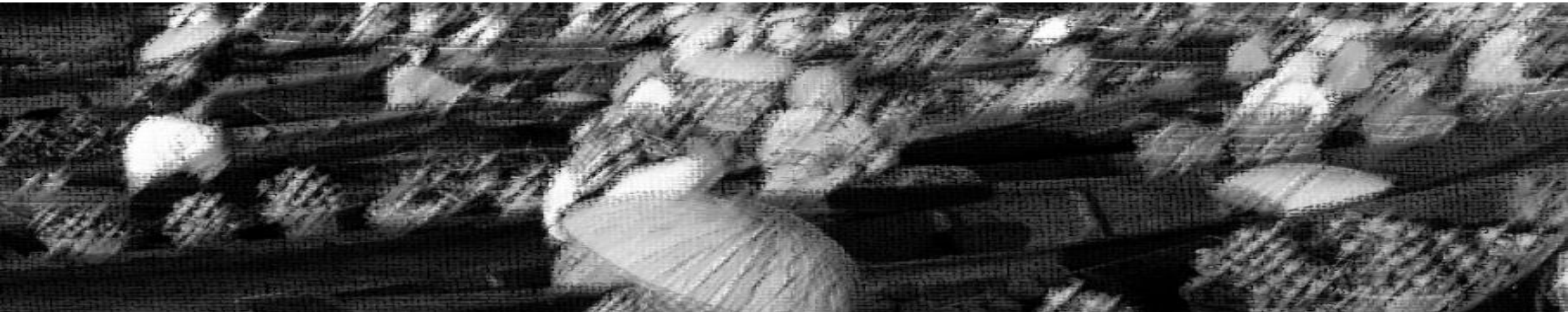
Intersessional Event on Nutrition on Food Systems Framework & Typologies



CFS Open Meeting on Food Systems & Nutrition

30 January 2019

Jessica Fanzo PhD, Team Leader HLPE Food Systems & Nutrition Report

For our discussion

- **Part 1:** Why are food systems critical for healthy diets and nutrition?
- **Part 2:** What information do typologies provide that help us assess how well food systems are delivering healthy diets?
- **Part 3:** Moving beyond typologies: What information do policymakers need to make decisions about food systems?
- **Part 4:** Why are the voluntary guidelines so central following the HLPE report?

Why are food systems critical for healthy diets and nutrition?

1. Malnutrition in all its forms is a large scale and universal problem

2 billion
people lack key micronutrients like iron and vitamin A

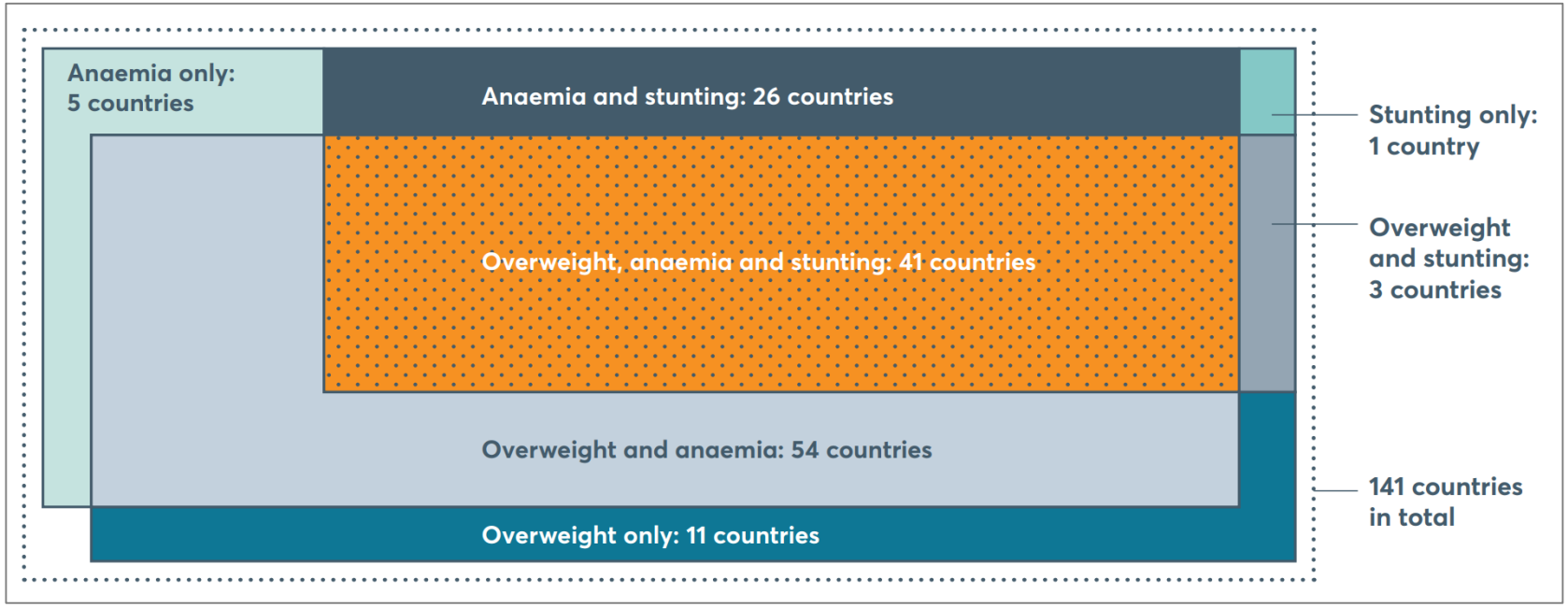
2.1 billion
adults are overweight or obese

151 million
children are stunted

38 million
children are overweight

51 million
children are wasted

88%
of countries face a serious burden of either two or three forms of malnutrition

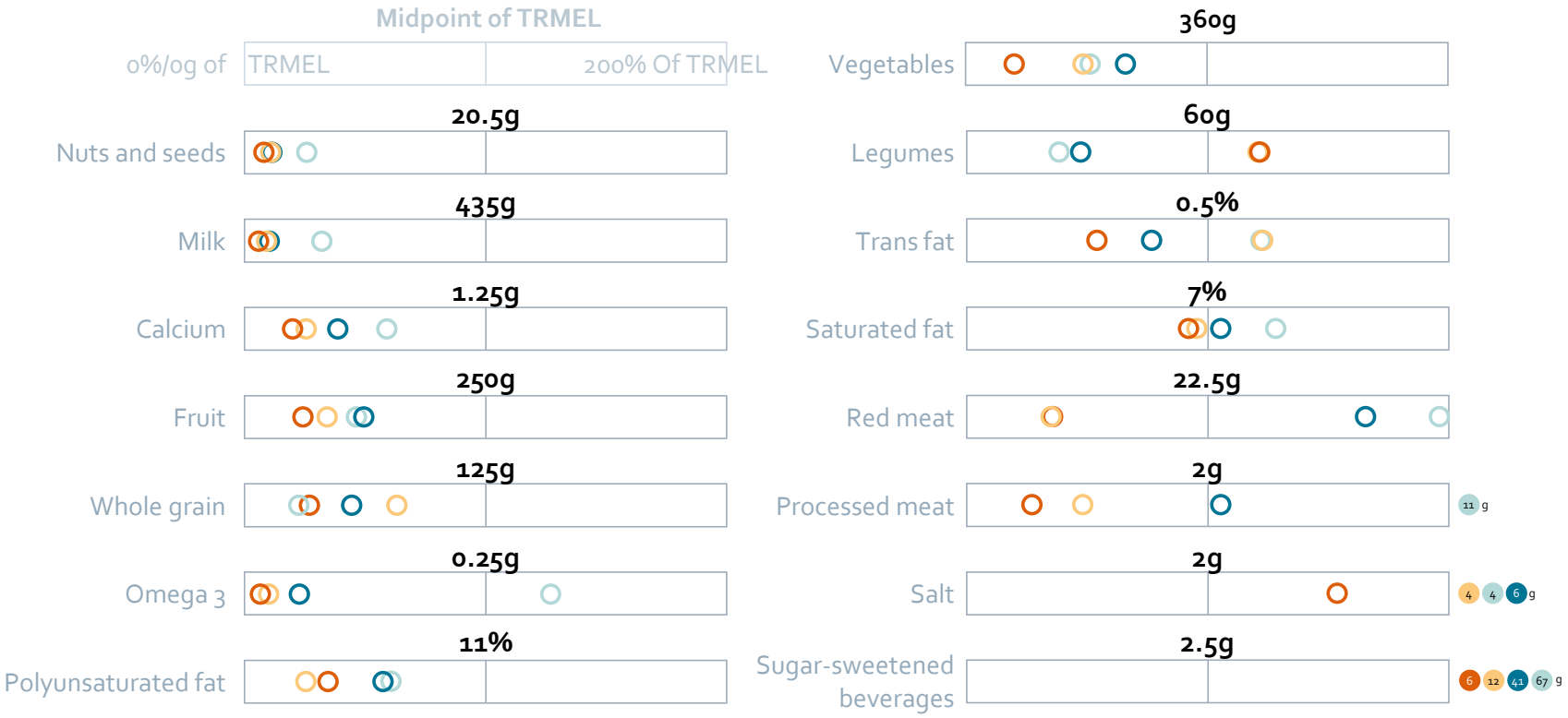


Source: Development Initiatives: 2018 Global Nutrition Report

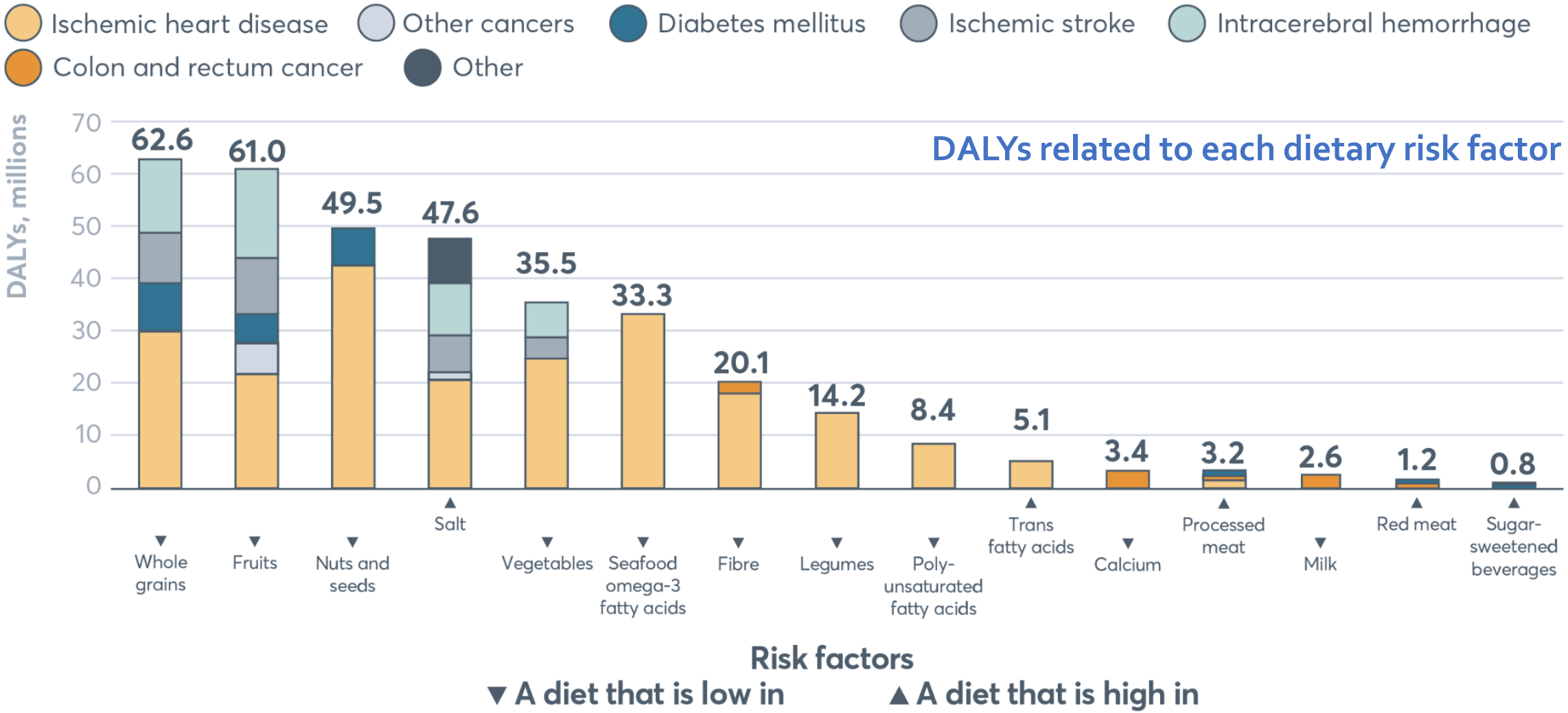
2. Sub-optimal diets are contributing to the malnutrition burden

Consumption of food groups and components across income groups, 2016

- Low income
- Lower-middle income
- Upper-middle income
- High income

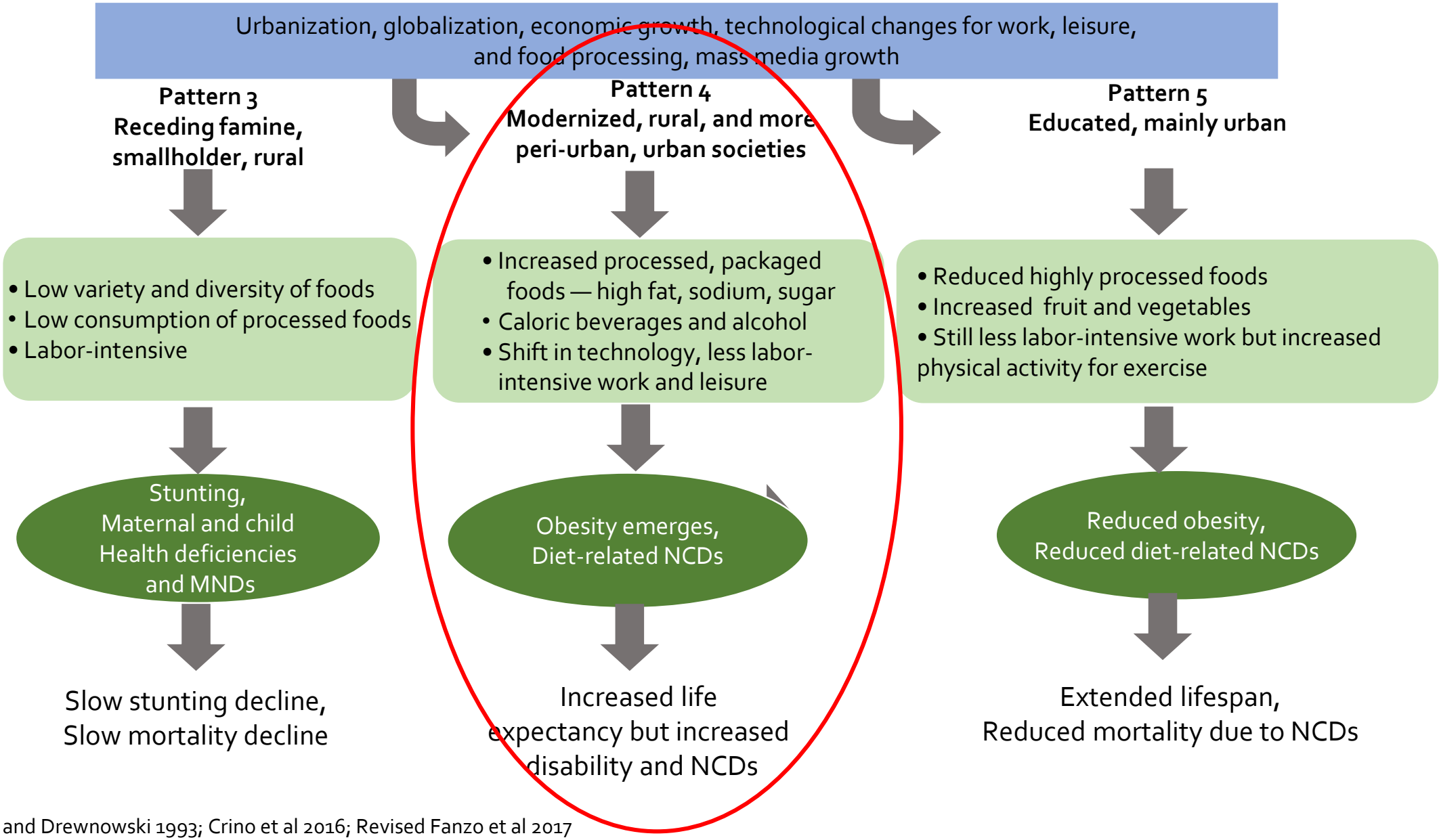


3. Diets low in nutritious foods are a leading cause of healthy life years lost



Source: Development Initiatives: 2018 Global Nutrition Report

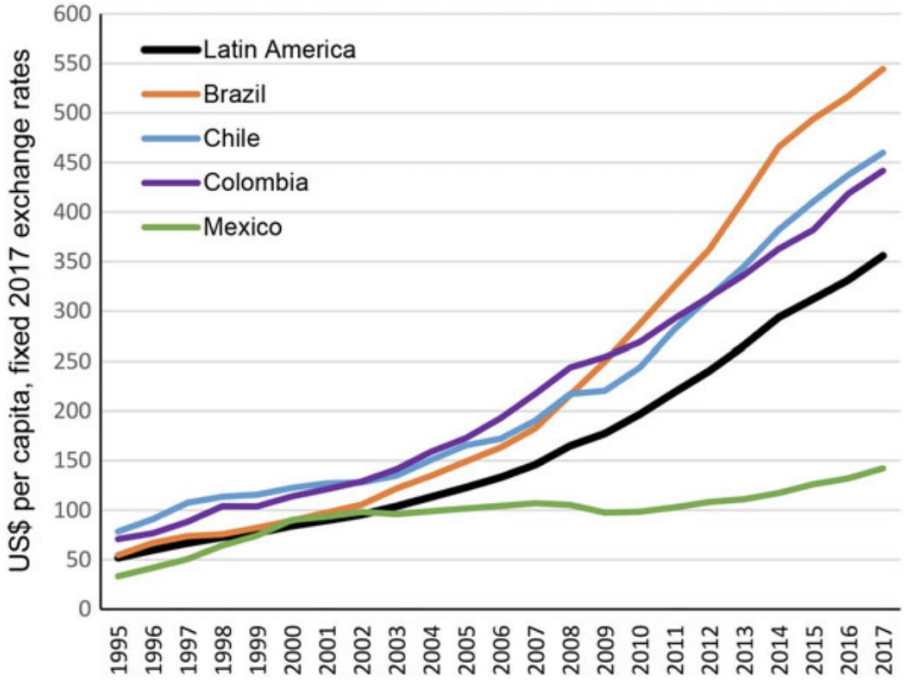
4. Diets, lifestyles and food systems are changing



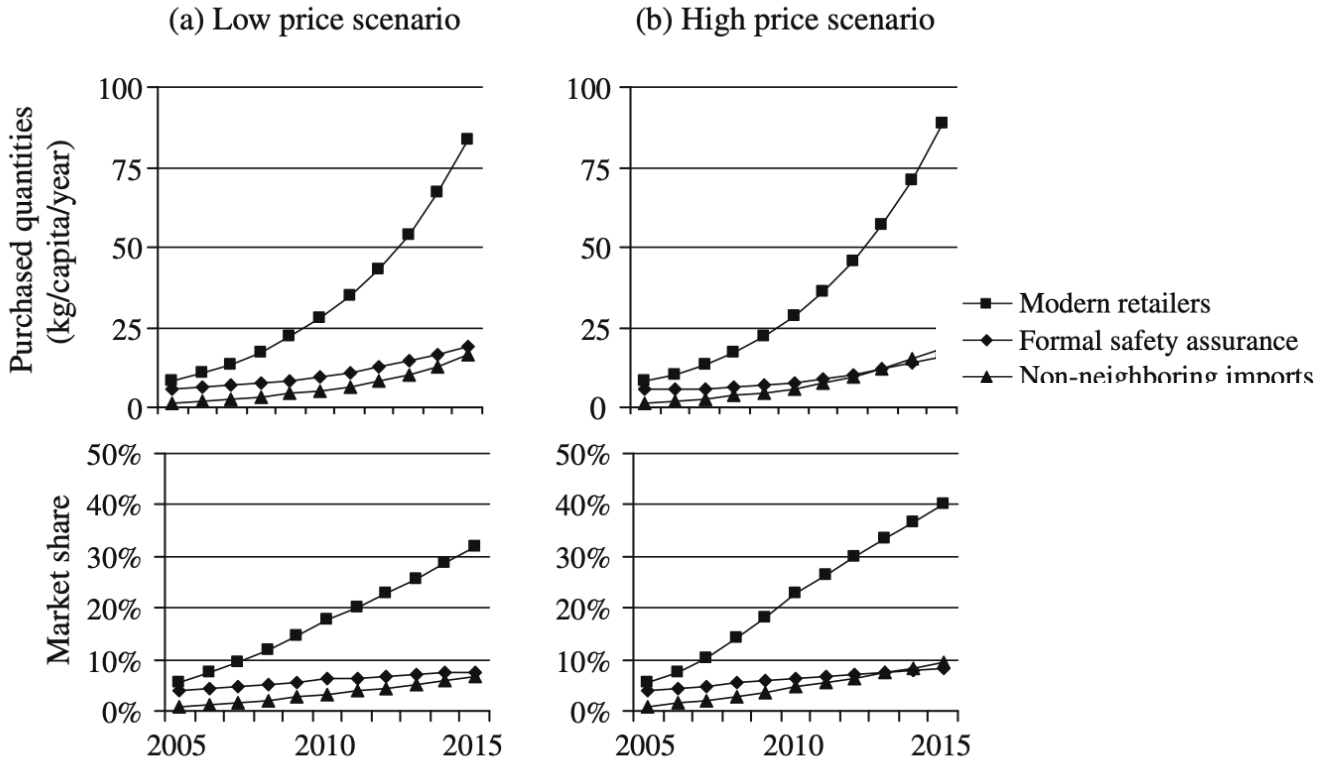
Source: Popkin and Drewnowski 1993; Crino et al 2016; Revised Fanzo et al 2017

5. Food systems are transforming at the same time

Per capita away from home food yearly expenditures in select Latin American countries



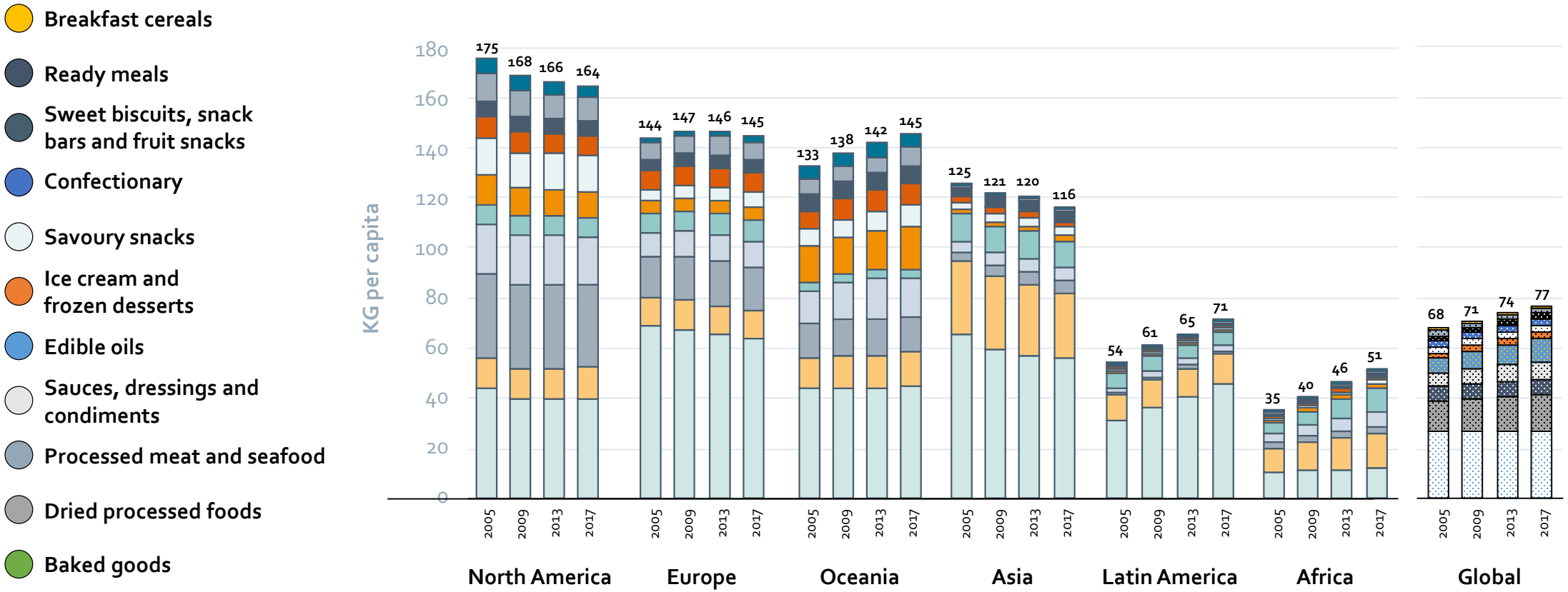
Projected purchase quantities and market share of modern supply chains for fruits and vegetables in Vietnam



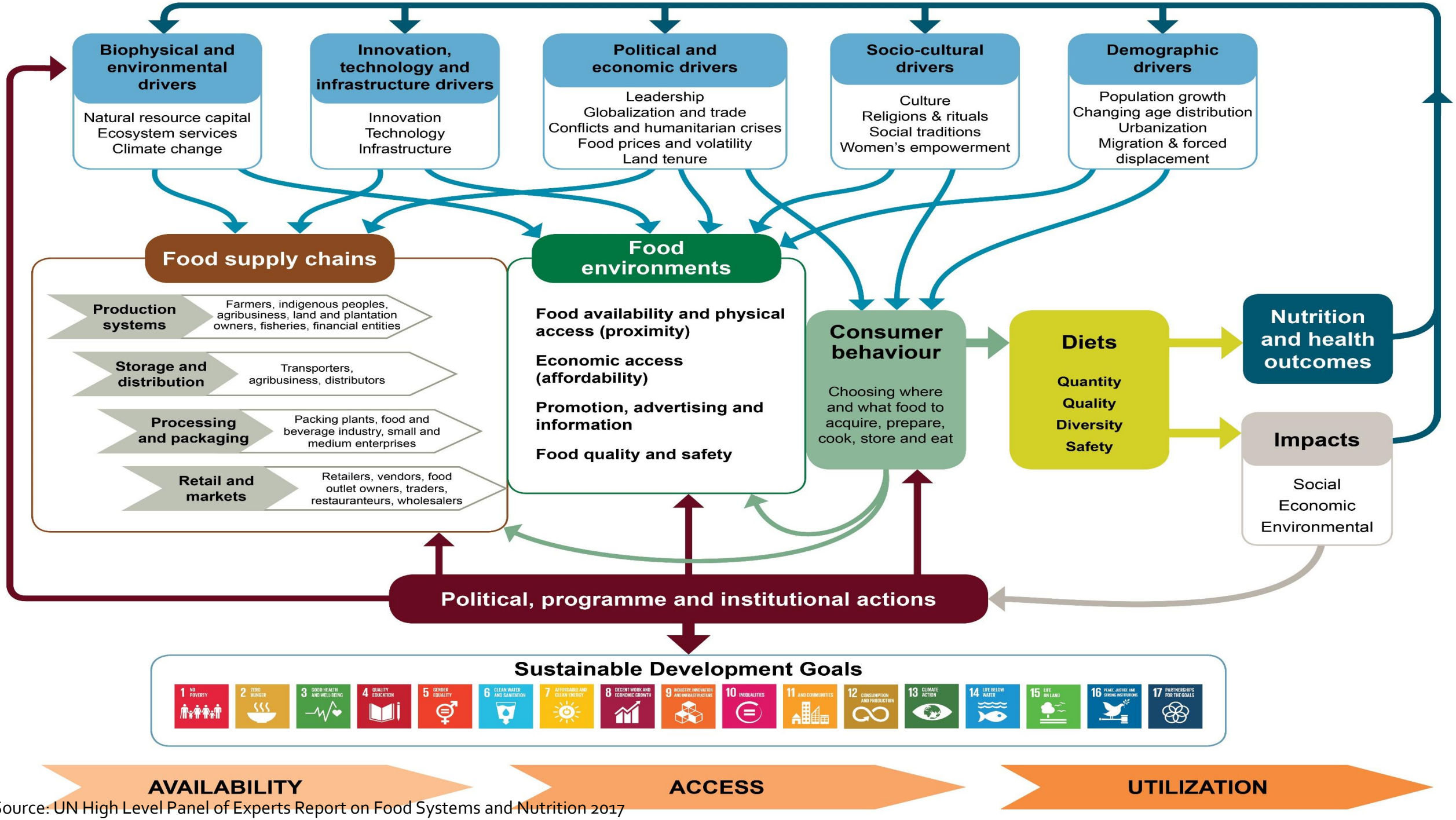
Sources: Popkin, B.M. and Reardon, T., 2018. Obesity and the food system transformation in Latin America. *Obesity Reviews;* Mergenthaler, M., Weinberger, K. and Qaim, M., 2009. The food system transformation in developing countries: A disaggregate demand analysis for fruits and vegetables in Vietnam. *Food Policy*, *34*(5), pp.426-436.

69% packaged foods are not aligned with healthy diets

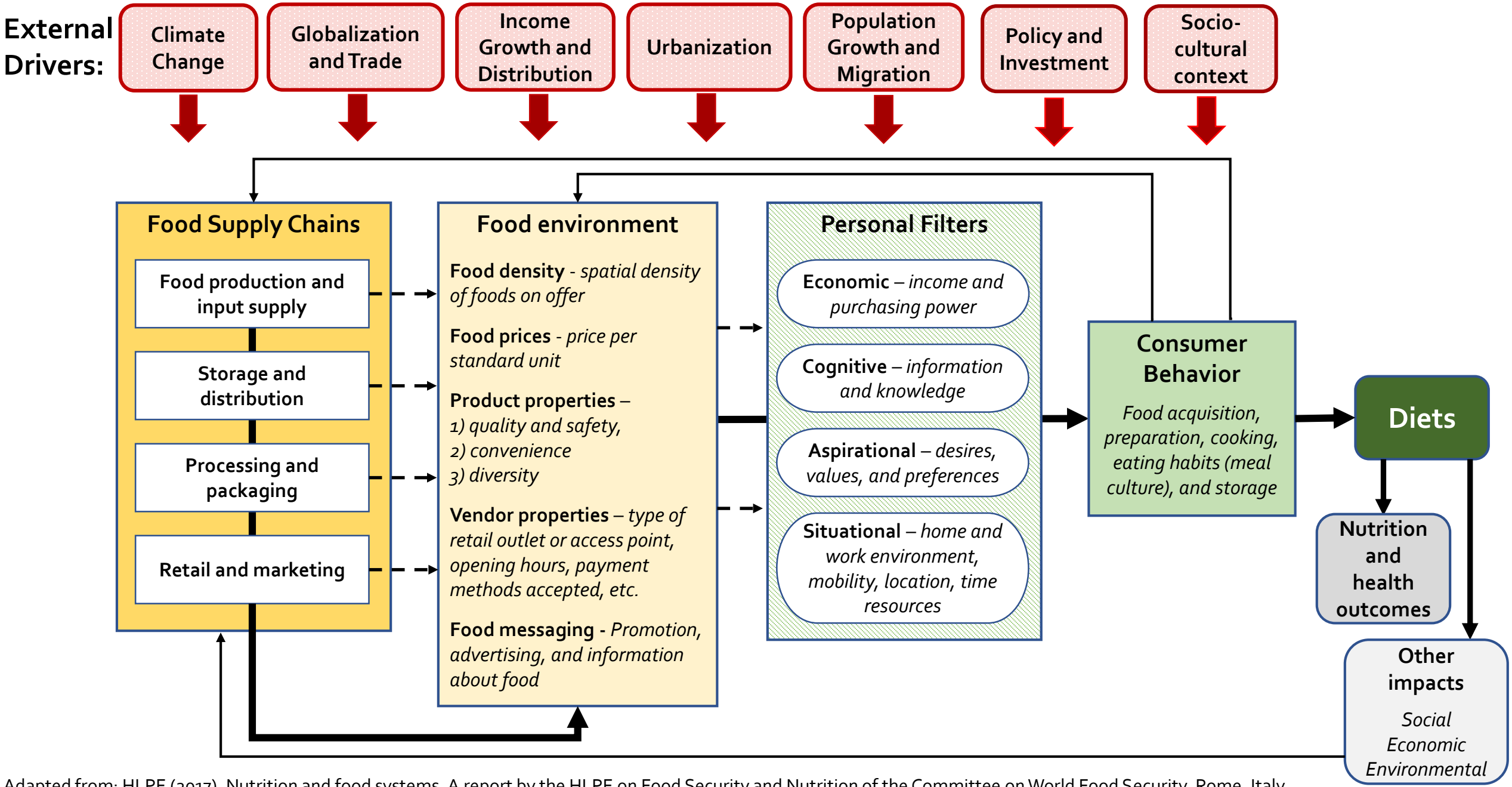
Trends and patterns in per capita packaged food category sales by region, 2005–2017



Source: Development Initiatives: 2018 Global Nutrition Report



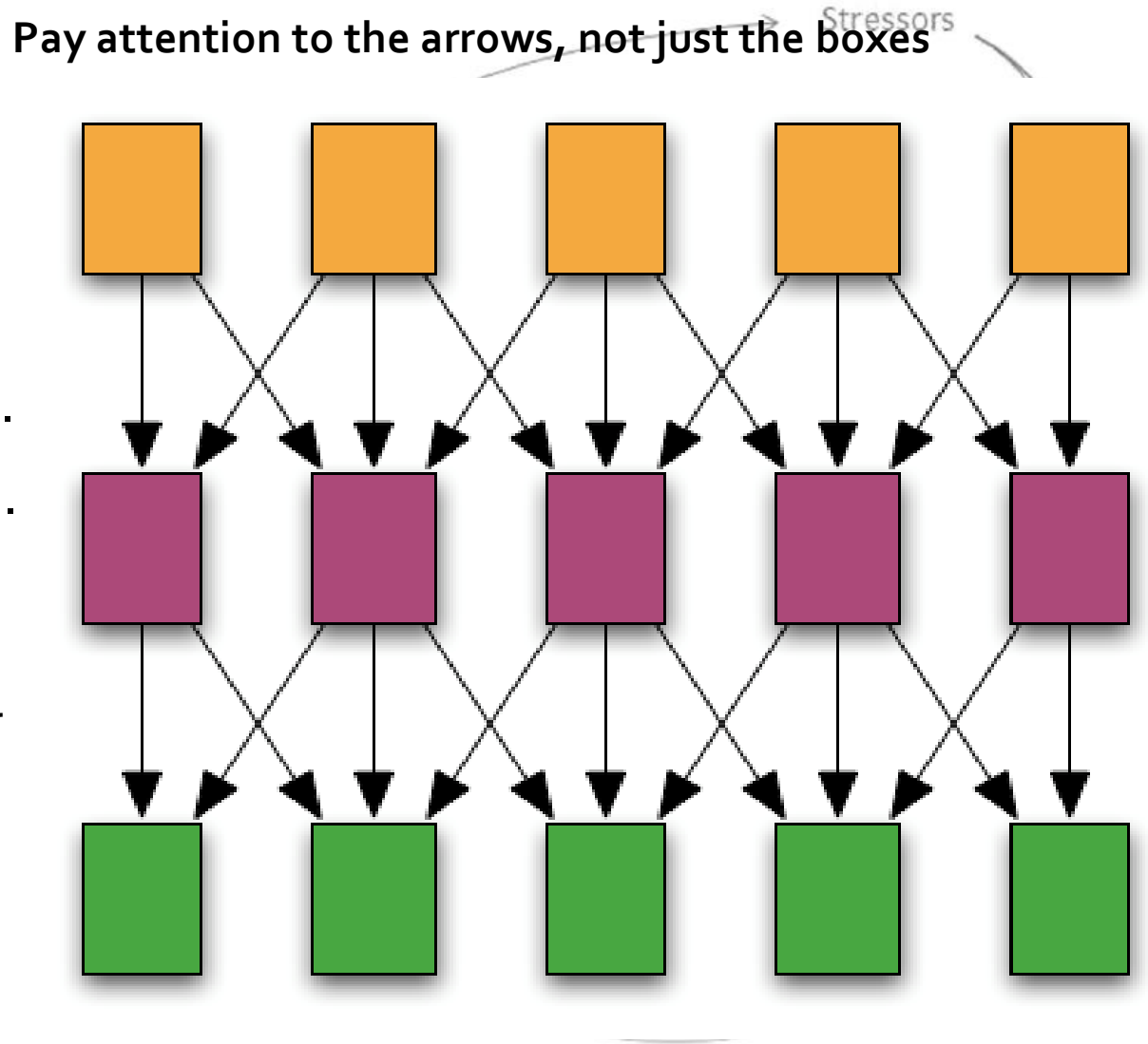
Source: UN High Level Panel of Experts Report on Food Systems and Nutrition 2017



Adapted from: HLPE (2017). Nutrition and food systems. A report by the HLPE on Food Security and Nutrition of the Committee on World Food Security, Rome, Italy.

Food systems are not static

- Food systems are being shifted, shaped, transformed, dismantled.
- Much of that is due to external drivers that +/- impact food system flows and feedbacks, but also supply and demand input/output dynamics.
- Resiliency of systems should also be considered.
- Frameworks don't really show the dynamism, temporalism, or spatial nature of food systems.
- Need to better understand food systems – their feedback loops and the system in its totality.



Source: D.M. Tendalletal./GlobalFoodSecurity6(2015)17–23

Are food systems failing us?

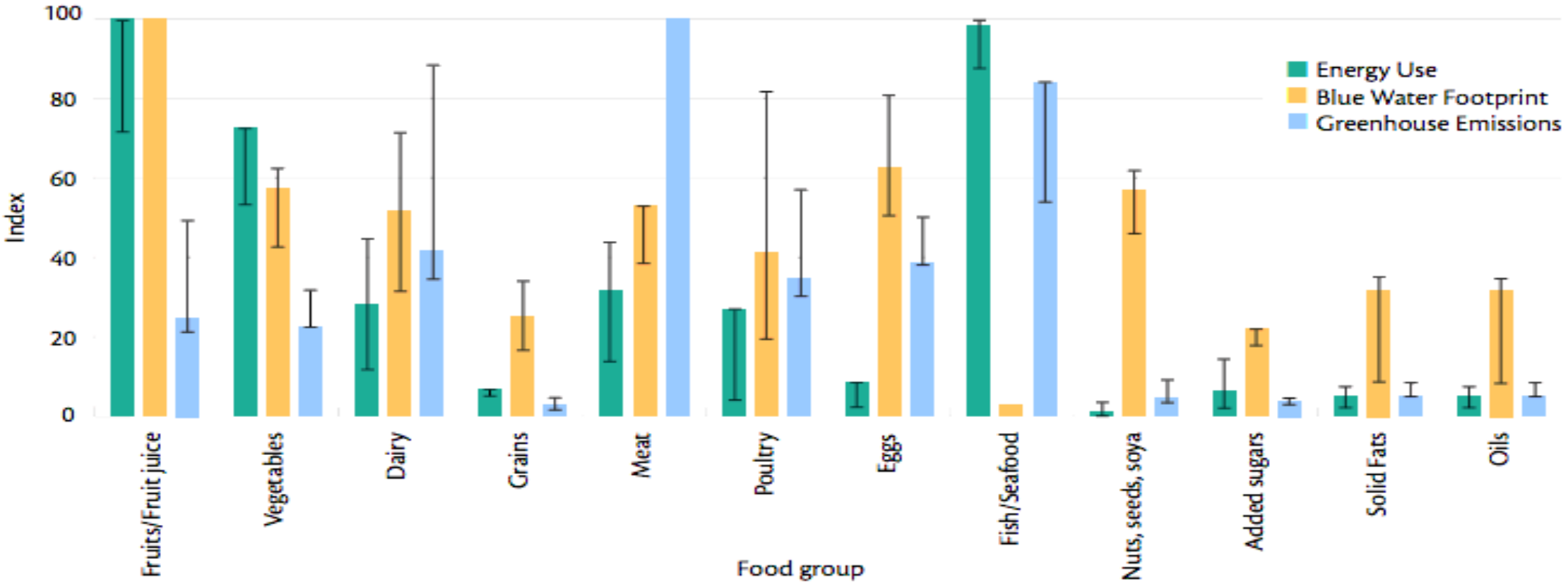
Different narratives about the failure of food systems.

The state of play	What is the failure about?	What is threatened and needs to be fixed?	Where do the priorities for action stand?
"our food system is failing us"	Inability of the system to feed the future world population	Food security	Closing the yield gap
	Inability of the system to deliver a healthy diet	Nutrition security and health	Closing the nutrient gap and ensuring the quality of diet
	Inability of the system to produce equal and equitable benefits	Social justice, democratic process, small-scale actors	Decentralization, grass-roots autonomy
	Unsustainability of the system and its impact on the environment	Natural resources, agrobiodiversity, energy-water-carbon efficiency	Reducing the food-print of the system on the environment

Source: C. Béné et al. / World Development 113 (2019) 116–130

More and more, environmental sustainability issues are coming into the spotlight

Energy use, blue water footprint and greenhouse gas emissions from different food groups in the US



Source: Global Panel on Food and Agriculture For Nutrition Foresight Report 2016

The Nutrition Transition + Planetary Health

Urbanization, globalization, economic growth, technological changes for work, leisure, and food processing, mass media growth

Pattern 3
Receding famine, smallholder, rural

- Low variety and diversity of foods
- Low consumption of processed foods
- Labor-intensive

Stunting, Maternal and child Health deficiencies and MNDs

Slow stunting decline, Slow mortality decline

Pattern 4
Modernized, rural, and more peri-urban, urban societies

- Increased processed, packaged foods — high fat, sodium, sugar
- Caloric beverages and alcohol
- Shift in technology, less labor-intensive work and leisure

Obesity emerges, Diet-related NCDs

Increased life expectancy but increased disability and NCDs

Pattern 5
Educated, mainly urban

- Reduced highly processed foods
- Increased fruit and vegetables
- Still less labor-intensive work but increased physical activity for exercise

Reduced obesity, Reduced diet-related NCDs

Extended lifespan, Reduced mortality due to NCDs

Pattern 6
Educated, mainly urban with some ti back to land, concerns for human & planetary health

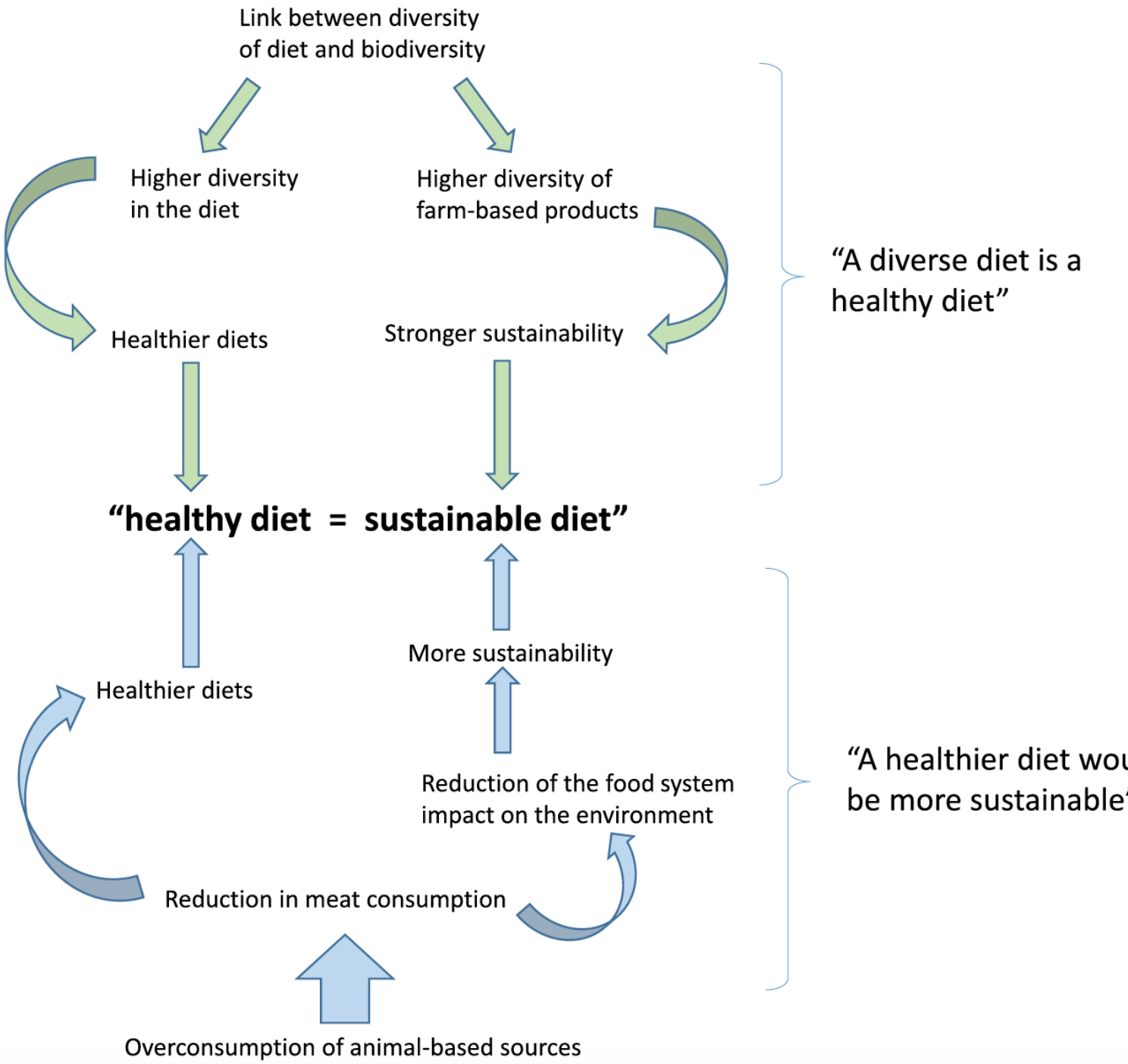
- Flexitarian diet
- Minimal packaged foods and reduced waste
- Purposeful activity with public transport

Reduced obesity, Reduced diet-related NCDs Reduced use & degradation of natural resources

Extended lifespan
Reduced mortality due to NCDs
Reduced carbon footprint

Source: Popkin and Drewnowski 1993; Crino et al 2016; Revised Fanzo et al 2017

Two causal pathways 'explaining' the equation "sustainability = health" based on the cases of agrobiodiversity use and meat overconsumption



Source: C. Béné et al. / World Development 113 (2019) 116–130

What information do typologies provide that help us assess how well food systems are delivering healthy diets?

Let's talk about typologies…

"We can use typologies to better understand a food system, but these typologies do not necessarily help us change it." - Stefano Prato

What are typologies?

- The study of different types
- Typology most often classifies things by certain commonalities or classifies them by certain differences.
- Using typology helps to better understand certain conditions or factors of those things or how things relate to each other.

What are the advantages of typologies?

- Categorize the complexity of "systems" into specific societal attributes and group together a number of countries that share the attributes without having to do an in-depth and separate analysis for each country.
- Seeks generalizable systemic regularities that permit the grouping of certain societies (or food systems) and contrasts them with others.
- Offered as a didactic apparatus to guide discussion and provides a comparative approach.

What are the limitations of typologies?

- Not all countries fall clearly into one category and there is within-category country variation or may have features of other types.
- Provides crude measures that may conceal conflicting influences on food systems that cannot easily be discerned or may have different affects on outcomes.
- Misses the variability of food systems in countries and more so, food environments.
- Often, national level data, is limited when thinking about the operationalization of food systems at sub-national and micro-national levels.

Broad trends food system typology example

	Traditional	*Structured*	*Modern / Integrated*
Share of agriculture in GDP	High	Medium	Low
Urbanization	Rural	Urbanizing to varying degrees	Urbanized
State of the agricultural economy	Traditional	Modernizing	Industrialized
Rural income sources	Few opportunities outside agriculture (farming or ag. wage labour), high migration	More diversified opportunities, dualistic	Agriculture and manufacturing, dwindling rural population
Agriculture's role in poverty reduction	Agriculture growth stimulates mass poverty reduction via market linkages and labour for traditional export commodities	Ag. growth reduces rural poverty and manages the urban transition. Opportunities in processing and high-value crops in domestic markets	Ag. growth promotes rural income parity, agribusiness provides employment, provision of ecosystem services
Institutions	State boards	Transitioning	Regulatory
Examples	Bhutan, Kenya	India, China, Honduras, Mexico	US, EU

Source: McCulllough, Pingali, Stamoulis (2008)

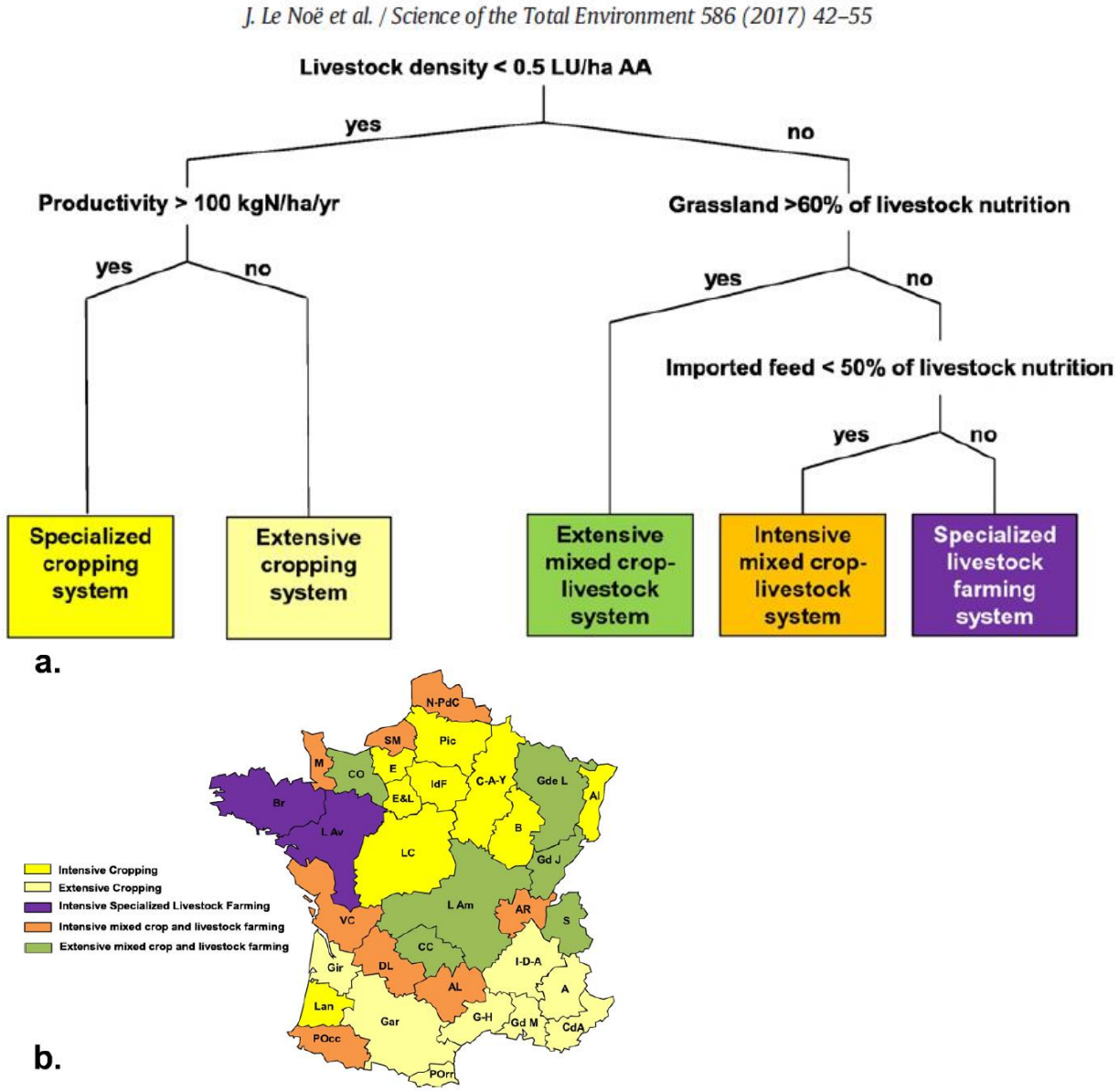
- Characteristics used to create the typology are a mix of variables that can be quantified and stylized descriptions of food system elements.
- Makes it easier to include characteristics the authors feel are important, but where data might not be available.
- Could be viewed as subjective.
- There are not clear thresholds that distinguish the types.

Food value chain typologies example

Type	Description
Traditional	Traditional traders buy primarily from smallholder farmers and sell to consumers and traditional retailers in wet (mostly local) markets
Modern	Domestic and multi-national food manufacturers procure primarily from commercial farms and sell through modern supermarket outlets
Modern-to-traditional	Domestic and multi-national food manufacturers sell through the network of traditional traders and retailers (e.g. “mom and pop” shops)
Traditional-to-modern	Supermarkets and food manufacturers source food from smallholder farmers and traders

Source: Gómez, M.I. & Ricketts, K.D. 2013. Food value chain transformations in developing countries: Selected hypotheses on nutritional implications. *Food Policy*, 42: 139–150.

Farming system typologies and decision trees



- A small set of indicators with thresholds are used to group farming systems into types, and decisions regarding the grouping takes place in a hierarchical manner.
- A different set of indicators may be examined based on answers at the previous steps.

Source: Noe et al Science of the total environment 586 (2017)

Typologies to better understand how and where to intervene for nutrition: HLPE approach

Indicators included in the typology:

Dietary energy in food supply (FAO Food Balance Sheet)

Urbanization (percent, UNDESA)

Food affordability (index value, Global Food Security Index)

Presence of food-based dietary guidelines (yes/no, FAO)

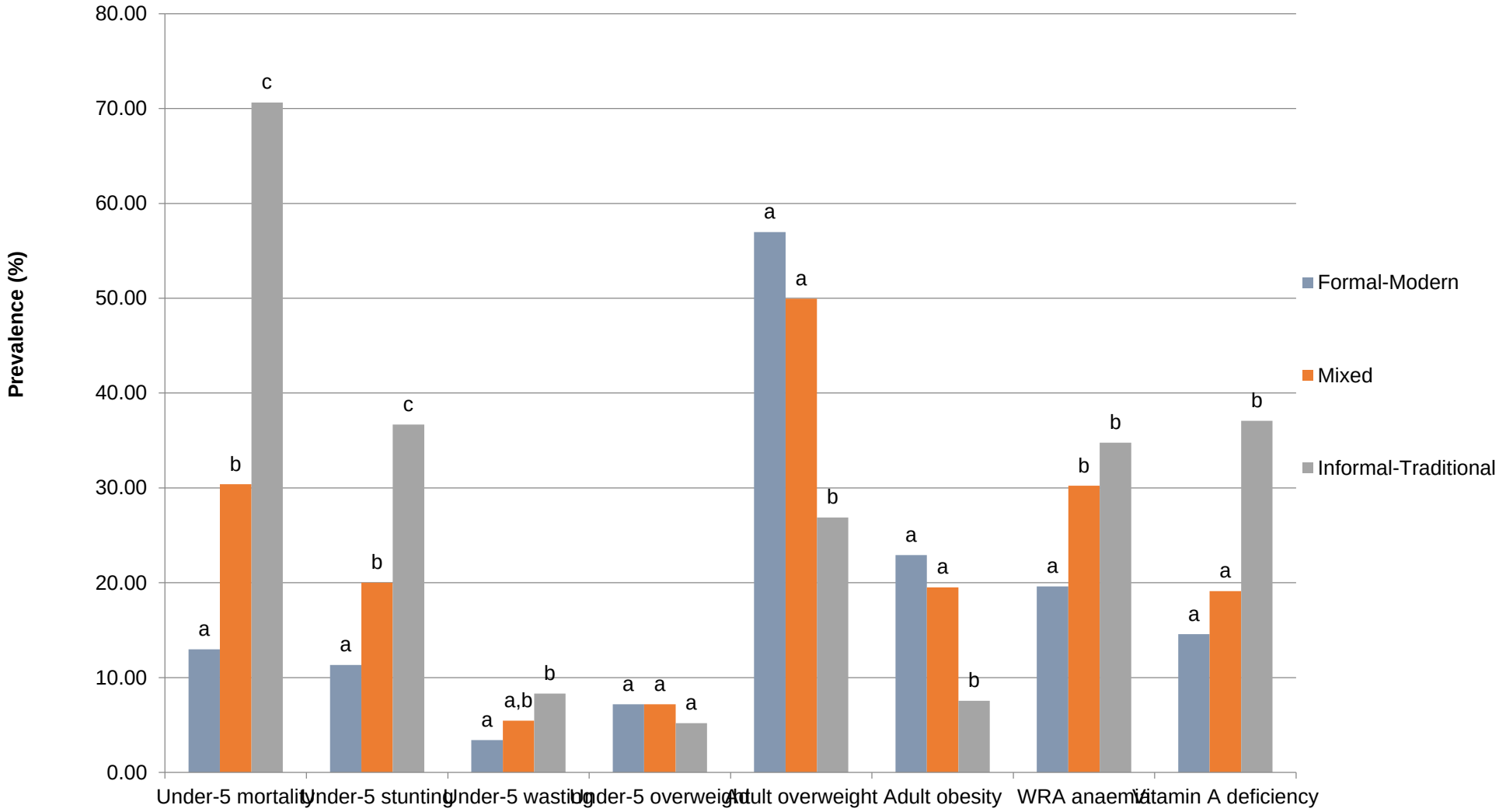
Methodology:

Countries with all four indicators above the median were classified as **modern** food systems. Countries with all four indicators below the median as **traditional** food systems. Countries with indicators both below and above the median were classified as **mixed** food systems.

- Allows classification based on quantitative indicators for all countries where all the indicators in the typology are available.
- Indicators can be chosen to represent different food system elements (i.e. supply chain, food environment, important drivers).
- May decide that indicators should not be equally weighted.
- Food system types may not always associate with the nutrition outcomes that ring true for users, depending on selection of indicators.

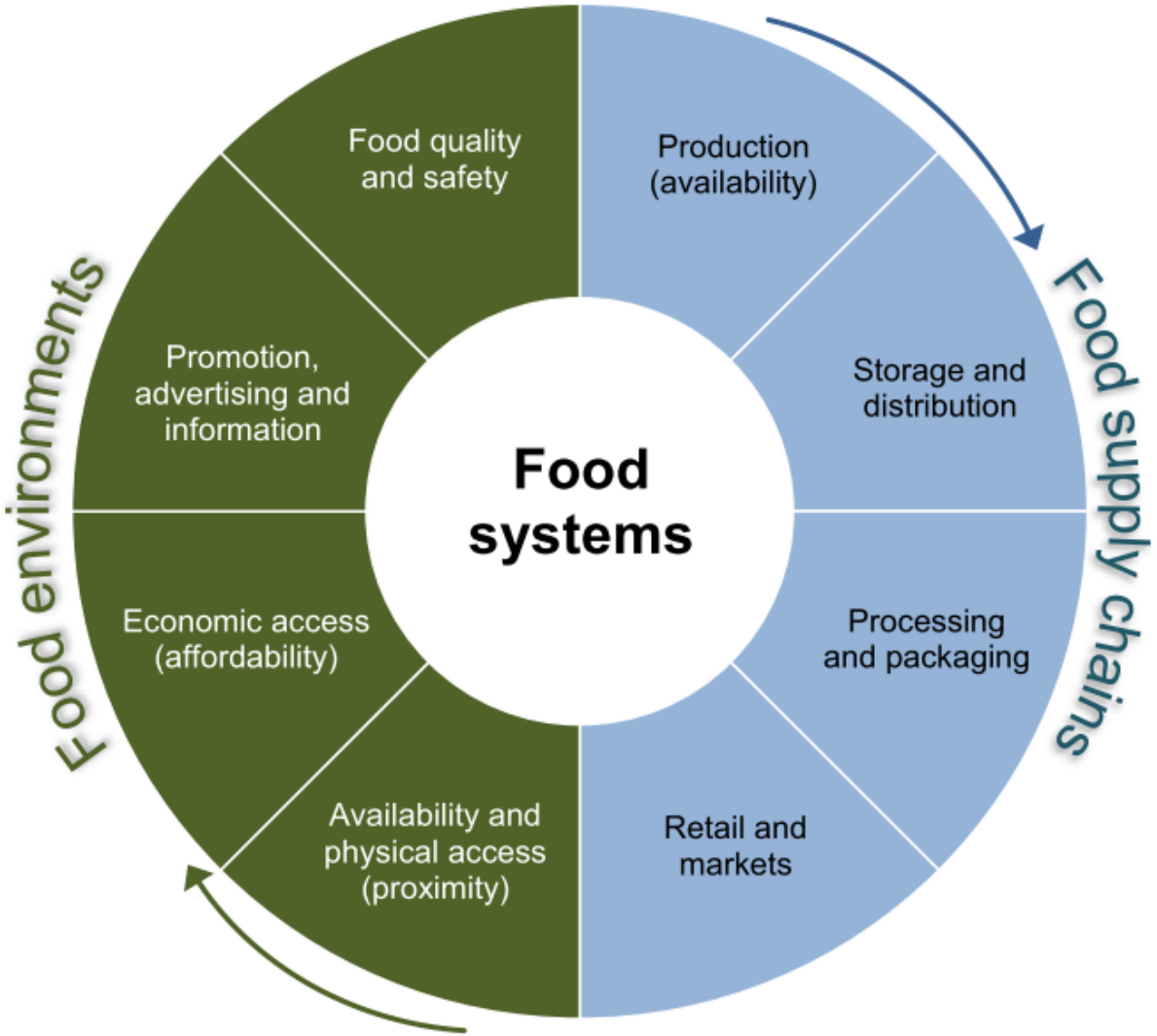
Source: UN High Level Panel of Experts Report on Food Systems and Nutrition 2017

Analysis of nutrition outcomes using HLPE typologies



Source: UN High Level Panel of Experts Report on Food Systems and Nutrition 2017

Many types of food systems & environments

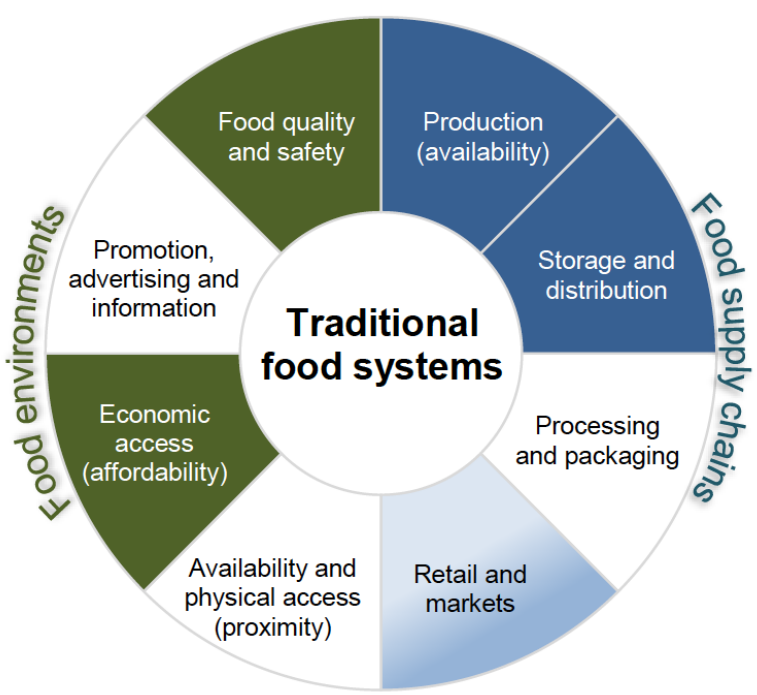


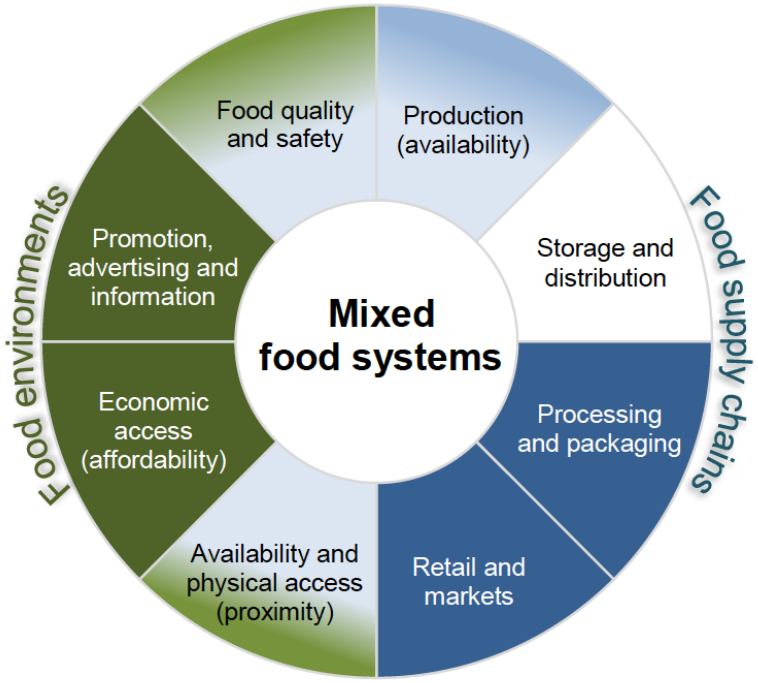
Traditional food systems

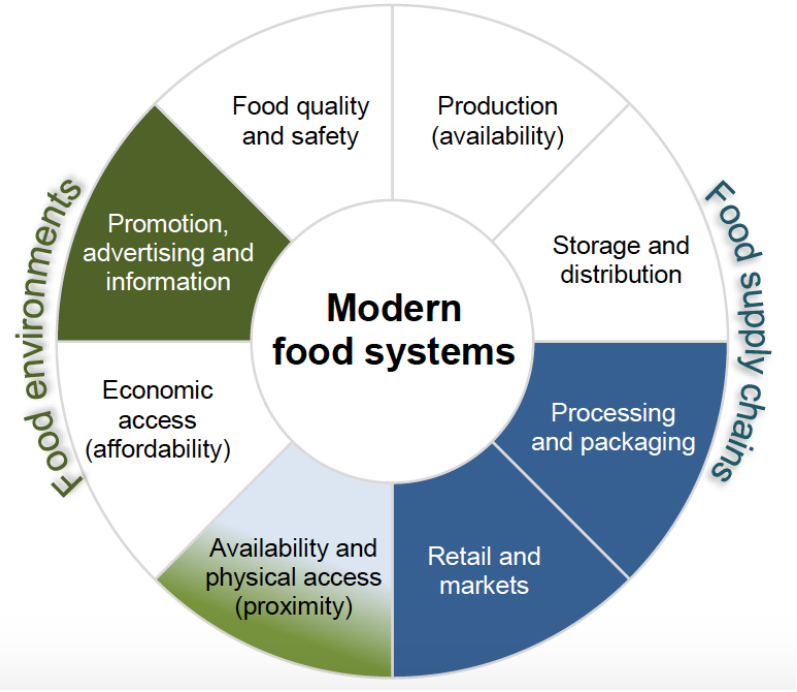
Mixed food systems

Modern food systems

Investment and intervention priorities across food system types







The right side of the wheel (blue) illustrates the elements of the food supply chain while the left side of the wheel (green) the elements of the food environment.
(1) Darker slices indicate elements of the food supply or environment that need *significant* investment and interventions to improve or change.
(2) Shaded slices indicate elements of the food supply or environment that need *some* investment to improve or change but not critical.
(3) Slices left white indicate elements of the food supply or environment which are important investments but if choices need to be made, they are *less of a priority.*

Refugee camp, Breidjing Camp, Chad

Smallholder family farm, Ecaudor

Wet Market, Delhi India

Street Food Stall, Hanoi Vietnam

Local Fast Food Restaurant, Mr. Biggs Nigeria

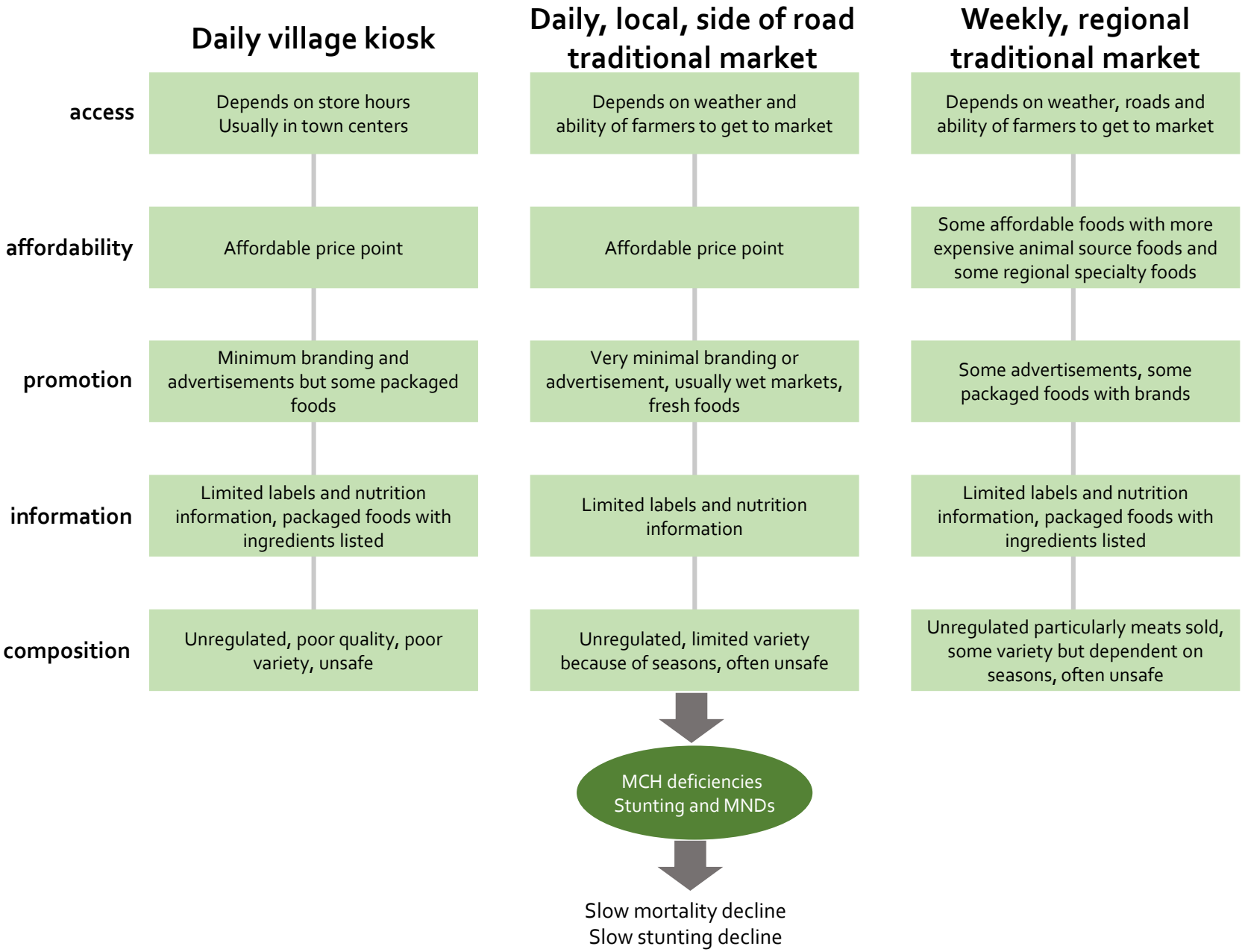
Corner Store, East Baltimore

Supermarket

Walk-in Walk-out

YOUR food environment today!

Pattern 3 Food Environment Typologies: Fewer Choices



Pattern 4 Food Environment Typologies: Increasing Choices

	Supermarket (modern market)	Wet Market (traditional-to-modern)	Bodegas and Corner Stores	Fast Food Restaurants	Street Food Vendors
access	Access often limited in urban centers, requires transport	Accessible in urban areas	Easily accessible, particularly in urban centers	Easily accessible, food swamps in some low-income neighborhoods	Easily accessible, particularly in urban centers
affordability	Processed foods inexpensive, specialty foods, fresh produce, high quality meats and seafood expensive	Affordable price point	Processed foods inexpensive; fresh produce, dairy, and meat expensive	Inexpensive; healthier items often more expensive	Affordable price point
promotion	In-store price promotions (e.g. BOGO) and advertisements	Very minimal advertisements or branding, limited to branded processed foods	Some in-store advertisements for branded processed foods	Price promotions (e.g. value meals), high level of web, print, television promotions, celebrity and athlete sponsorships	Minimal advertisements or branding, primarily reserved to the cart itself
information	List of ingredients, nutrition facts and front-of-pack nutrient declarations labelled on packaged foods	Limited labels and nutrition information, with the exception of branded packaged foods	List of ingredients and nutrition information for branded packaged foods; limited information for non-branded products	Nutrition information available online, limited labeling at point-of-purchase	Limited labels and nutrition information, nutrition information and ingredients on branded packaged foods only
composition	Uniform and quality controlled, wide variety (independent of seasons), fresh and processed foods	Limited regulation, some variety but dependent on seasons	Predominantly poor quality and low variety, particularly for fresh foods	Uniform and quality controlled; energy dense foods high in fat, salt, sugar	Limited regulation; energy dense foods high in fat, salt, sugar; some food safety concerns

Obesity emerges
Diet-related NCDs

Increased life expectancy but increased disability
Increased NCDs

Pattern 5 Food Environment Typologies: Many Choices

	Upscale Specialty Market (modern market)	Farmers Market (modern-to-traditional)	Fine Dining Restaurant	Fast Casual Restaurant	Food Trucks (upscale street food)
access	Limited to affluent neighborhoods	Limited to specific days of the week and times of the year, may be reduced access in low-income neighborhoods	Limited to affluent neighborhoods	Easily accessible, higher density in affluent neighborhoods	Limited to high-density, affluent neighborhoods
affordability	Higher price point, particularly for specialty foods	Price points vary largely depending on location; pay premiums for local, organic and artisanal items	Higher price point	Affordable price point but more expensive than typical fast food restaurants	Affordable price point but more expensive than typical street vendor food
promotion	Limited advertising, in-store promotions often related to production (local, organic, GMO free) practices	Minimal advertising or branding	Social network promotion; online, city newspaper and magazine reviews	Advertising in web, television, print, billboards; focus on freshness, quality and in some cases, sustainability	Social networking promotion; apps that track food trucks; participation in city events
information	Extensive nutrition and "value" labelling; list of ingredients, some in-store labelling of prepared foods; corporate information campaigns	Limited nutrition information, list of ingredients on some unbranded packaged foods, talking to farmers	Limited nutrition information	Some labeling at point-of-purchase (e.g. kcal), some information on antibiotics and GMOs etc.	Limited nutrition information
composition	Local, organic, GMO free; wide variety, fresh and high quality; specialty processed and prepared foods	Fresh, local, organic, high quality produce; prepared foods with variable nutritional quality	High quality ingredients; may be energy dense and contain high amounts of fat and salt	Fresh ingredients, may be energy dense and contain high amounts of fat and salt	Limited regulation, high quality ingredients, may be energy dense and contain high amounts of fat and salt

Slowing down obesity, and diet-related NCDs

Extended lifespan
Reduced mortality due to NCDs

Typologies of neighborhood food environments

Preventive Medicine 111 (2018) 248–253

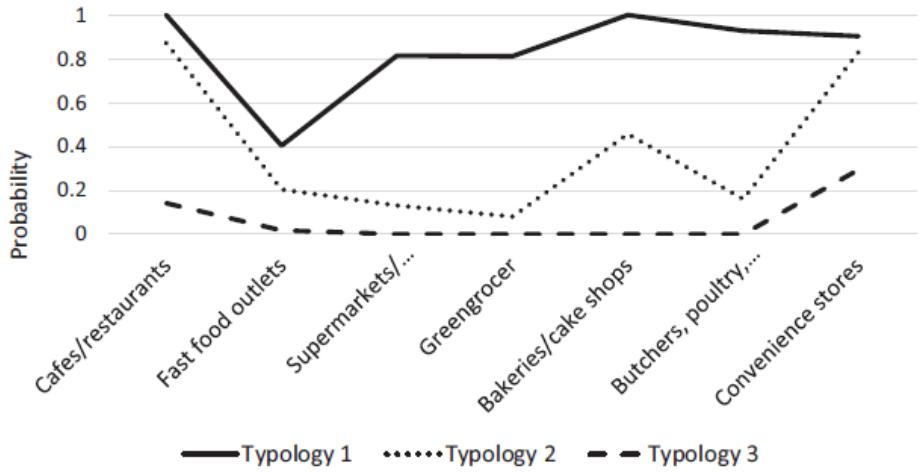


Fig. 1. Probability of typology (class membership) by food outlet type.[a]
[a]Study location: Melbourne and Geelong, Australia; 2003.

- Eight types of retail outlets were counted within buffers of 800m buffers around survey participants homes.
- Latent class analysis was used to identify "types" of neighborhood food environments.
- This can be more objective than other methods, but requires more data.

Type 1 – neighborhoods with a variety of food outlets

Type 2 – neighborhoods with cafes/restaurants and convenience stores

Type 3 – neighborhoods with few types of food outlets available

Source: Timperio (2018)

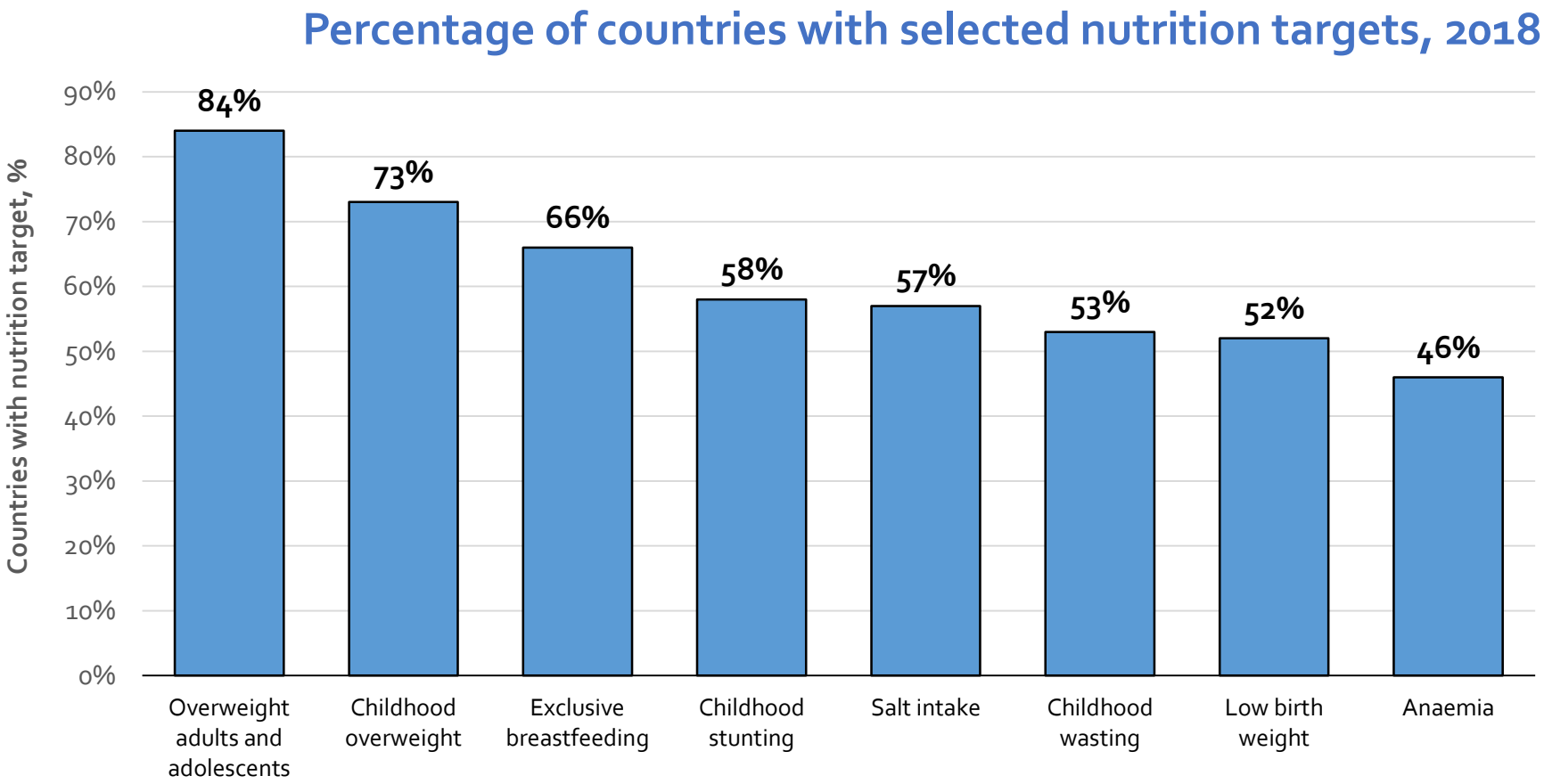
Moving beyond typologies: What information do policymakers need to make decisions about food systems?

“You can’t manage what you don’t measure”…but we have enough to act!

- Existing tools used to measure nutrition links to agriculture and other food policy interventions capture only parts of the food system.
- Evidence-based policy making requires more rigorous and specific metrics relating to these elements of the food system and their dynamic interactions over time.
- Evidence-based policymaking requires sound evidence. It is difficult for governments to make improvements in areas that are not well understood and hence not well measured.
- **That said, we have significant information to act, and we are urgently required to do so** (not having data does not mean one has a ”get out of jail free” card)

Source: Global Panel. 2015. Improved metrics and data are needed for effective food system policies. in the post-2015 era. Technical Brief. London, UK: Global Panel on Agriculture and Food Systems for Nutrition.

81% of countries have three or more nutrition targets



189 countries have at least 1 nutrition target

164 countries have nutrition action plans

Source: Development Initiatives Global Nutrition Report 2018

Progress is needed in six key areas

1. Improving the quality and quantity of data on food intake among different sectors of the population.
2. Reaching agreement on how to measure diet quality.
3. Developing metrics that measure women's roles in dietary choices.
4. Designing metrics to measure the 'food environment', including how different food system domains are linked to, and interact with, the food environment in which dietary choices are made.
5. Devising metrics that measure the healthiness of food systems, all the way from agriculture through markets to people's actual food consumption.
6. Developing metrics that measure people's ability to access food of sufficient quantity and quality as well as their drivers of choice.

Source: Global Panel. 2015. Improved metrics and data are needed for effective food system policies. in the post-2015 era. Technical Brief. London, UK: Global Panel on Agriculture and Food Systems for Nutrition.

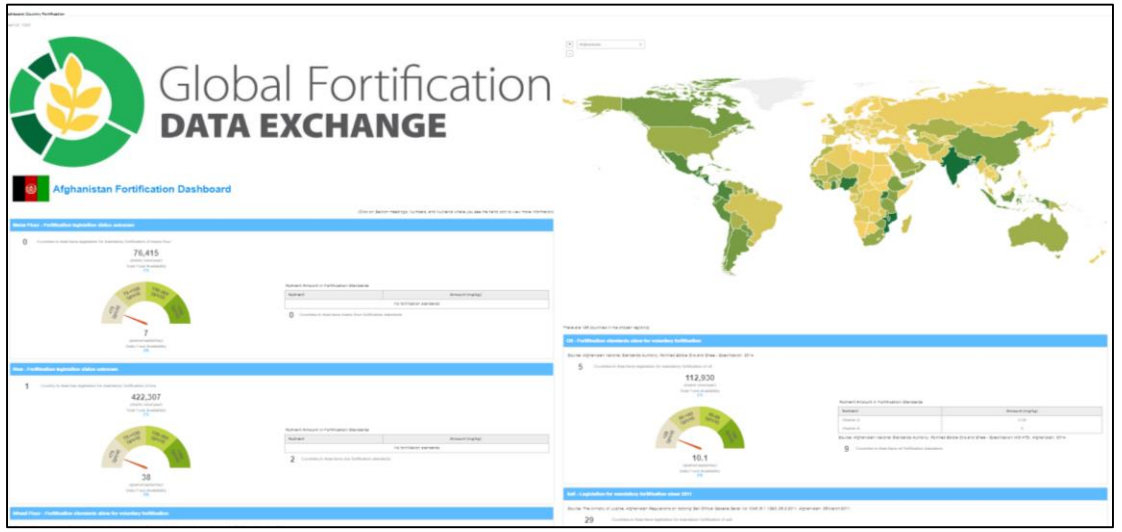
What do we want to understand about diets?

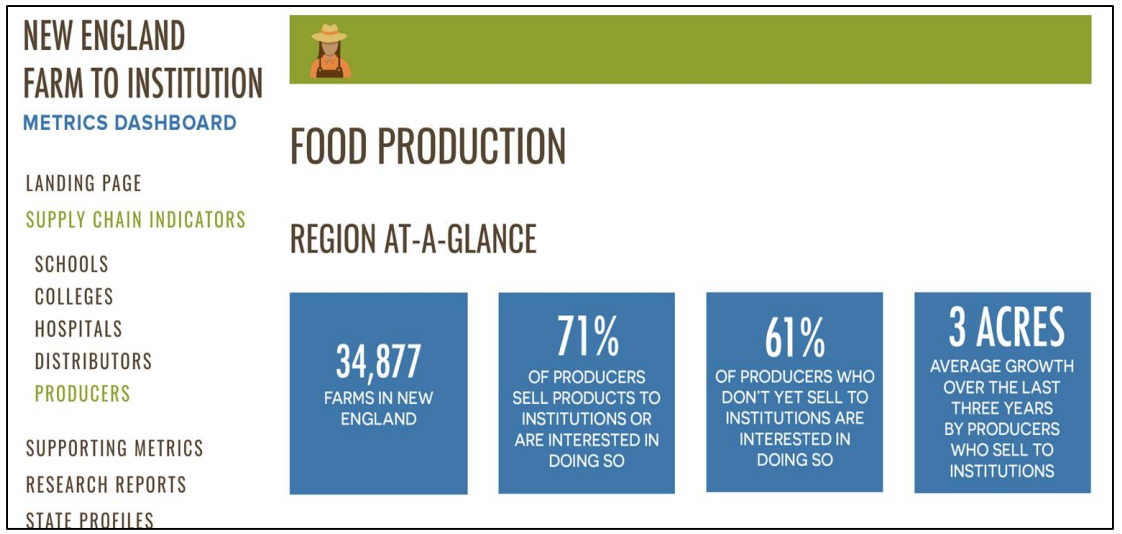
- What are people eating?
- What is the quality and diversity of what people are eating?
- How much do diets cost?
- Where do people get their food from?
- How do people make decisions about what to eat?

Data visualization tools can be powerful

To enable country stakeholders to:

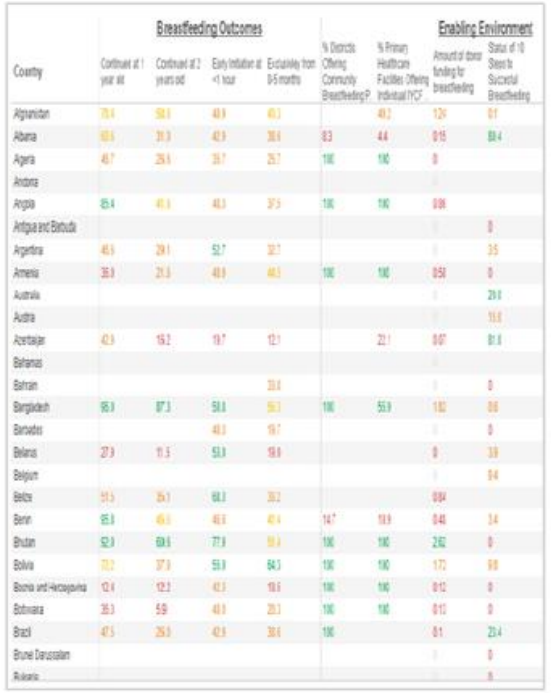
- better visualize their food systems through a data rich "hub" that is visually appealing, easy to use and understand.
- assess the "temperature" of their food system through a scoring system.
- "macro" compare indicators to their neighbors or to countries which are grouped in the same typology.



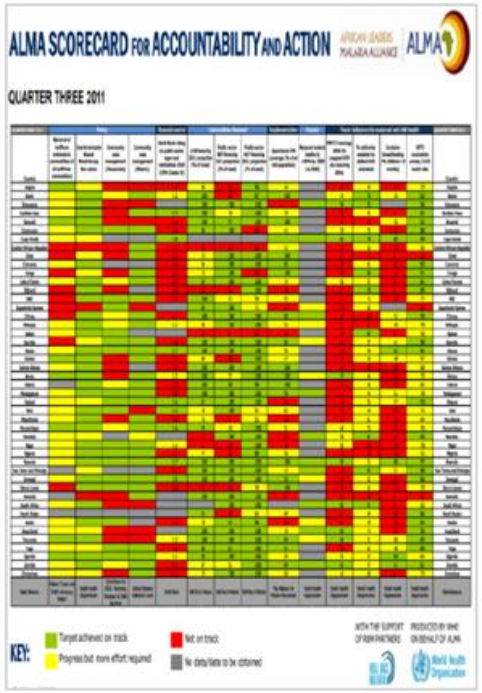


Examples of data visualization tools

Dashboard



Scorecard



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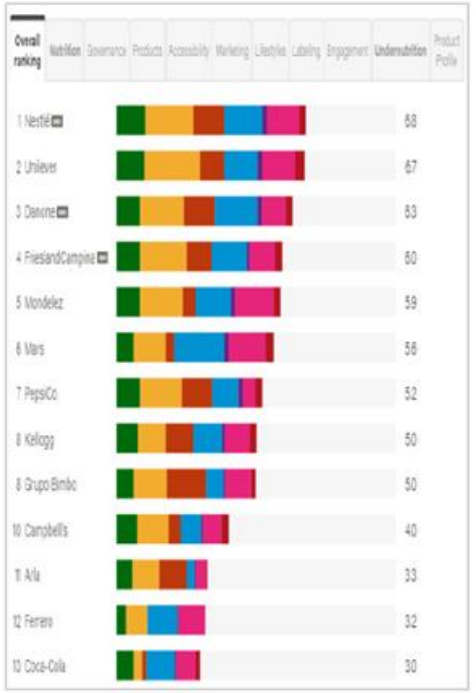
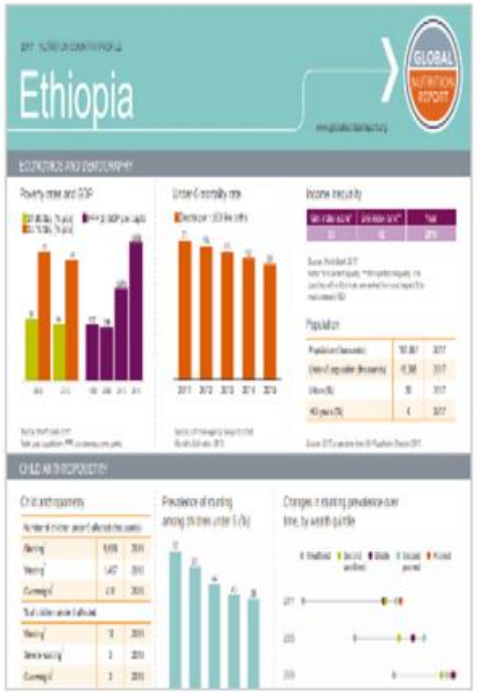


Profile



Source: Research for Development (2018)

United Kingdom

Country report card
Adults

2018

Evidence of Marketing Guidelines/Policy

Evidence of Nutritional Guidelines/Policy

Evidence of Community Interventions

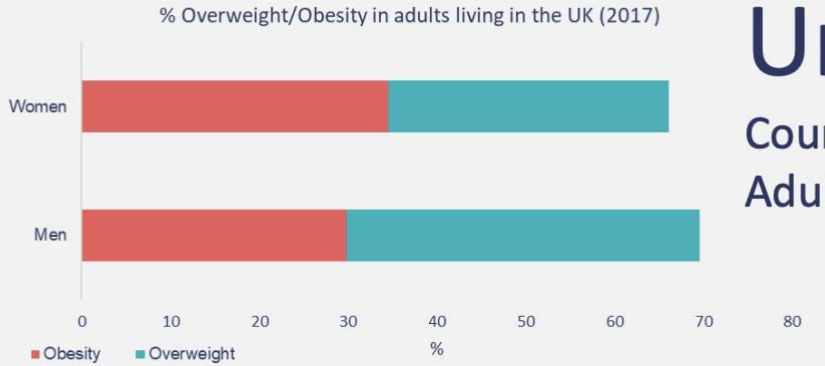
Evidence of taxation on food or beverages

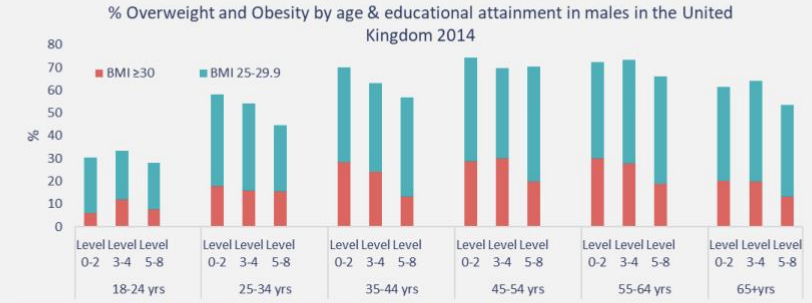
Evidence of Physical Activity Guidelines/Policy

Evidence of National Obesity Strategy/Policy or Action

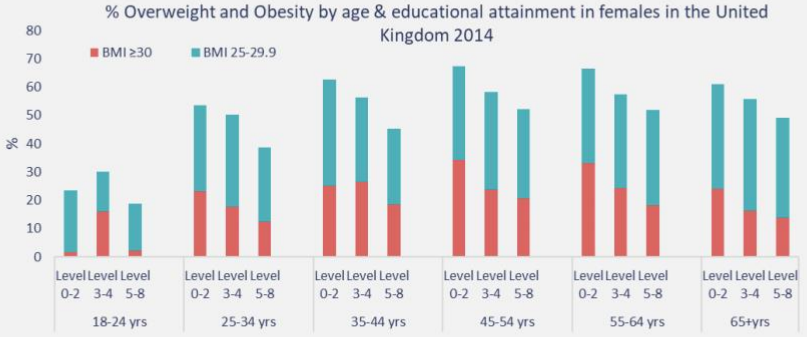
Evidence of Labelling Regulation/Guidelines

Evidence of any government body published any obesity-related treatment recommendations or guidelines for adults or children?



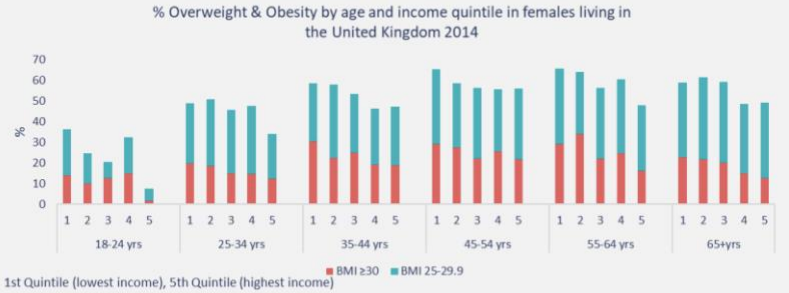


Less than primary, primary and lower secondary education (levels 0-2)
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)
Tertiary education (levels 5-8)



Less than primary, primary and lower secondary education (levels 0-2)
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)
Tertiary education (levels 5-8)

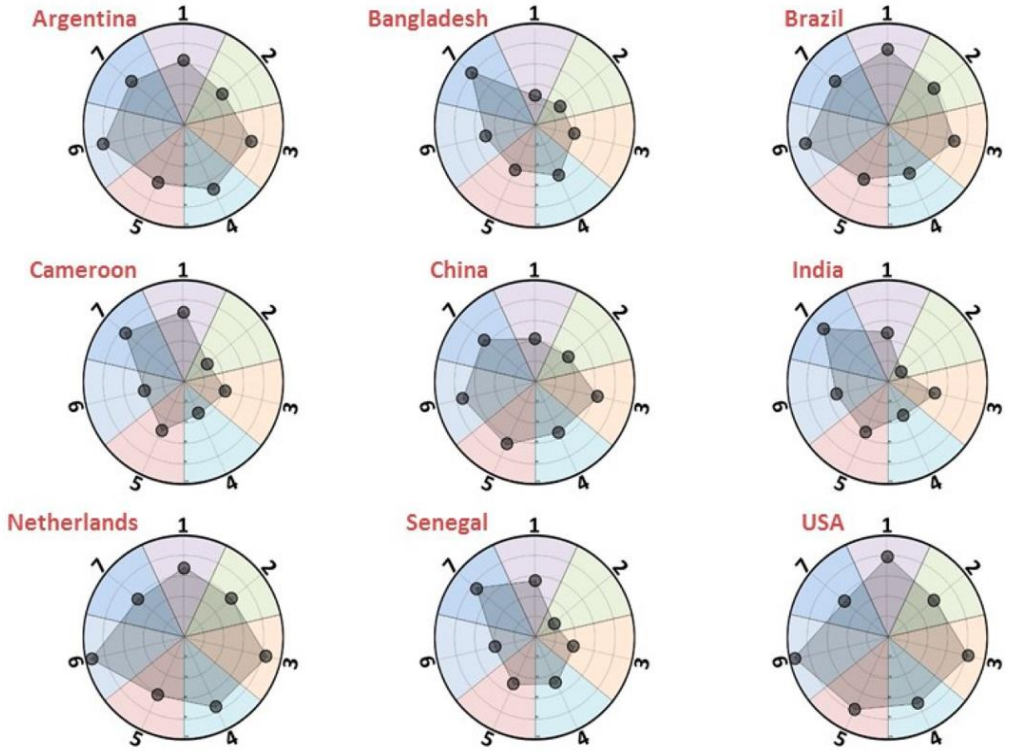
1st Quintile (lowest income), 5th Quintile (highest income)



1st Quintile (lowest income), 5th Quintile (highest income)

Evaluating national food systems for sustainability metrics

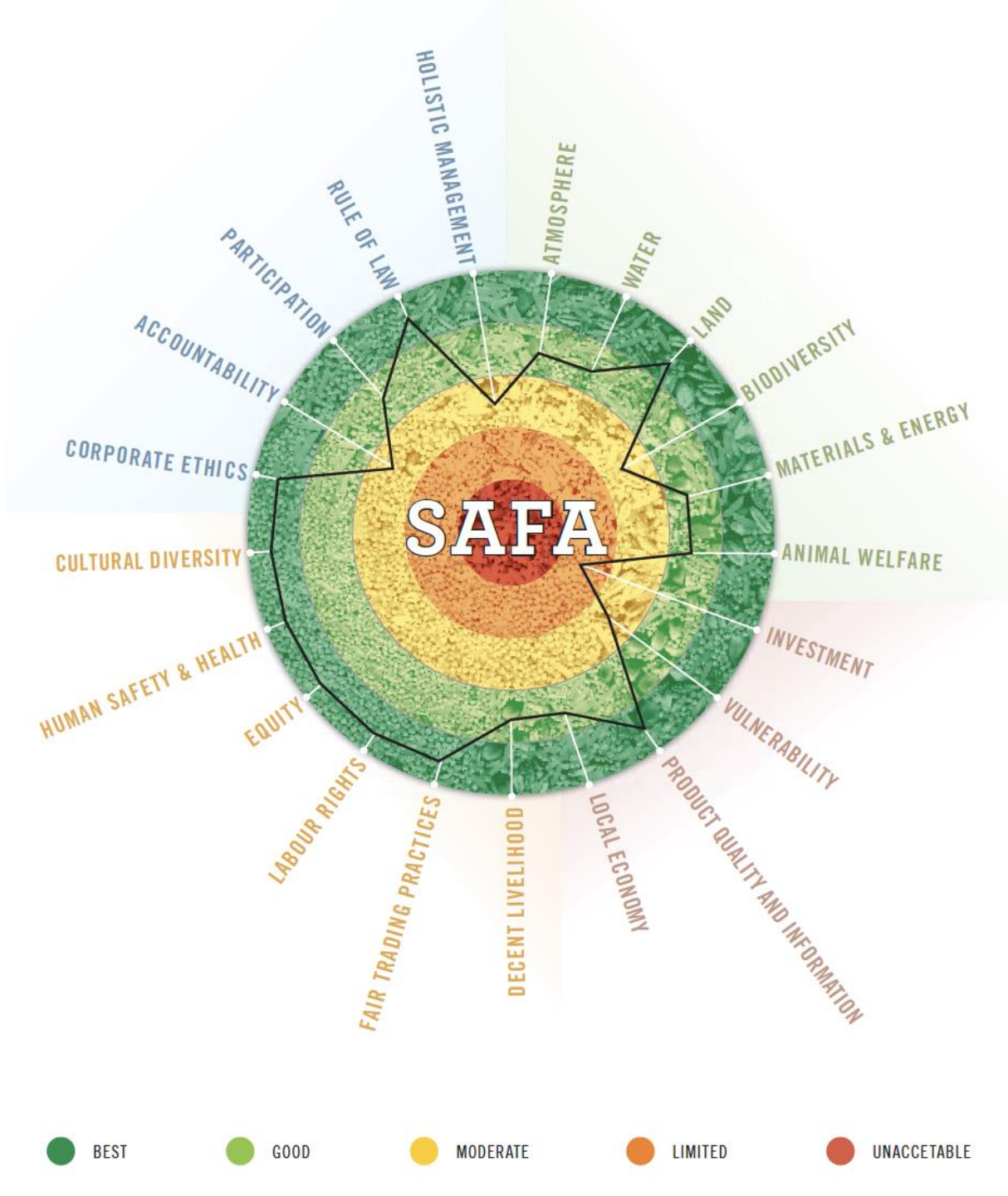
Metric	Indicator	Section Number	Weighting Factor
Food Nutrient Adequacy	Non-Staple Food Energy	2.1.1	0.20
	Shannon Diversity	2.1.2	0.20
	Modified Functional Attribute Diversity	2.1.3	0.20
	Nutrient Density Score	2.1.4	0.20
	Population Share with Adequate Nutrients	2.1.5	0.20
Ecosystem Stability	Ecosystem Status	2.2.1	0.20
	Per-Capita Greenhouse Gas (GHG) Emissions	2.2.2	0.20
	Per-Capita Net Freshwater Withdrawals	2.2.3	0.20
	Per-Capita Non-Renewable Energy Use	2.2.4	0.20
	Per-Capita Land Use	2.2.5	0.20
Food Affordability & Availability	Food Affordability	2.3.1	0.25
	GFSI Food Availability Score	2.3.2	0.25
	Poverty Index	2.3.3	0.25
	Income Equality	2.3.4	0.25
Sociocultural Wellbeing	Gender Equity	2.4.1	0.25
	Extent of Child Labor	2.4.2	0.25
	Respect for Community Rights	2.4.3	0.25
	Animal Health & Welfare	2.4.4	0.25
Resilience	ND-GAIN Country Index	2.5.1	0.50
	Food Production Diversity	2.5.2	0.50
Food Safety	Foodborne Disease Burden	2.6.1	0.50
	GFSI Food Safety Score	2.6.2	0.50
Waste & Loss Reduction	Pre- & Post-Consumer Food Waste & Loss	2.7	1.00



Source: Gustafson, D., Gutman, A., Leet, W., Drewnowski, A., Fanzo, J. and Ingram, J., 2016. Seven food system metrics of sustainable nutrition security. *Sustainability*, *8*(3), p.196.

SAFA tool

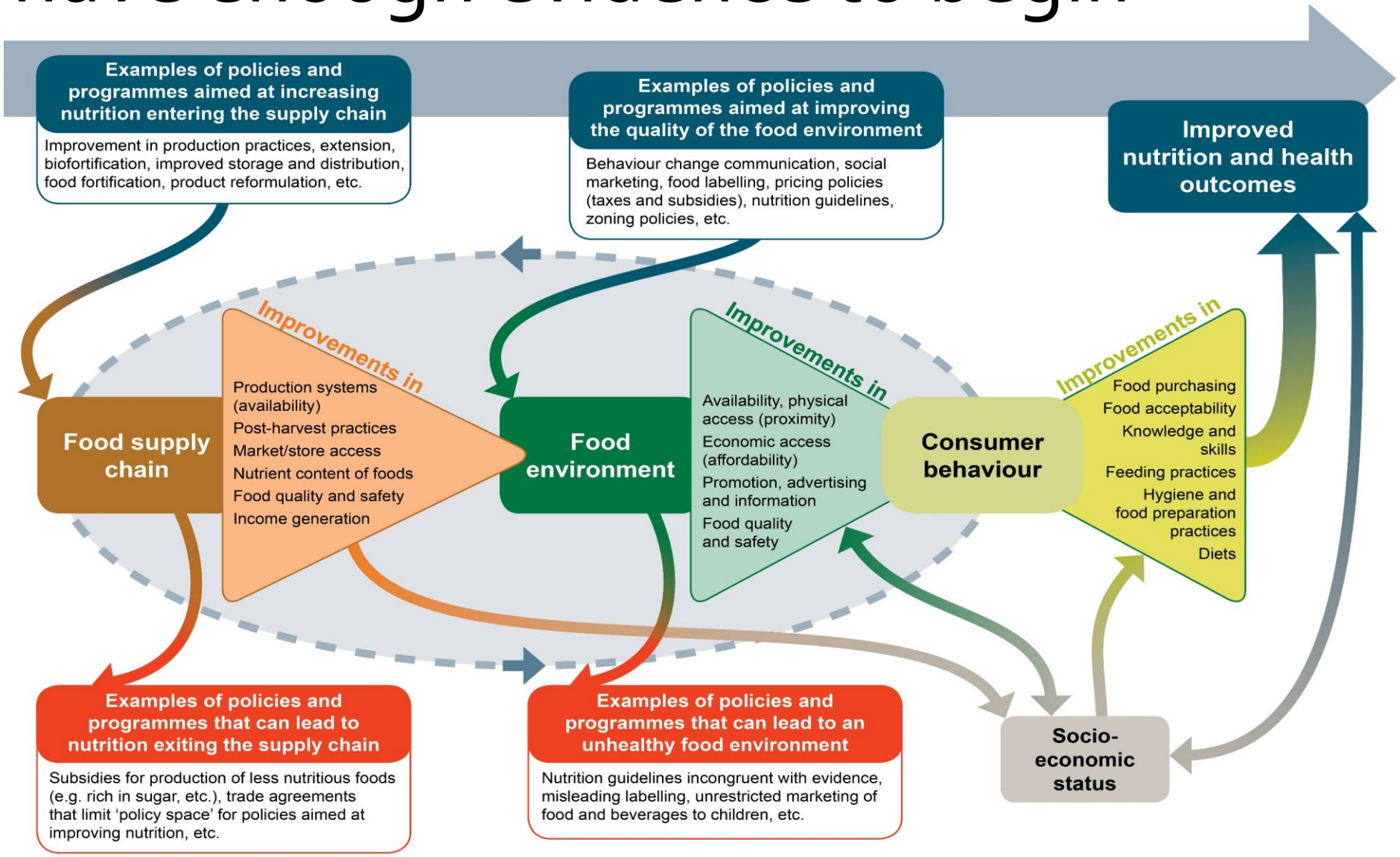
SAFA is a holistic global framework for the assessment of sustainability along food and agriculture value chains. SAFA establishes an international reference for assessing trade-offs and synergies between all dimensions of sustainability.



Data is *very* political.

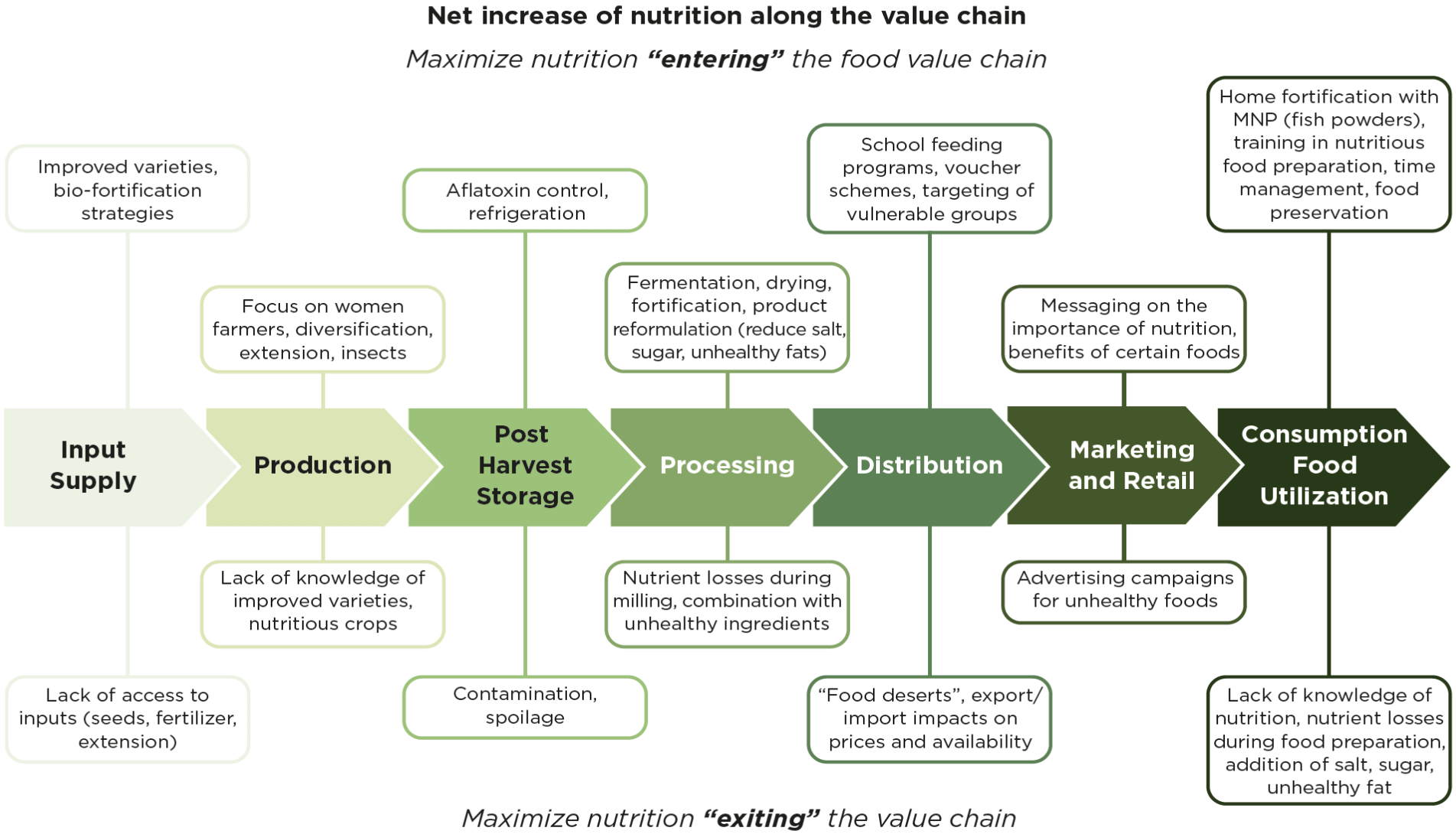
Why are the voluntary guidelines so central following the HLPE report?

We have enough evidence to begin



Source: HLPE (2017). Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome, Italy.

Example: Nutrition along supply chains



Source: Fanzo, J. C., Downs, S., Marshall, Q. E., de Pee, S., & Bloem, M. W. (2017). Value Chain Focus on Food and Nutrition Security. In *Nutrition and Health in a Developing World* (pp. 753-770). Springer International Publishing.

There is progress in effective policies and programmes

1. More countries have mandatory fortification

86 countries now require at least one type of cereal grain to be fortified with iron and/or folic acid. Only 19 countries are still classified with insufficient iodine intake, a dramatic shift from 110 countries in 1993

2. Governments are acting to improve diets

59 countries impose taxes on sugar-sweetened beverages, many in the context of excess intake: Mexico saw 9.7% decline in spending on sugary drinks within 2 years

3. Multi-sector action in cities is growing

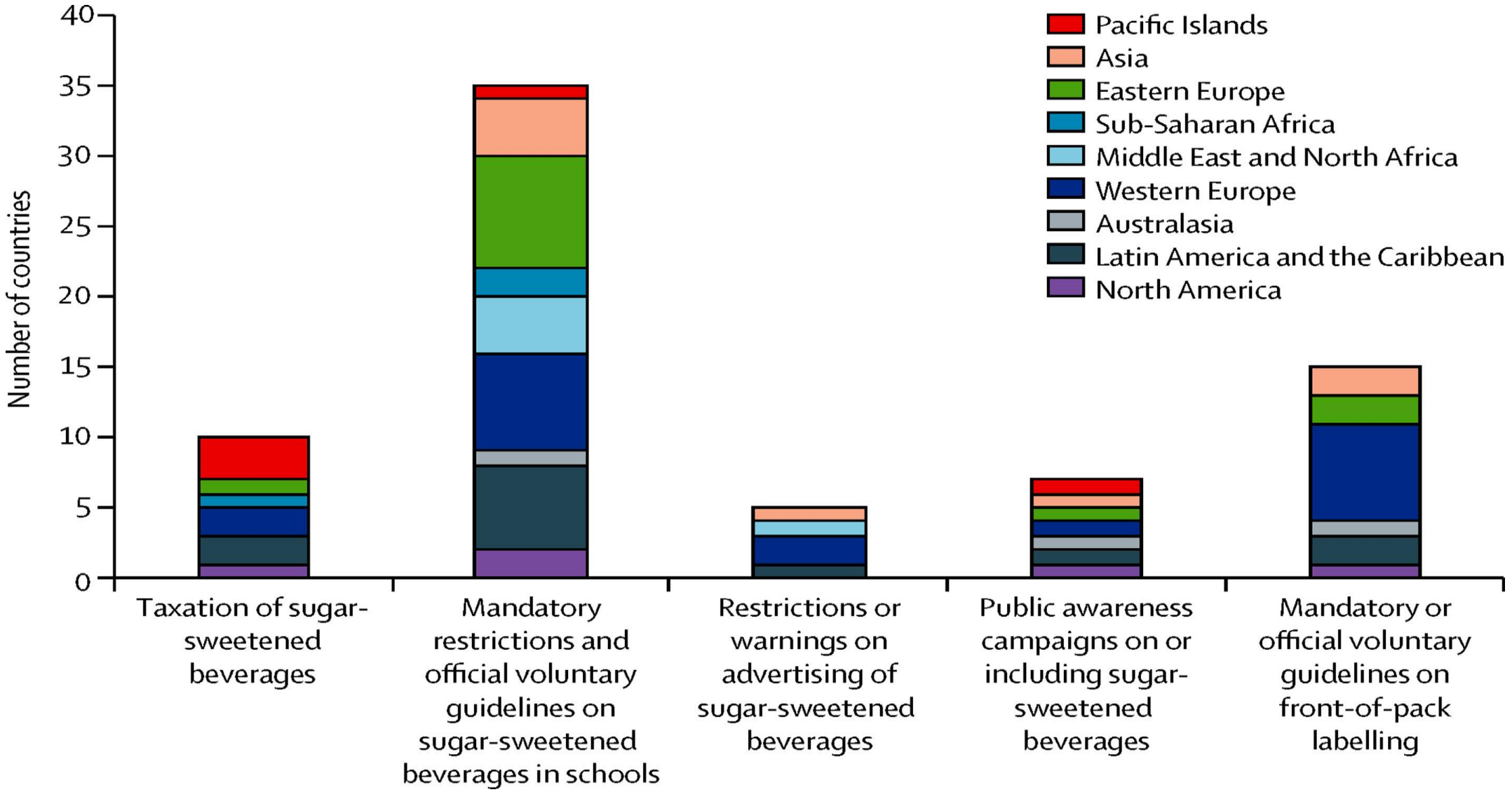
Decline of obesity in Amsterdam by 12.5%, declines in municipalities in the US

4. Multi-level, community based interventions show rapid impact

Minimum dietary diversity prevalence increased 5.2%–24.9% in communities with intense activity by "Alive and Thrive" in Ethiopia 2015–2017

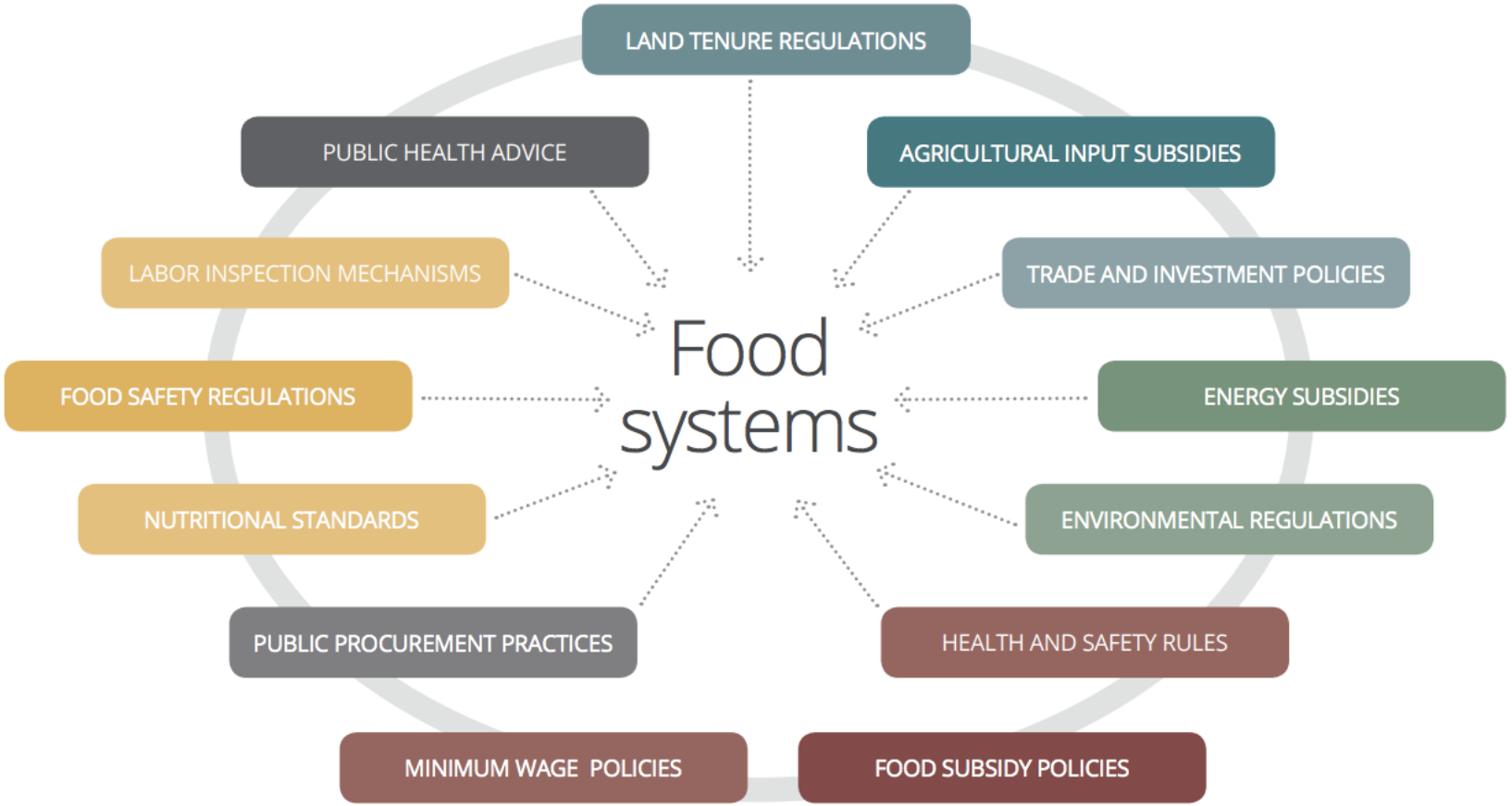
Source: Development Initiatives Global Nutrition Report 2018

But we need more policy implementation and scale



Source: Popkins and Hawkes 2016 Lancet Diabetes & Endo

Need for more coherence across policies



Adapted from: HLPE (2017). Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome, Italy; IPES 2015 Report

Voluntary guidelines on food systems & nutrition

Build on the evidence base outlined in the HLPE report and take it one step further.

- The “what”
- The “how” and the “context”
- The “who”
- The “impact”

Thank you!