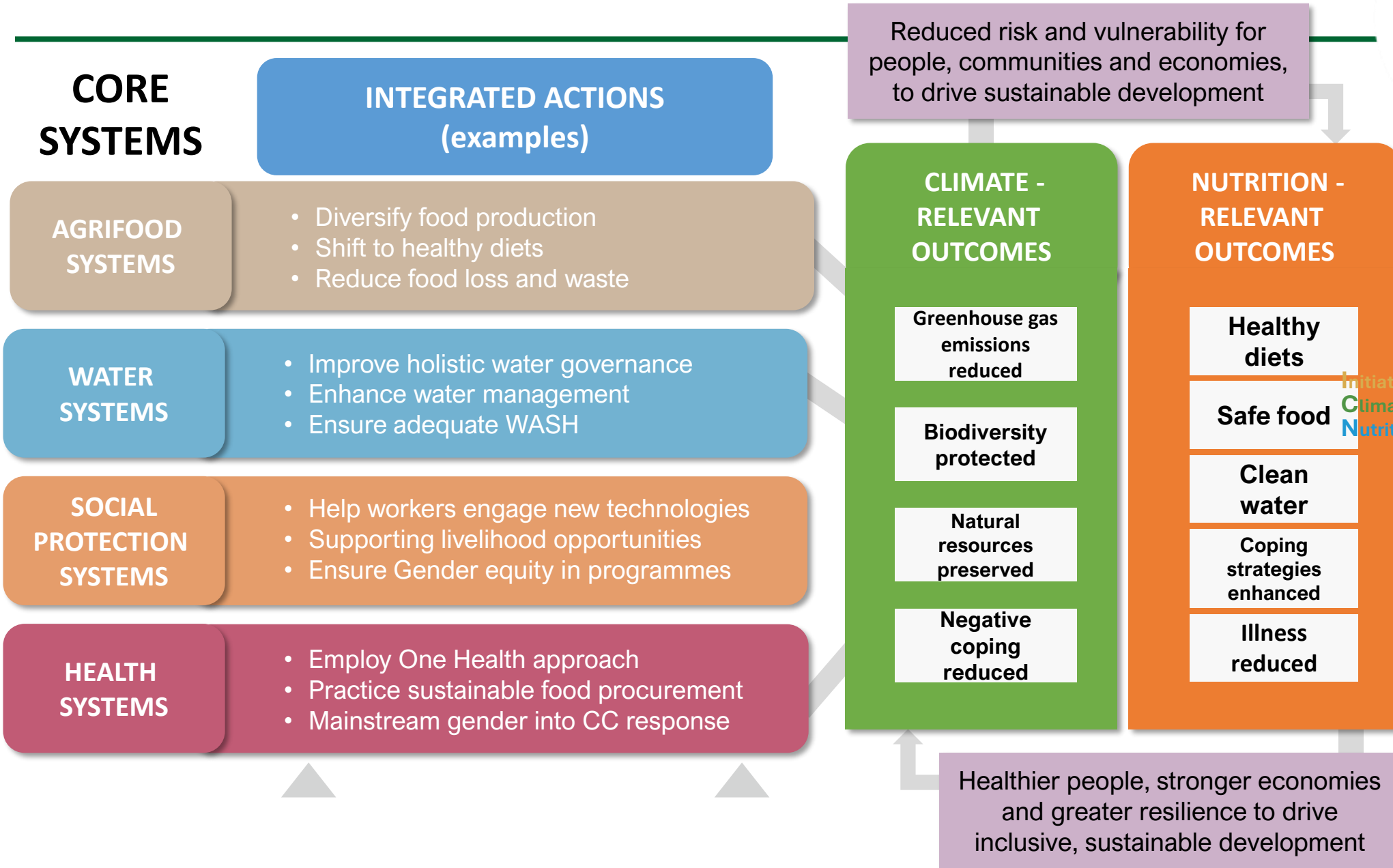
Fig. 1. Iron (a) and zinc (b) content on a DM basis in meat from conventional production animals (beef (hatched); pork (diagonal lines); chicken (solid grey)) and in three insect species (yellow mealworm *Tenebrio molitor* L. (white), house cricket *Acheta domestica* L. (solid black) and African migratory locust *Locusta migratoria* L. (solid dark grey)). Data for conventional meat were adapted from the US Department of Agriculture (USDA) food database (USDA National Nutrient Database for Standard Reference, release 28; Agricultural Research Service, USDA, Nutrient Data Laboratory; <http://www.ars.usda.gov/nea/bhnrc/ndl>, selecting data on meat only (excluding pure fat and organs)) reporting both iron and zinc concentrations. Insect data were adapted from references^(19,20,21,22,25). Values are means, with standard deviations represented by vertical bars.

Integrated approaches to deliver sustainable nutrients



- **Fortification of foods** can be an efficient and climate-friendly way of delivering micronutrients to a large number of people
- **Biofortification of staple foods** (breeding for higher micronutrient contents) can increase average micronutrient intakes and enhance nutrition resilience
- **Social protection programs** can ensure access to nutritious foods and gender equity.
- **Health programs** promote breastfeeding, dietary diversity and supplements to those in high needs

Integrated actions across systems



Initiative on Climate Action and Nutrition

Read more....



Initiative on
Climate Action
and Nutrition

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- 4. Holistic and context specific approaches** are needed across agro-food, water, health and social protection systems.

What is the Micronutrient Forum?

The Micronutrient Forum is the central global platform for evidence, collaboration, and advocacy to improve micronutrient health.



Thank you.

Connect with us!



MNForum



Micronutrient Forum



www.micronutrientforum.org



info@micronutrientforum.org

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CLIMATE & NUTRITION (I-CAN)



Lawrence Haddad

GAIN Executive Director



ANIMAL SOURCED FOODS AND FOOD SYSTEMS: NUANCE MATTERS

Lawrence Haddad

Executive Director, The Global Alliance for
Improved Nutrition (GAIN)



March 14, 2024
The Hague (The Netherlands)



OUTLINE

1. Countries have a lot of different food system priorities
2. Trade-offs are inevitable
3. Different countries perform differently in different domains – they start from different places
4. ASF is not just about climate
5. We do not focus enough on opportunities for synergies
6. We need more nuance – 3 groups
7. We need better metrics

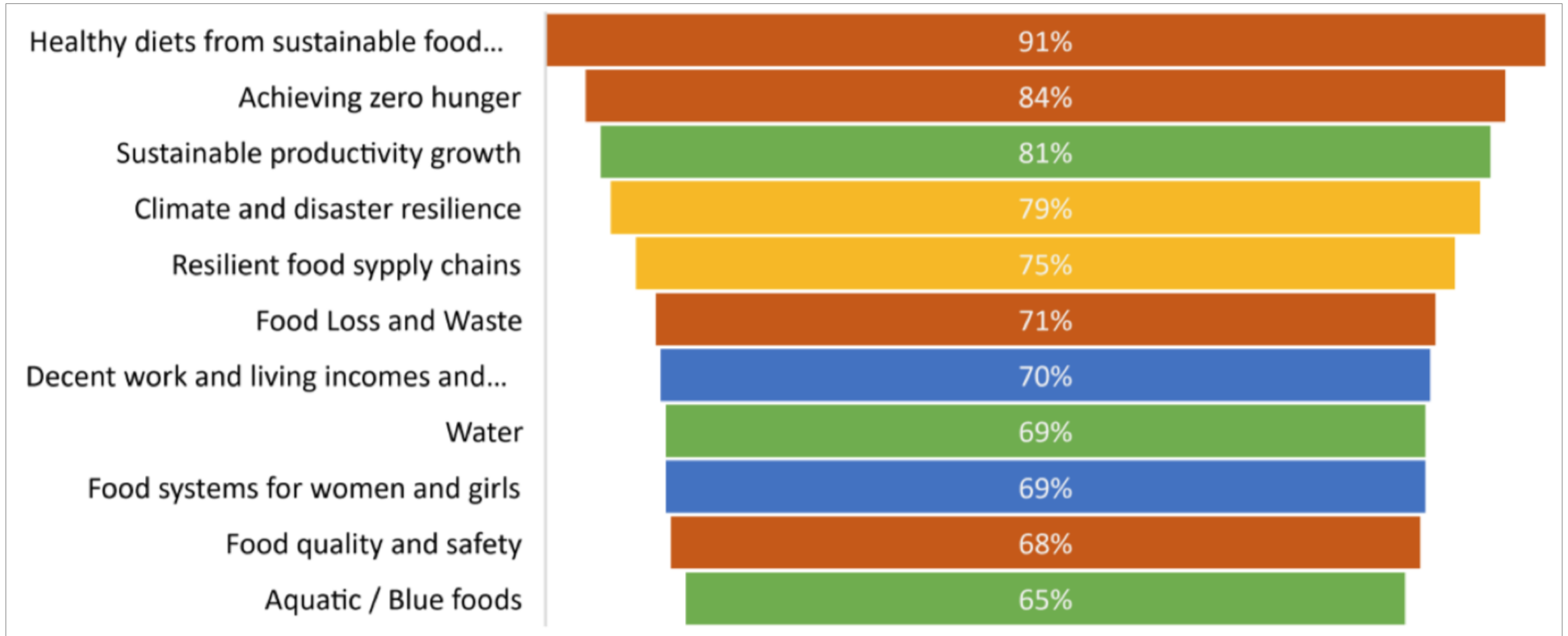


Countries have many priorities

Trade-offs are inevitable



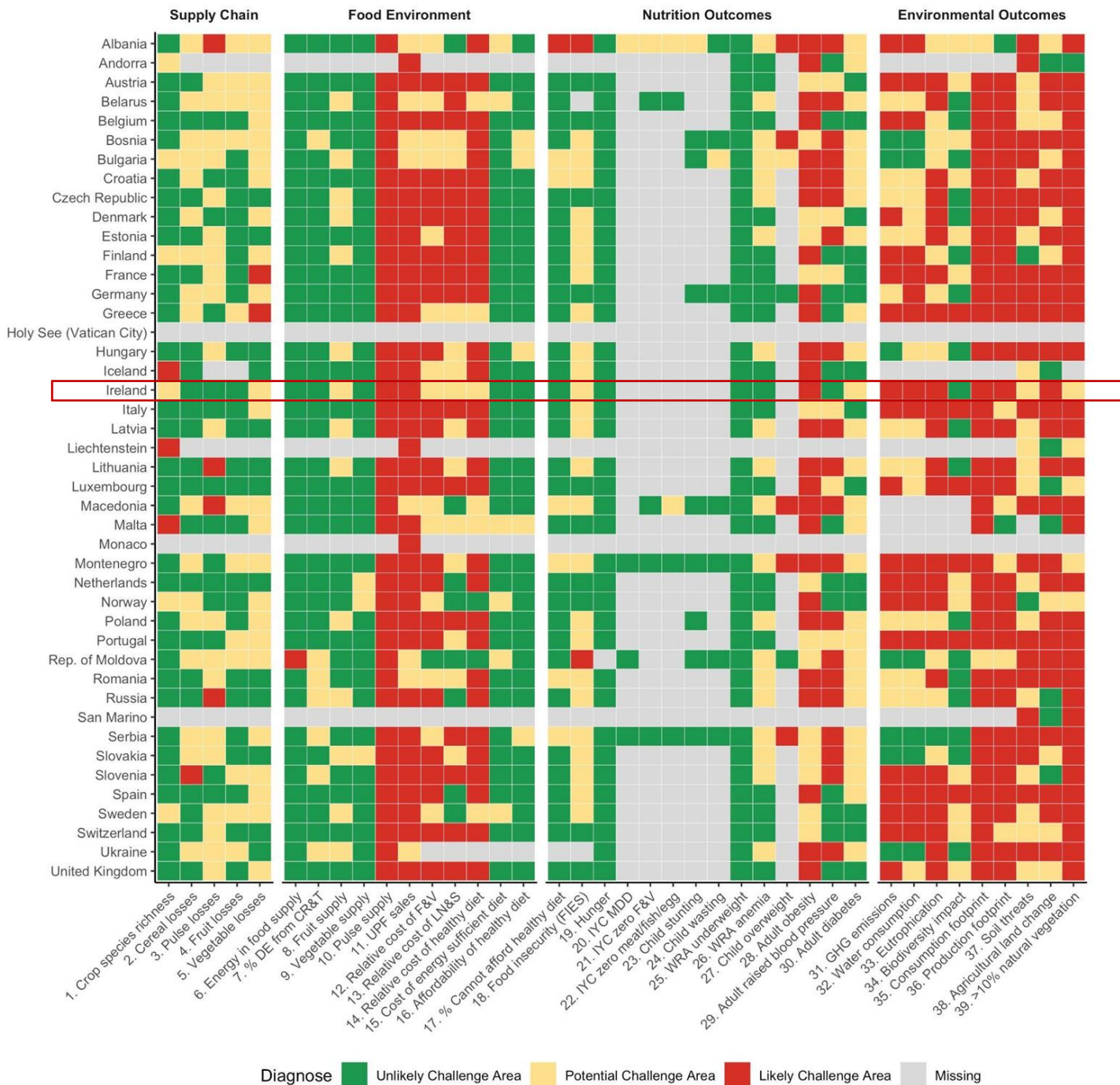
Themes most frequently mentioned in 111 national pathway documents from the 2021 UN Food System Summit



Countries perform differentially by outcome

So, they start from different places when it comes to trade-offs





Ireland's challenge areas

- Low supply of pulses
- High consumption of ultra processed foods
- Adult obesity
- GHG emissions
- Water consumption from food
- Eutrophication (quality of body of water)

From the Food Systems Dashboard

www.foodsystemsdashboard.org

ASF trade-offs are not just about climate

Energy, water, land use, N and P matter too

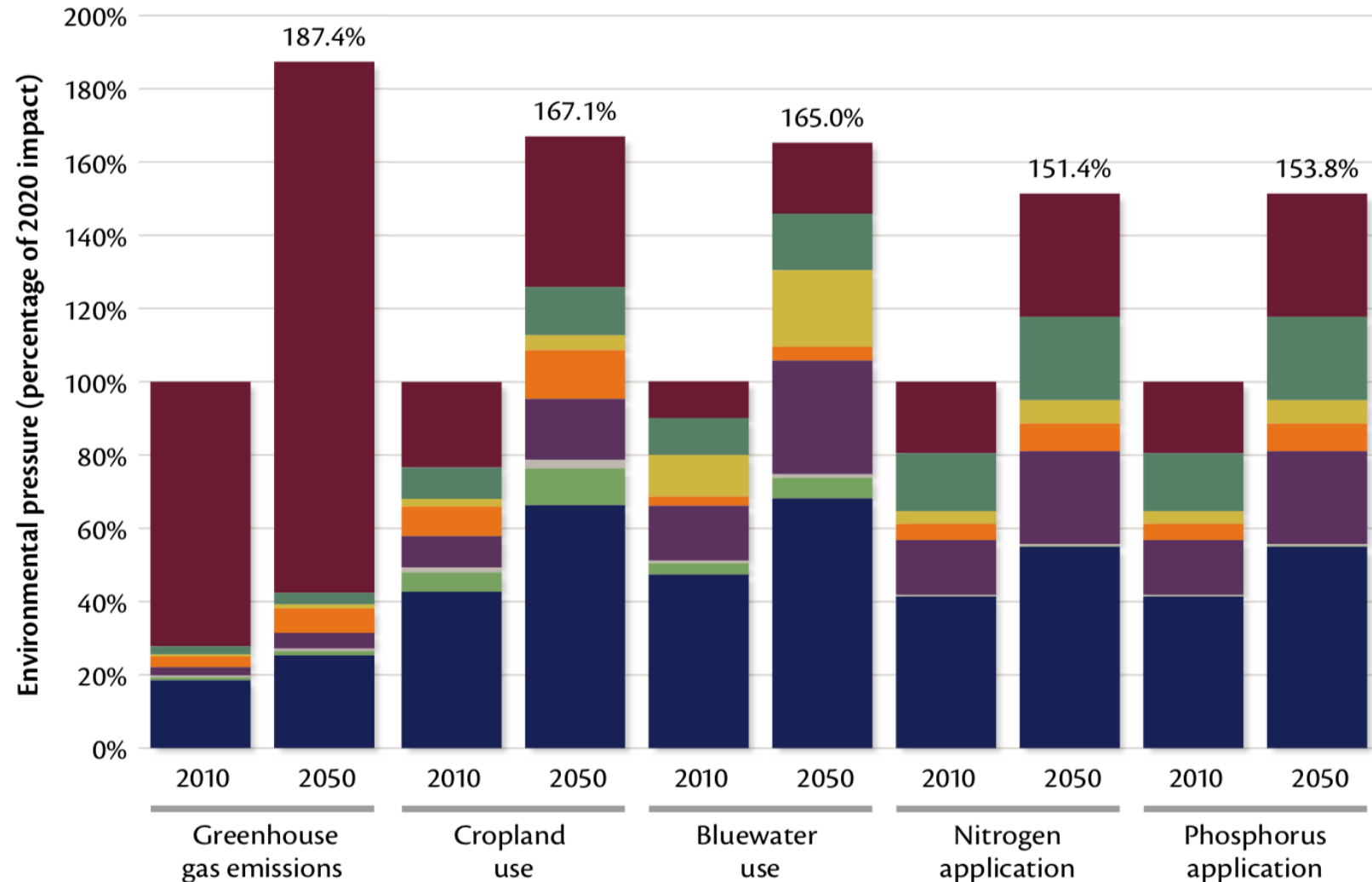


Production of different food groups has different impacts on different environmental dimensions

Global

Food group

- Animal products
- Other crops
- Sugar
- Vegetable oils
- Fruits and vegetables
- Nuts and seeds
- Legumes
- Staples

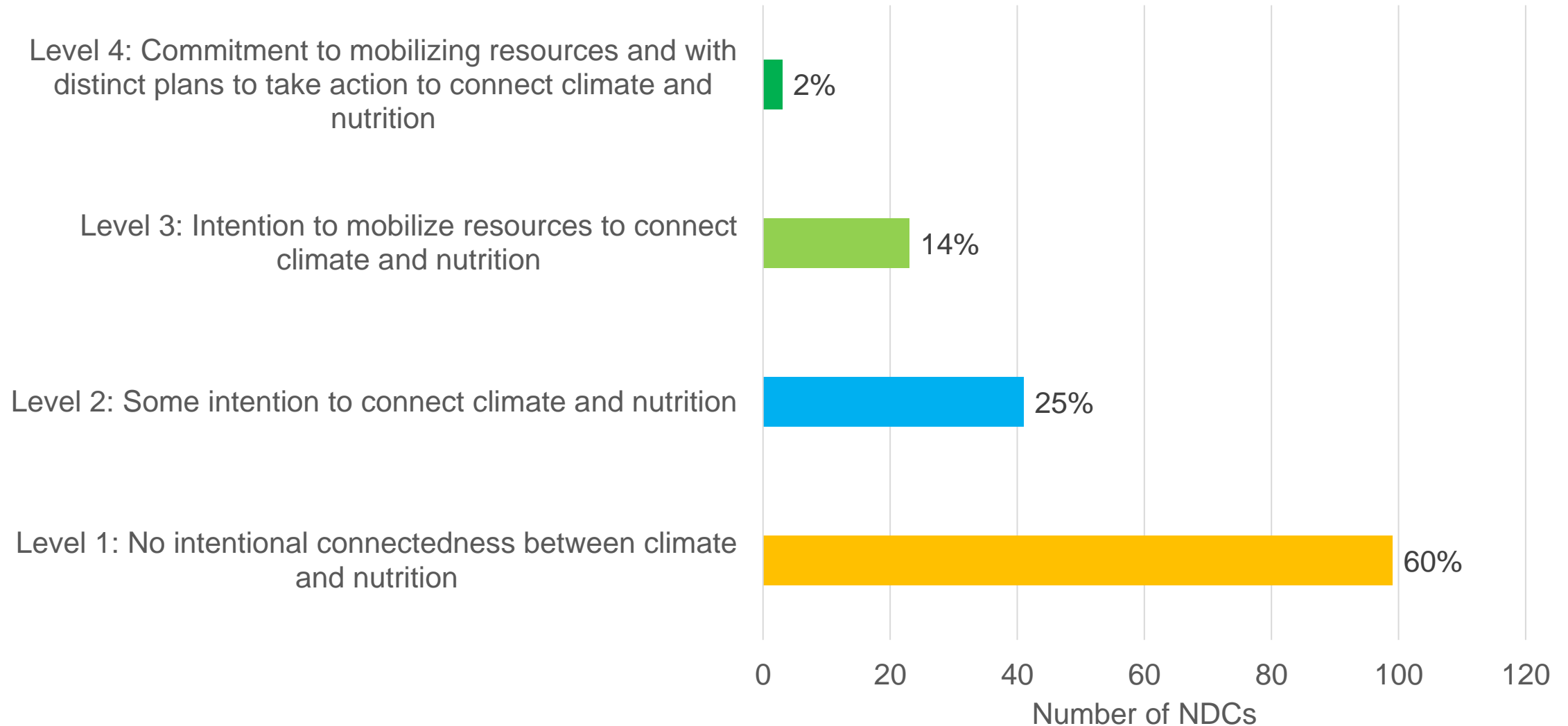


There are plenty of opportunities for nutrition-climate synergies

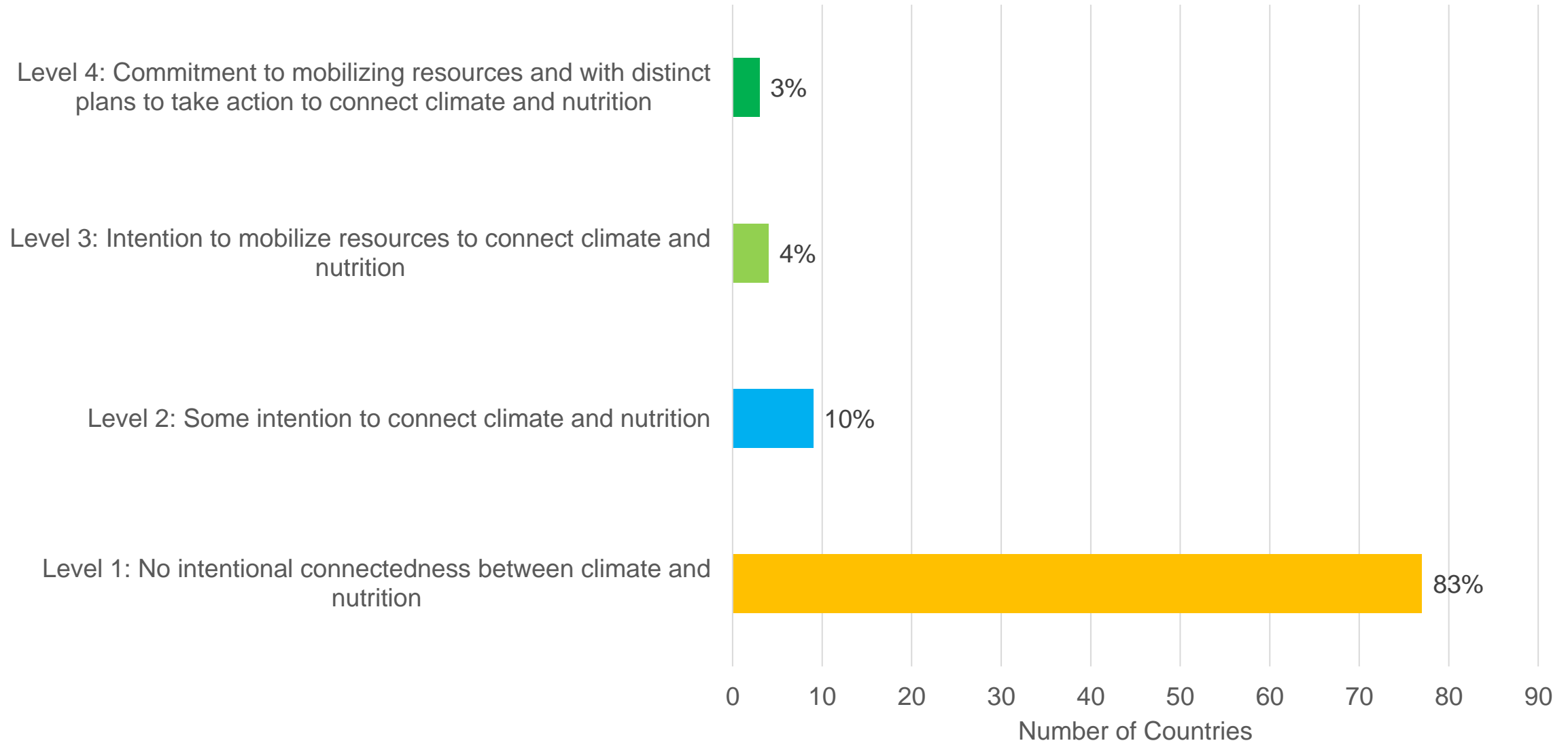
Some results from the I-CAN baseline assessment



Nutrition Considerations in NDCs from 2016-2023 Inclusive (N=166)



Climate Considerations in Public Food Procurement from 1996 to 2022 (N=93)



Nuance matters

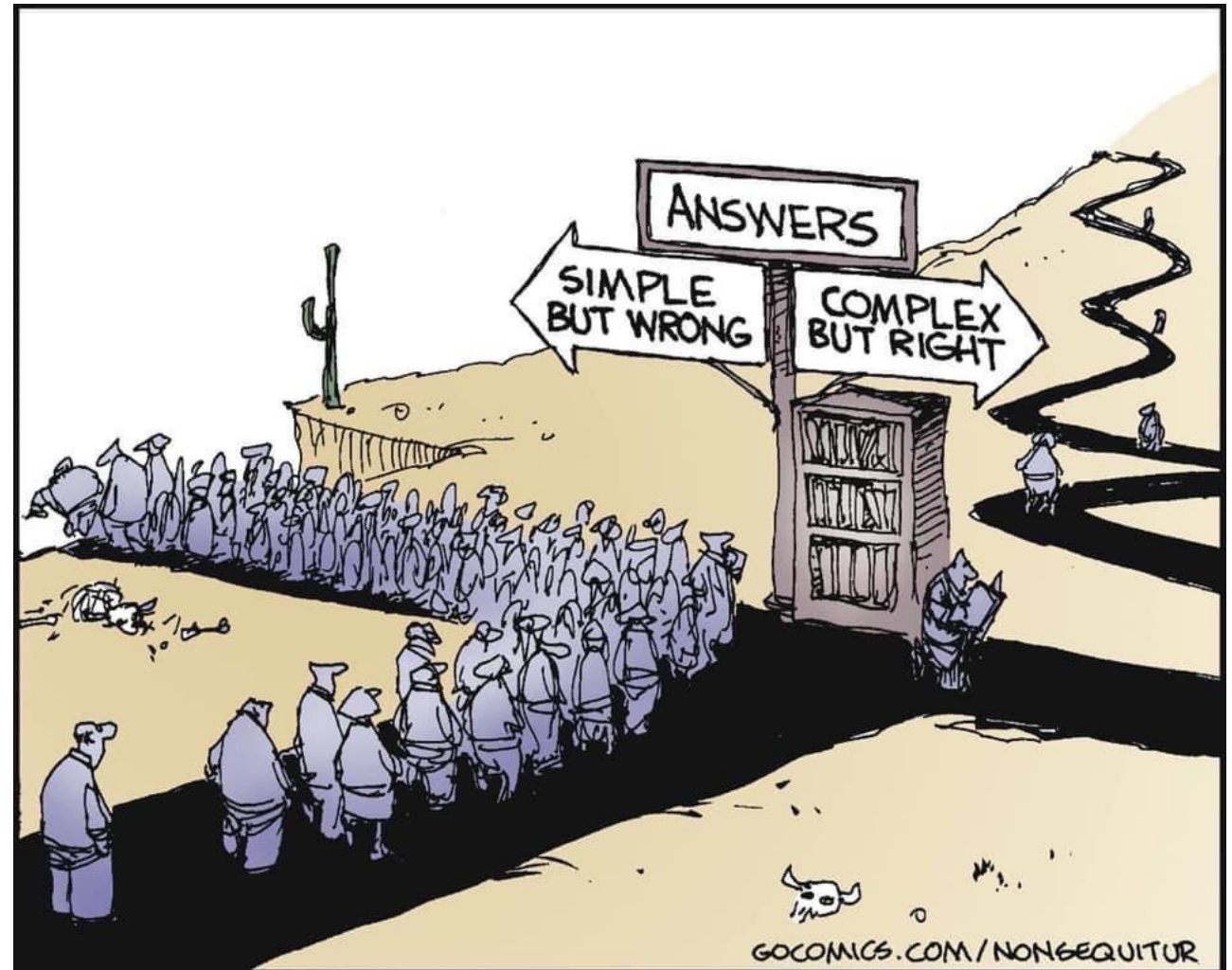
Each country has three types of ASF consumers—with varying shares



Outside Texas (and even inside it) we need nuance when it comes to ASF ☺

"In Texas, we don't do nuance."

US President George W. Bush 2004



In every country there are three groups of ASF consumers (shares vary by country)

Group 1

- Those consuming too much, i.e. above Food Based Dietary Guidelines
- They need to consume less for their health, and this will benefit climate

Group 2

- Those on the verge of dramatically increasing ASF consumption: emerging middle class, still not moved to lower fertility rates
- Their demand increases for ASF could be moderated for climate reasons and for health reasons

Group 3

- Those not consuming enough ASF because they have very per kg high nutrient requirements
- They need to increase consumption but moderate climate impacts

Each group requires a different strategy

We need better metrics

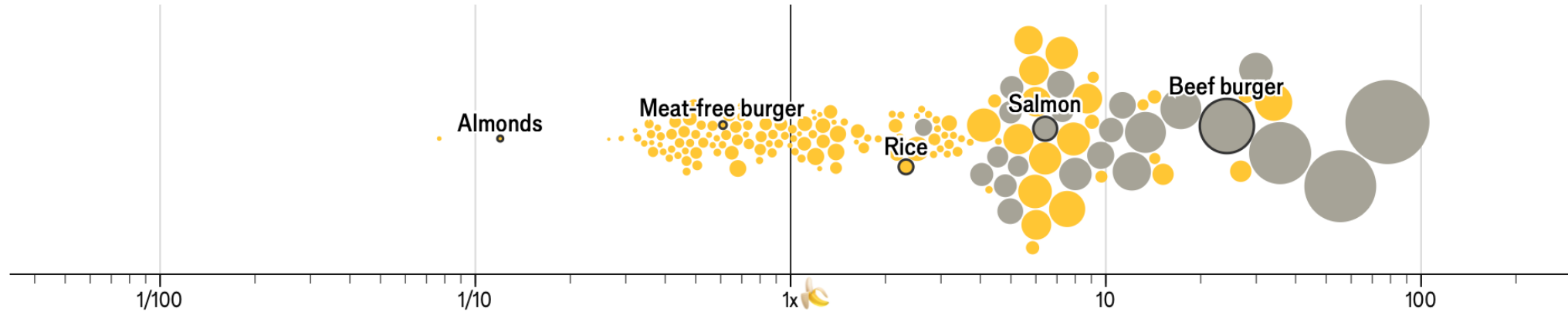
For nutrition-environment trade-offs



The Economist's Banana Index

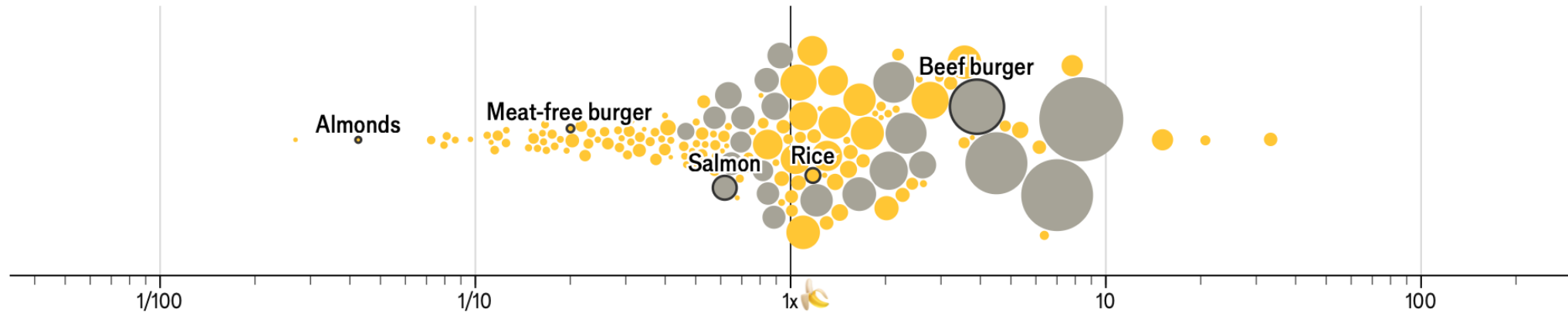
Emissions by calorie count

= 0.876 kg CO₂* per 1,000 kcal

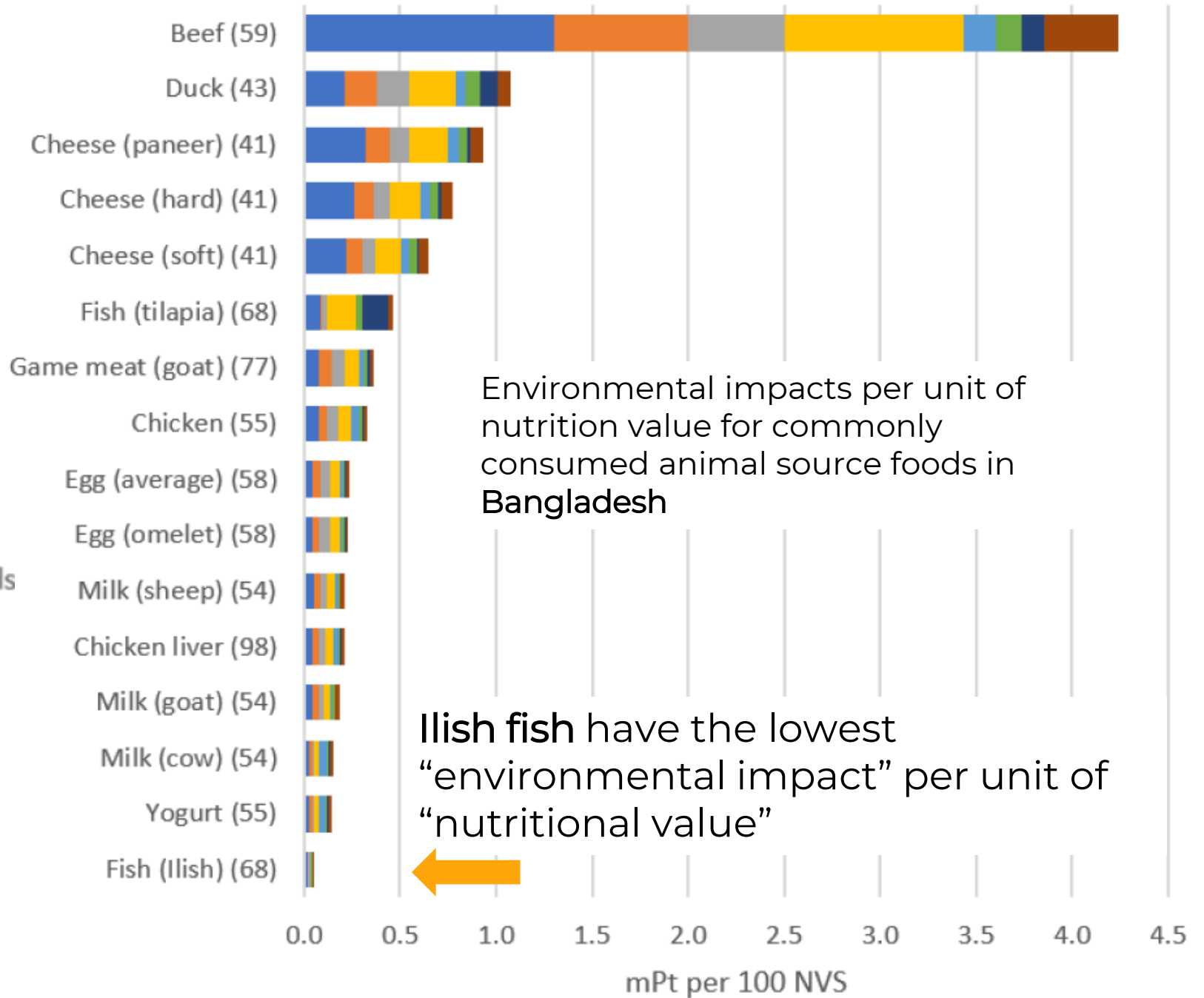


Emissions by protein content[†]

= 7.72 kg CO₂* per 100g protein



But we need to go beyond protein and beyond climate



Beal and Orteni. “Nutritional Value Score rates foods based on global health priorities”. Under review at Nature Food.

SUMMARY

1. Countries have a lot of different food system priorities
2. Trade-offs are inevitable
3. Different countries perform differently in different domains – they start from different places
4. ASF is not just about climate
5. We do not focus enough on opportunities for synergies
6. We need more nuance – 3 groups
7. We need better metrics



Thank you

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 @GAINAlliance

 Global Alliance for Improved Nutrition



EXPERT WORKSHOP

Questions?

15 mins



SUSTAINABLE PRODUCTION ASPECT OF ANIMAL SOURCE FOODS



Marcel van Nijnatten

Nature and Food Security Coordinator at Dutch
Ministry of Agriculture

CONSUMER BEHAVIOUR AND INFLUENCE

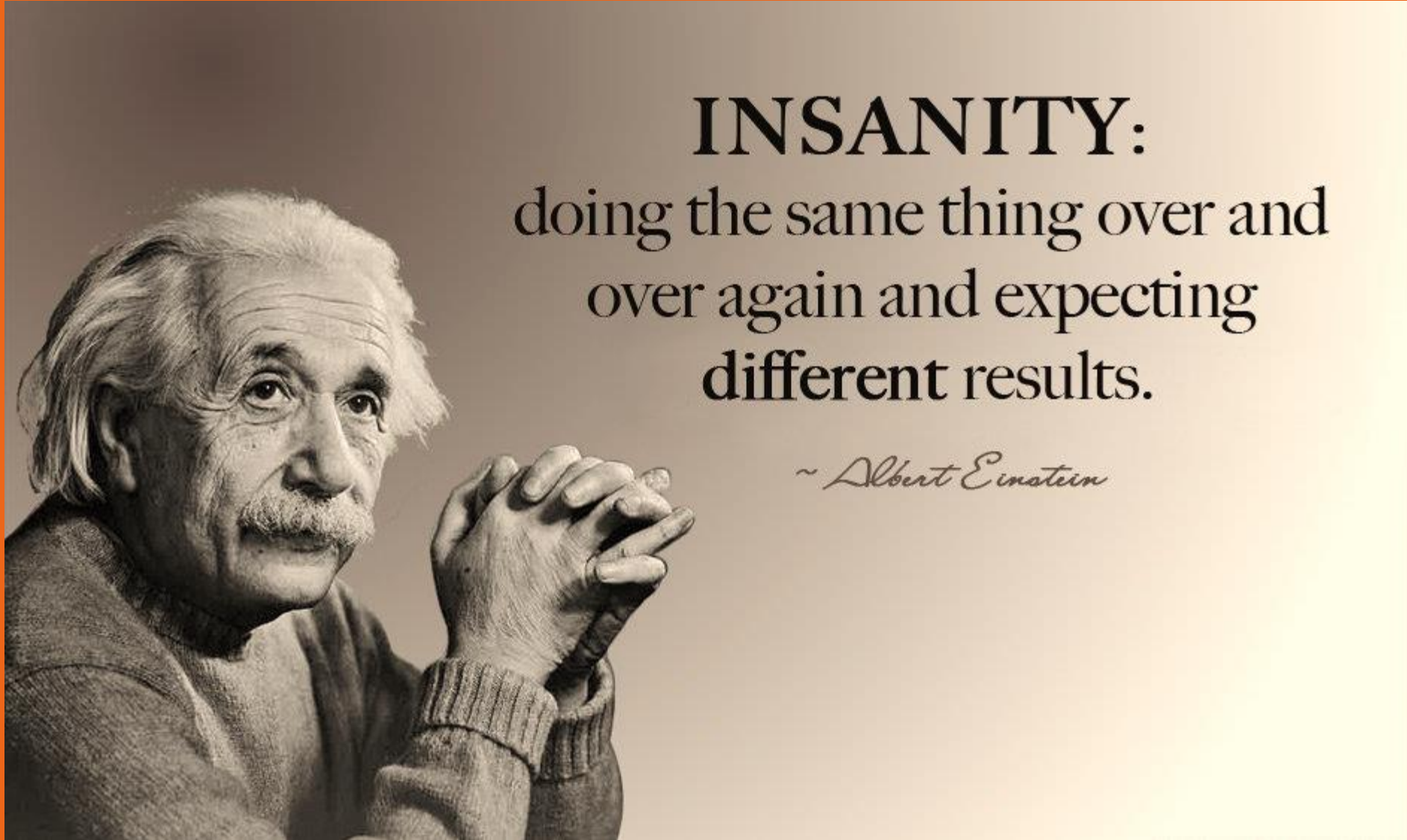


Dhanush Dinesh

Founder and Director of Clim-Eat



RETHINKING PATHWAYS FOR ANIMAL SOURCE FOODS



INSANITY:

doing the same thing over and
over again and expecting
different results.

~ Albert Einstein

RETHINKING BIG LIVESTOCK NARRATIVES





Smoke screens, oily politics, and bull-poop

Is Big Livestock on the same path as Big Tobacco and Big Oil?

Bruce M Campbell

By the 1950s the link between lung cancer and tobacco smoking was being confirmed.¹ Big Tobacco continued to resist change through misrepresenting science, fearmongering over illegal supply and tax revenues, and threatened or real legal action, amongst other activities.² Since the 1970s, Big Oil knew that fossil fuel burning was linked to global warming with

“dramatic environmental effects before the year 2050.” Despite this, Big Oil mounted a decades-long campaign of climate deception and denial, promoting doubt on the climate change link. Is Big Livestock on the same path: responsible for greenwashing the livestock sector, advancing doubt about solutions to climate change, and resisting change?



Seven ways Big Livestock is painting greener pictures

False narratives

Big Livestock downplays environmental impact, emphasizing cultural traditions and global food security.

Promises not to be kept

Big Livestock pledges net-zero goals but continues deforestation and high emissions.

Funding resistance

Industry-backed research and protest hinder change and innovation.

Blocking the development of sustainable protein

Powerful vested interests exert political influence to thwart competition.

Creative accounting

Emphasis on emission intensity masks absolute reductions; crucial supply chain emissions are often excluded.

Obfuscation

Misleading claims and terms divert attention from significant emission reductions needed.

Techno-fixes and offsets

Overreliance on technology sidelines vital dietary shifts and livestock reduction strategies.



RETHINKING TECHNOLOGIES FOR LOW EMISSIONS LIVESTOCK



foodsystems.tech



**Sustainable livestock
Low-emitting livestock**



**Sustainable livestock
Insect farming for feed**



**Sustainable livestock
Cultivating algae using
livestock waste**



RETHINKING DIETS AND CONSUMER BEHAVIOUR

SUSTAINABLE LIVESTOCK PRODUCTION



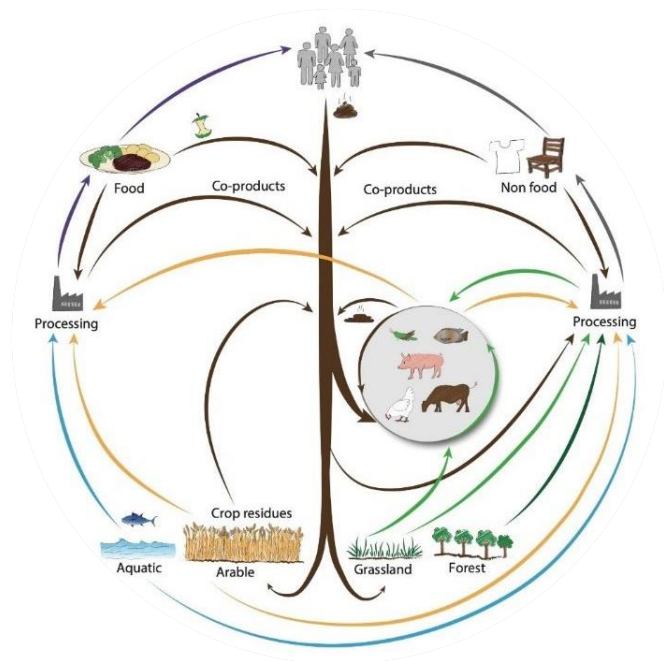
Jan van der Lee

Senior Researcher Sustainable Livestock System, Team Lead Livestock
International at Wageningen University & Research

Sustainable animal production around the globe

With case material from dairy production in East Africa

March 13, 2024, Jan van der Lee and Augustine Ayantunde, NWGN-NFP event



Objective

Explore trade-offs and synergies between various sustainability objectives of ASF production and consumption

- with a food system lens, focus on production
- global, with case material from dairy in East Africa.



Further reading:

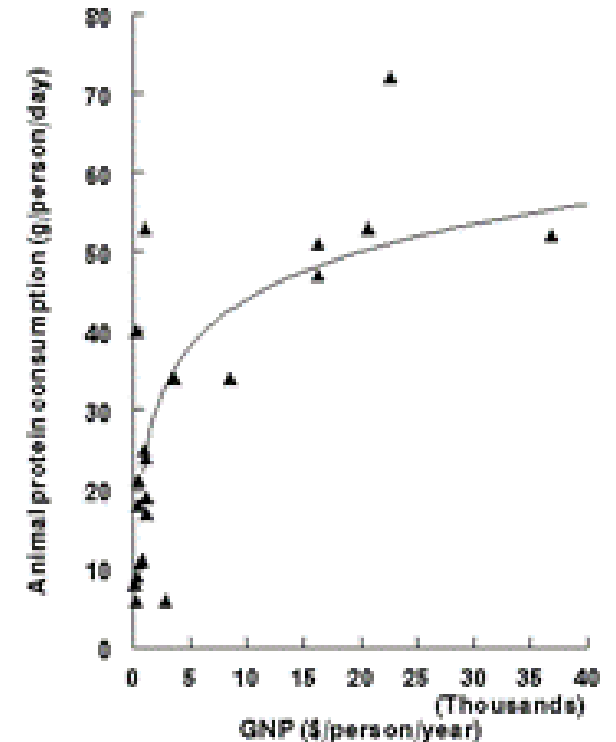
- Oosting SJ, van der Lee J, Verdegem M, de Vries, M, Vernooij A, Bonilla-Cedrez C, and Kabir K (2021). Farmed animal production in tropical circular food systems. *Food Security* 14: 273-292.
- Oosting, 2022. The multifunctional role of cattle in East African food systems: The perspective for climate smart dairy development. Presentation NEADAP CoP27 event “The contribution of dairy to resilient food systems in East Africa”
- Oosting et al., 2024. The multifunctional role of livestock in East African food systems, in “African food security 2050”, Routledge.
- van der Lee, J., Alvarez Aranguiz, A., Pishgar Komleh, H., & Ndambi, A. (2022). *Dairy Sustainability Assessment Tool: User Manual*. Wageningen Livestock Research, Wageningen University & Research

Trade-offs of reduced (increased) ASF production

Less livestock means (a.o.) ...

- **Less high-quality protein and micro-nutrients** available for infants and breastfeeding (unless productivity increases)
- **Less low-grade biomass converted in food** – natural grasses, crop- and food waste (e.g., oil seed cake, fruit pulp)
- **Less organic manure** > lower crop yields or more fossil fertilizer
- **Less animal traction** > more mechanization with fossil fuels
- **Less stability** – “piggy banks” – less stable livelihoods

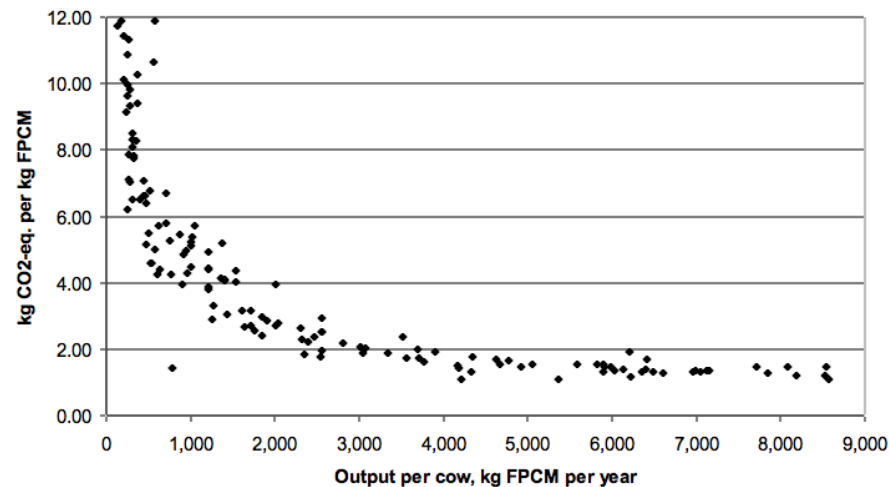
Animal Protein and GNP in Asia



Narrow or broad sustainability concept?

NARROW

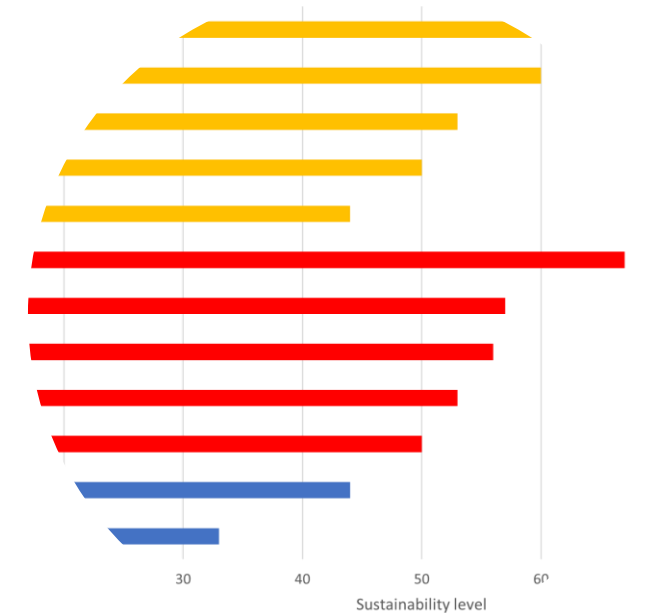
Focus on GHG emissions > efficiency focus > higher yield/unit to meet cons. demand



- Implicit choice for productivity, food security and climate change objectives
- Alienation of Southern partners

BROAD

IGA - Situation-specific pathway development through joint assessment and planning of key sustainability objectives/interventions (people-profit-planet, DSAT)

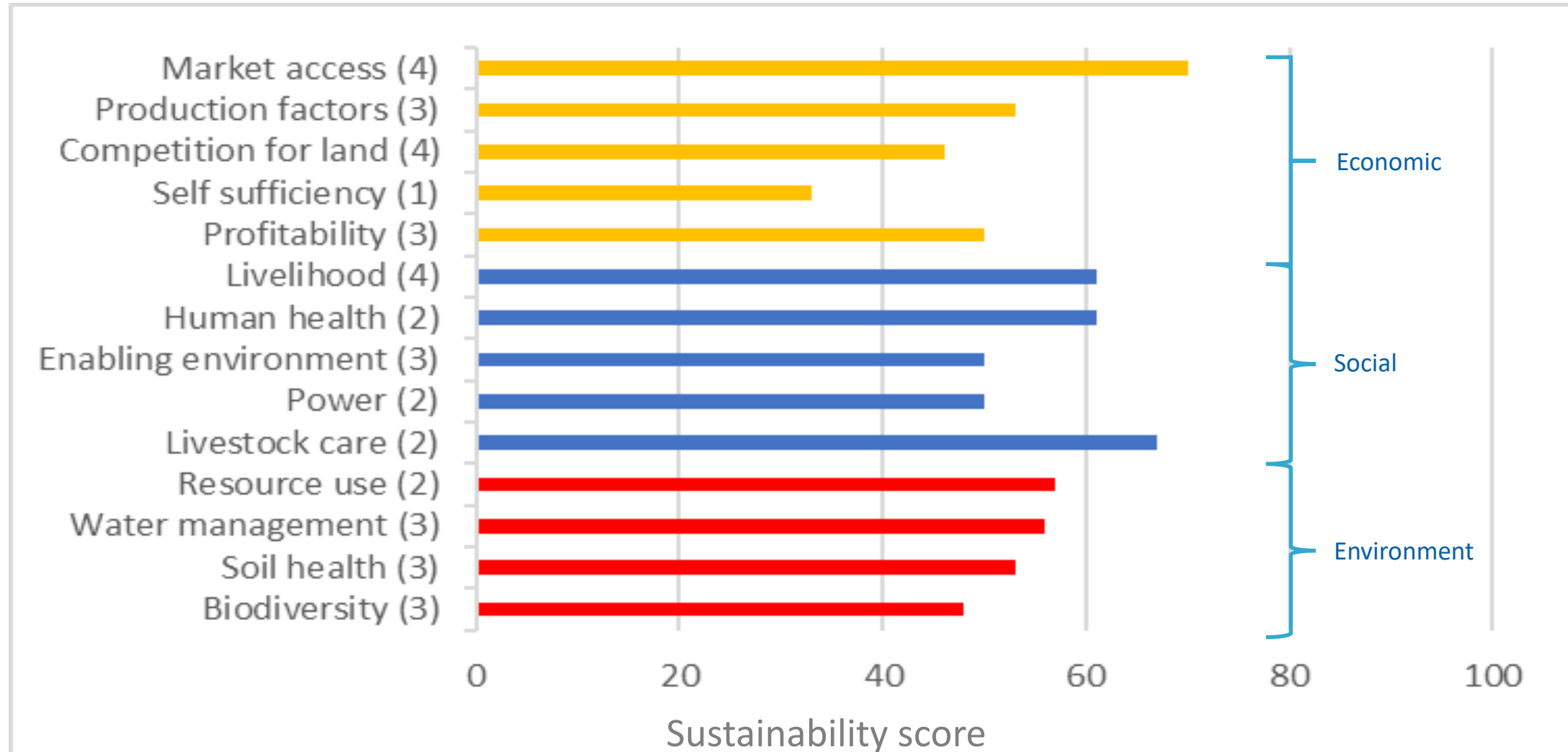


Sustainability objectives (of a food system)

Domain	Objectives	Indicators
Climate Smart Agriculture	<ul style="list-style-type: none">• Food and nutrition security• Feed-food competition• Climate change mitigation• Climate change adaptation	<ul style="list-style-type: none">• Quantity, quality• Land use• Productivity• Carbon sequestration• Resilience (diversity and modularity)
Biodiversity	<ul style="list-style-type: none">• Biodiversity• Natural resource management	<ul style="list-style-type: none">• Nature, water, land• Quantity• Quality (pollution and degradation)
Socio-economic	<ul style="list-style-type: none">• Livelihood & income• Employment & economic development• Social equity & liveability	<ul style="list-style-type: none">• Economy• Independence• Power (inclusivity)• Rural liveability

Perception of sustainability aspects by dairy actors

Results from NEADAP **DSAT**-workshops in Kenya, Uganda, Tanzania and Rwanda; *no of times 14 aspects are selected; Scores for selected aspects: 0 = perceived as not sustainable100 = perceived as sustainable)*



What livestock farming systems to focus on?

2019 figures	Ethiopia	Kenya
Human population (million)		
Total	99	50
• mixed crop-livestock smallh.	35	20
• (agro-)pastoralists	12	9
• (semi-)specialized farmers	<0.02	<0.02
Cattle population (million)		
Total	70	22
• Dairy	13	5

- Mixed crop-livestock and (agro-)pastoralist systems essential for 40-60% of population
- Few (semi-)specialized farms, generally with extreme land-scarcity (- feed production) => limited growth potential
- Minority of cattle are for dairy, others for other objectives

Key animal farming systems – performance on sustainability objectives

Sustainability objectives	System	(agro-) pastoral	mixed crop-livestock	specialized
Food & nutrition		+	++	+++
Feed-food competition		+++	++	-
Climate change adaptation		+ to +++	++	- to +
Climate change mitigation		+	+	++
Biodiversity & natural resources		+++	+	-
Income & livelihood		+	+++	+
Employment and economic development		0	++	+++
Social equity and liveability		?	++	- to +

Promising interventions – diverse objectives

- Connect smallholders to markets, diversity crops and ASF, facilitating input & service delivery and output marketing, *e.g., facilitate forage & forage seed markets to use forage as cash crop, breed dual purpose crop varieties (food and feed)*
- Subsidize trade in organic manure rather than in fossil fertilizers
- Land use planning – land utilization and zoning, agroforestry
- Circularity – use of food waste as feed (drying pulp, upgrading crop residues), use of novel proteins (insect meal, yeast, algae as animal feed)
- Food safety – assure quality of ASF – health and consumer trust
- Think about fish / aquaculture





**NEA
DAP**
Netherlands East Africa
Dairy Partnership

Thanks for your attention
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WAGENINGEN
UNIVERSITY & RESEARCH

EXPERT WORKSHOP

Questions?

10 mins



Table Discussions

Table 1: Climate and Environment Impact of different Animal Source Foods

Table 2: Sustainable fodder production

Table 3: Mixed production systems

Table 4: Role for pastoralists

Table 5: Potential of Neglected and Underutilized Food Crops (NUFCs) for Sustainable Healthy Diets

Table 6: Consumers and food environment

Table 7: Food Loss & Waste reduction and management to lower environment impact

Table 8: Potential of food fortification and micronutrient supplementation in Sustainable Healthy Diets

EXPERT WORKSHOP

BREAK – 20 mins



EXPERT WORKSHOP

TABLE DISCUSSIONS

40 mins



EXPERT WORKSHOP

BREAK – 20 mins



PANEL DISCUSSION



Saskia Osendarp
Micronutrient Forum
Executive Director



Lawrence Haddad
GAIN Executive Director



Marcel van Nijnatten
Nature and Food Security
Coordinator at Dutch
Ministry of Agriculture



Dhanush Dinesh
Founder and Director of
Clim-Eat



Jan van der Lee
Team Lead International
Livestock at Wageningen
University & Research



THANK YOU

Time for Drinks & Networking