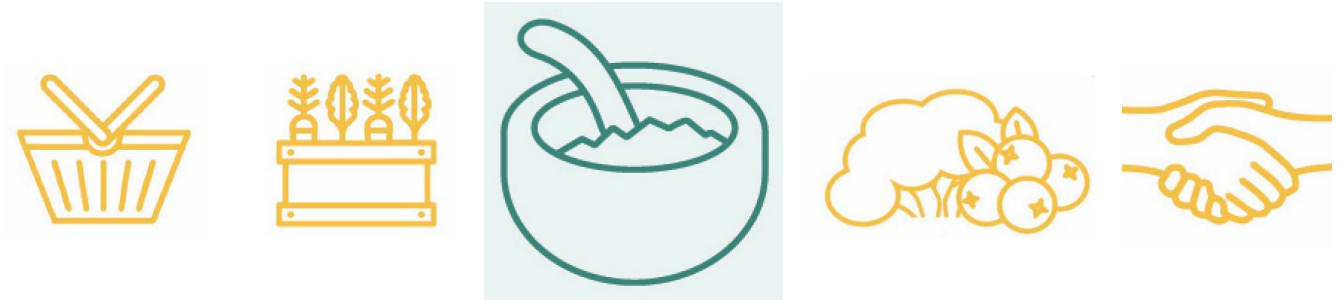

Food environment research in low- and middle-income countries: Concepts and emerging evidence

Dr Christopher Turner

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LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

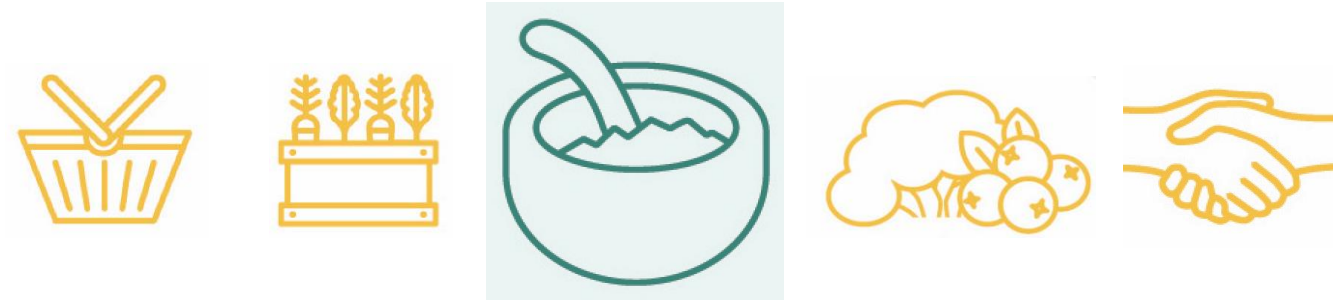
LCIRAH The London Centre for Integrative Research on Agriculture & Health

UNIVERSITY of GREENWICH

NRI | Natural Resources Institute

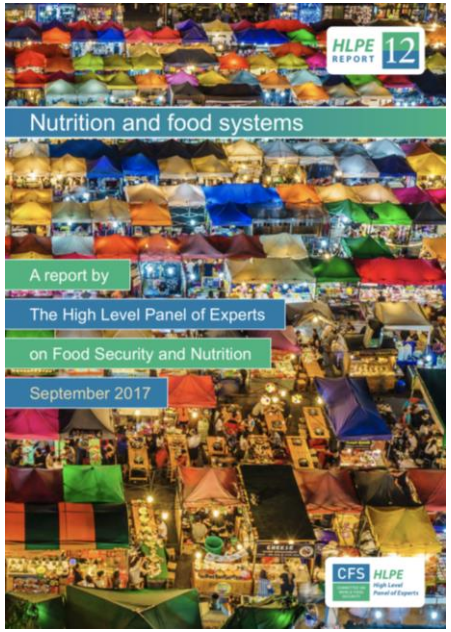
immana Innovative Metrics and Methods for Agriculture and Nutrition Actions

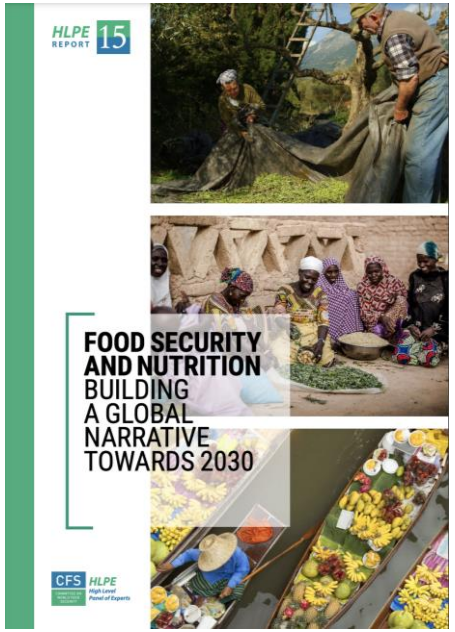
ANH Academy Agriculture, Nutrition & Health Academy

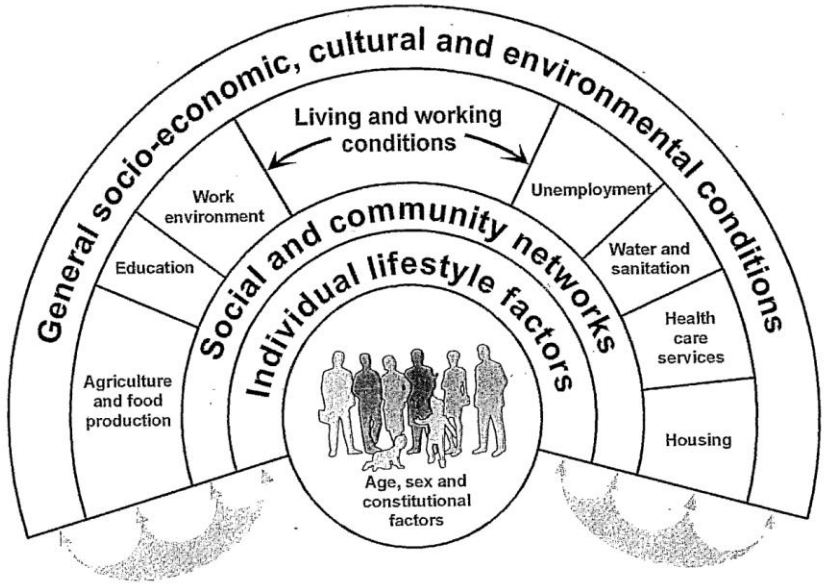


Background: Key concepts

- Growing global interest in food environments in response to the need to improve dietary, nutrition and health outcomes (Lytle and Sokol, 2017; Turner et al., 2020).
- A number of recent food environment conceptual frameworks have mapped multi-scalar determinants of diets, nutrition, and health (Swinburn et al., 2013; Herforth and Ahmed, 2015; Turner et al., 2018; Downs et al, 2020).







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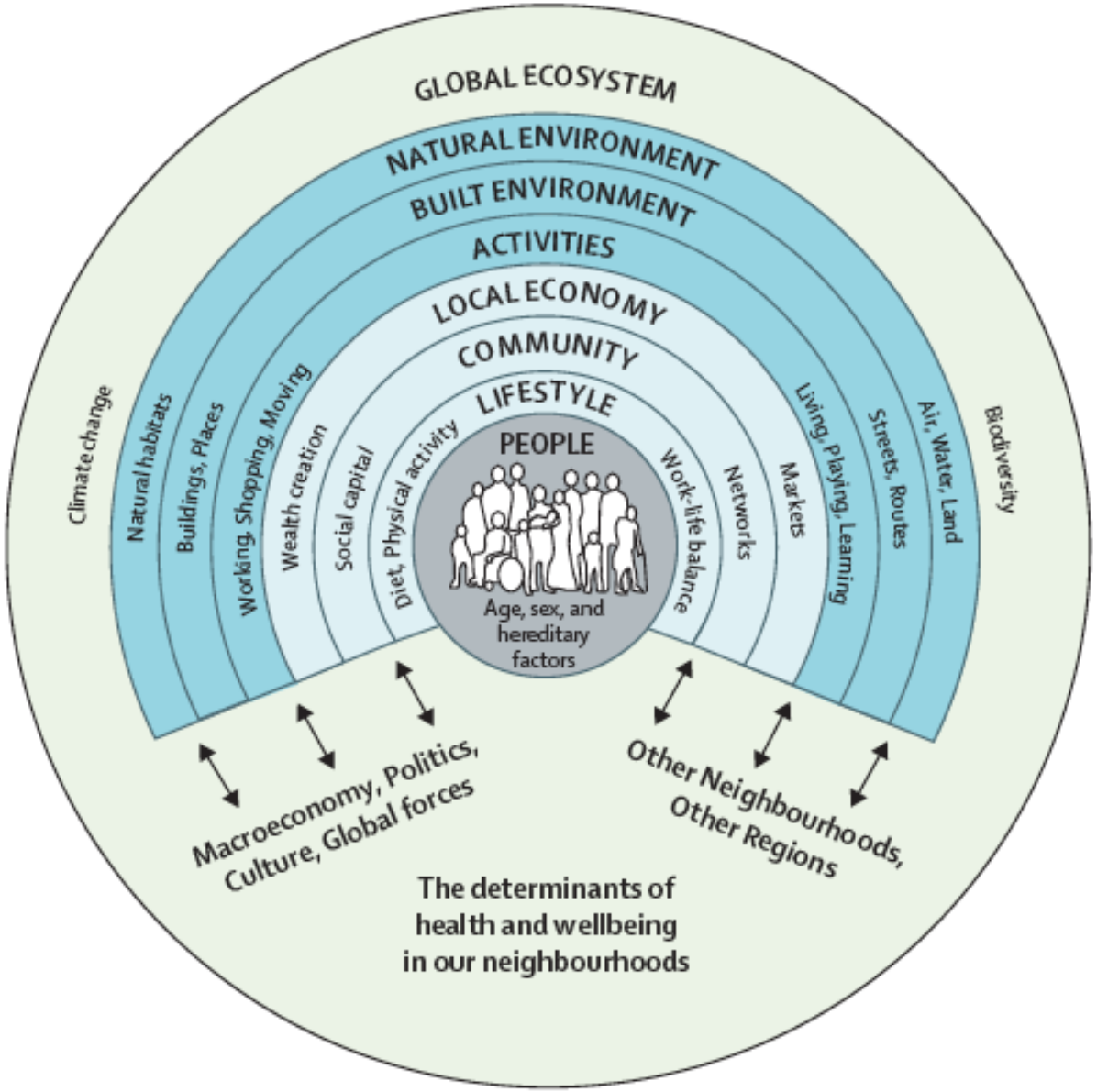

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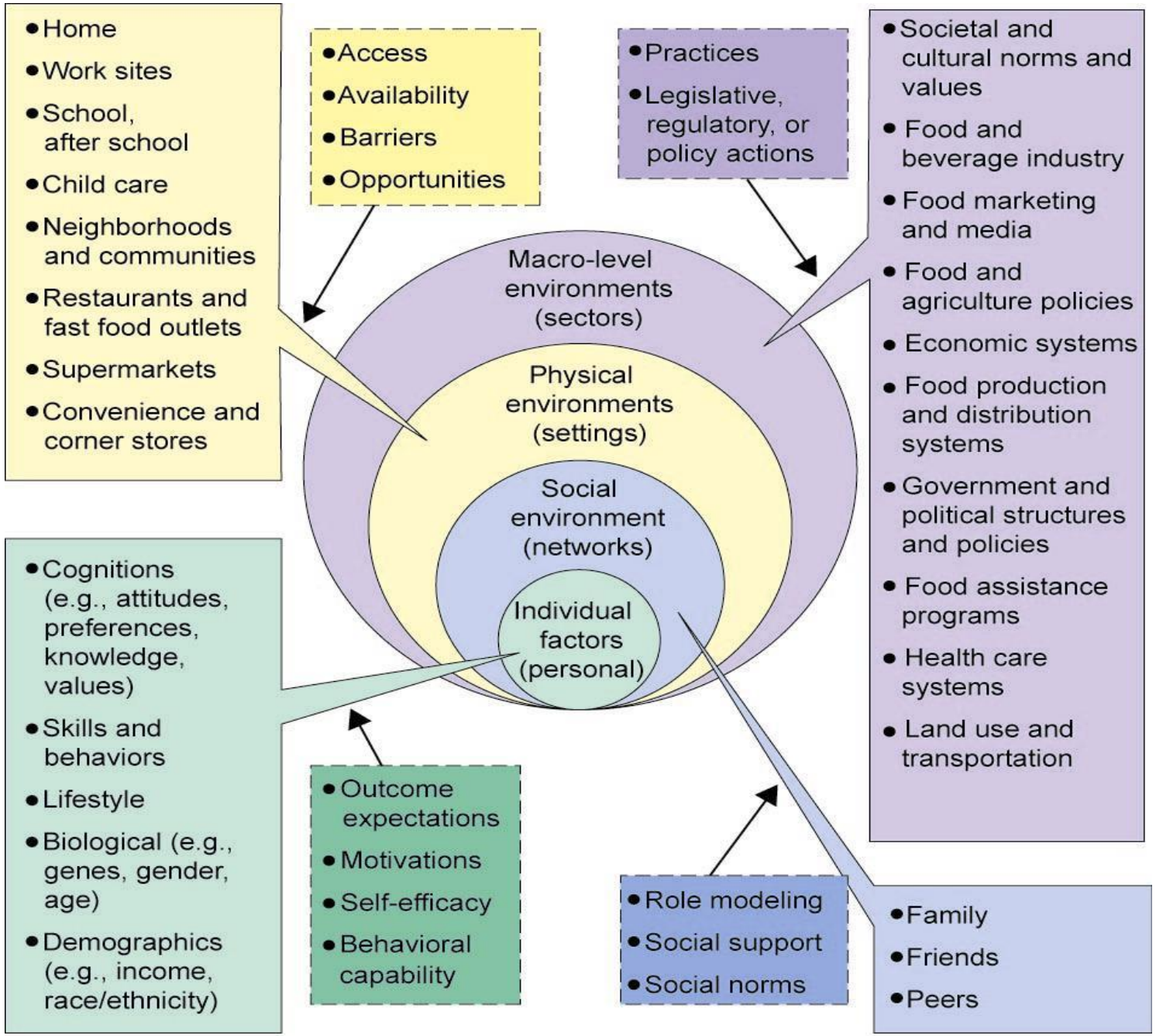
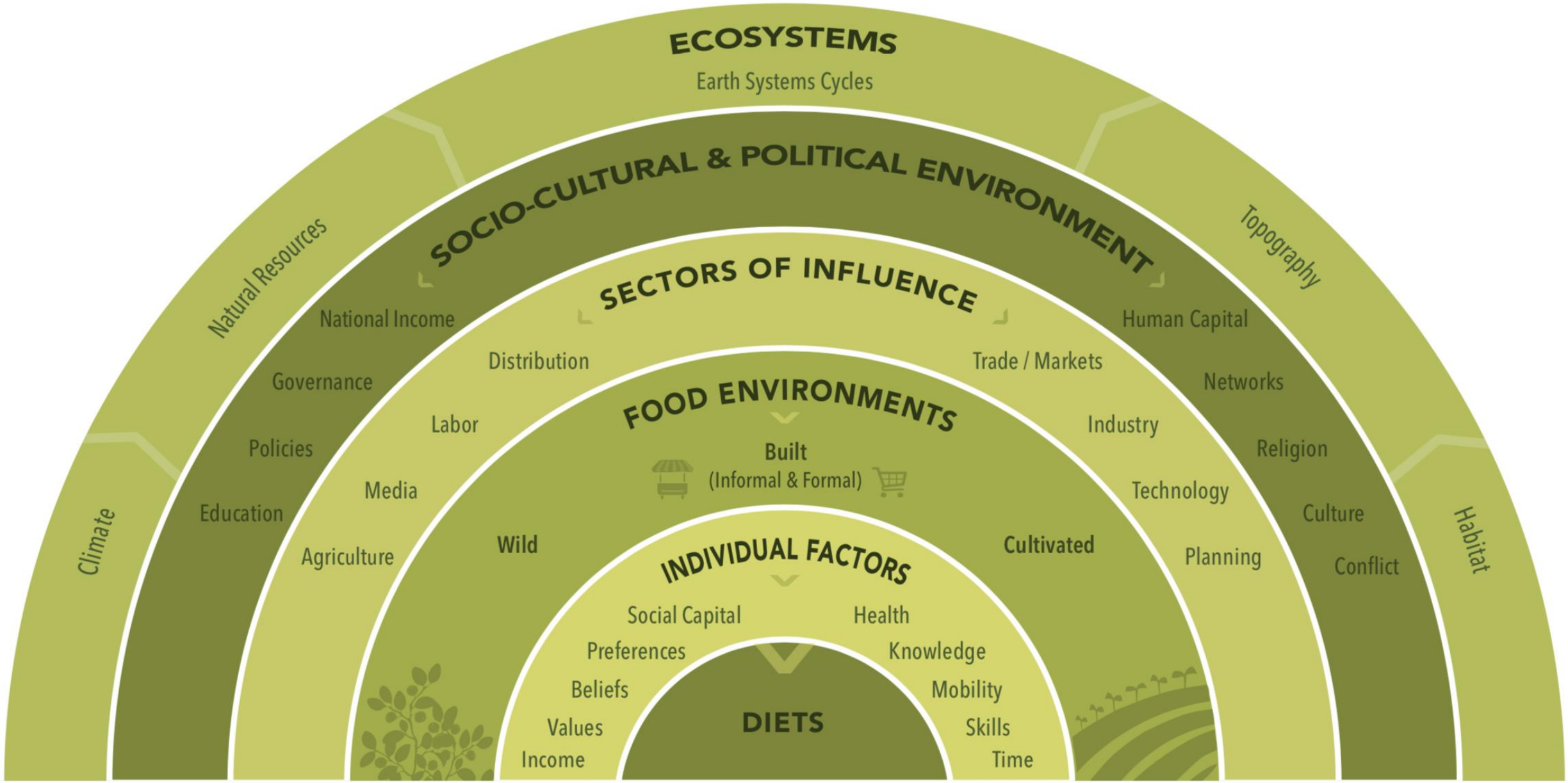
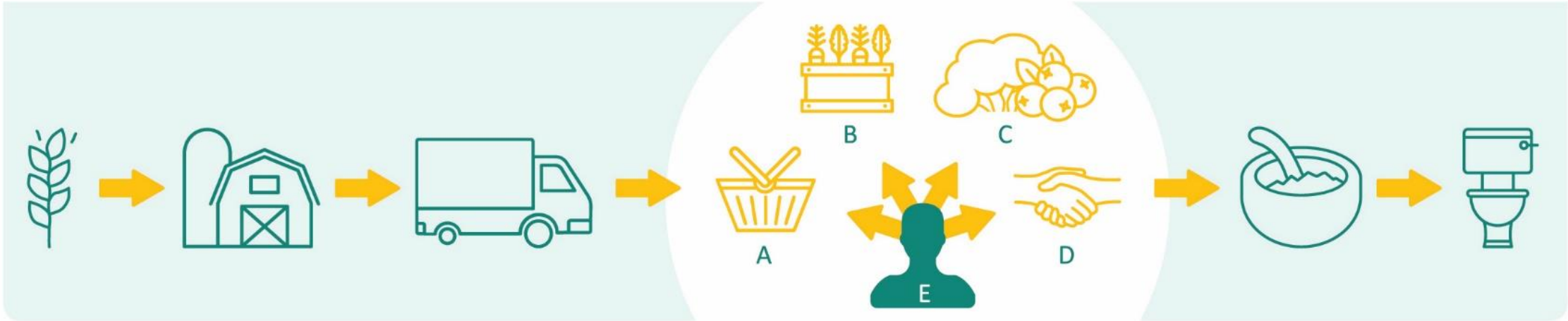


Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: Policy and environmental approaches. Annual Review of Public Health. 2008;29:253.



Downs, S.M.; Ahmed, S.; Fanzo, J.; Herforth, A. Food Environment Typology: Advancing an Expanded Definition, Framework, and Methodological Approach for Improved Characterization of Wild, Cultivated, and Built Food Environments toward Sustainable Diets. *Foods* 2020, *9*, 532.

- Increasing consensus around the food environment as an interface within the wider food system (FAO, 2016; HLPE, 2017; Turner et al., 2018; HLPE, 2020).
- Increasing recognition that the food environment is comprised of diverse food sources (Turner et al., 2018; Downs et al., 2020):
  A. Market based (formal and informal),
  B. Own production (rural, peri-urban, urban),
  C. Wild food harvesting,
  D. Transfers or gifts.



Turner et al. (2018) Concepts and critical perspectives for food environment research: a global framework with implications for action in low- and middle-income countries. Global Food Security;18:93–101

Food Environment
WORKING GROUP: TECHNICAL BRIEF

Concepts and methods for food environment research in low and middle income countries

https://anh-academy.org/food-environment-working-group-fewg-0

Global Food Security 18 (2018) 93–101

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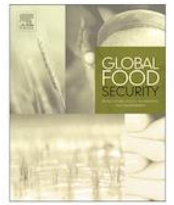

Concepts and critical perspectives for food environment research: A global framework with implications for action in low- and middle-income countries

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[d] Independent Consultant, New Haven, CT, United States
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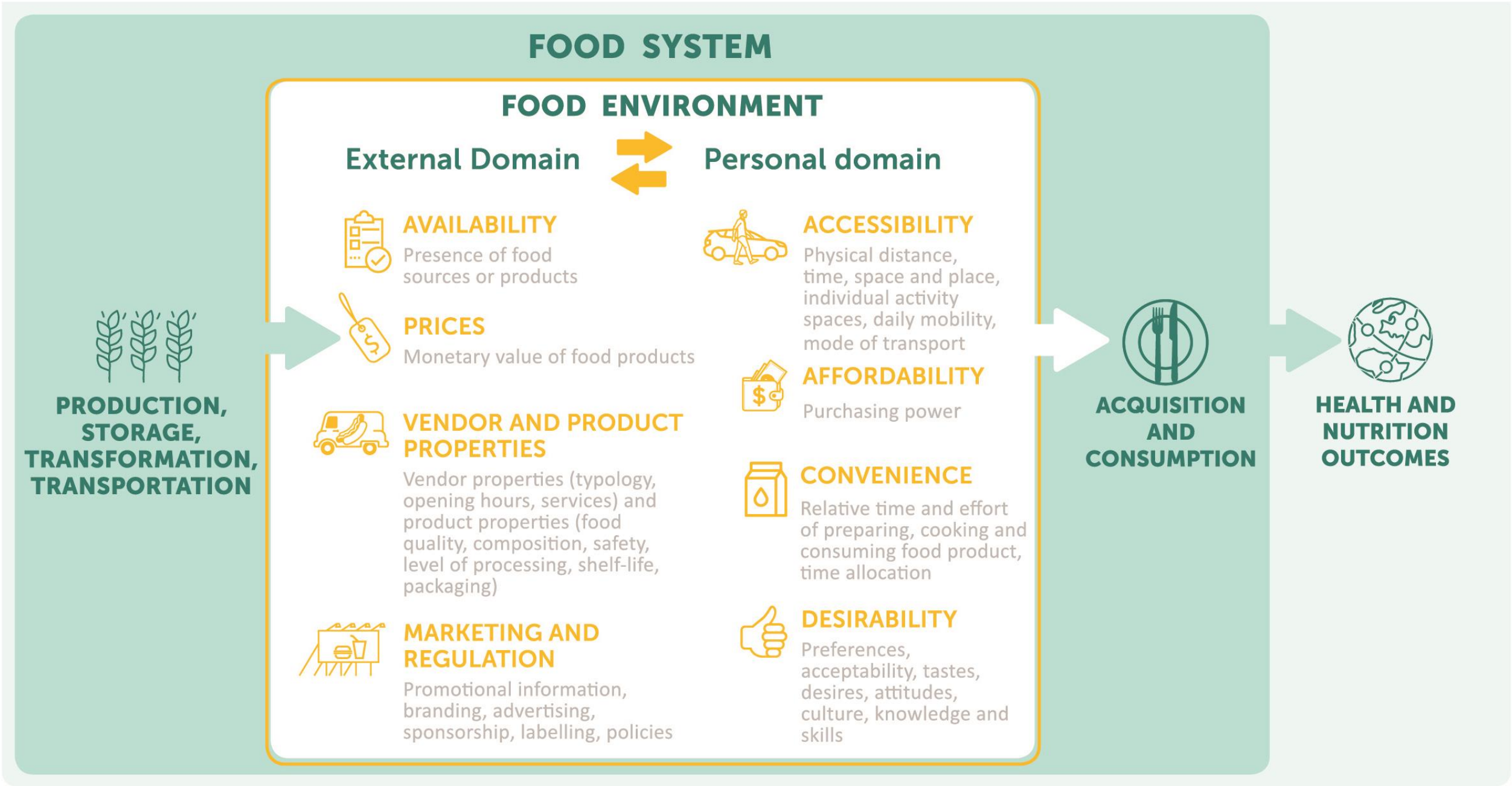
Low- and middle-income countries
Food security
Food acquisition
Double burden of malnutrition
Non-communicable diseases

ABSTRACT

Malnutrition in all its forms currently affects one in three people globally and is considered one of the greatest public health challenges of our time. Low- and middle-income countries (LMICs) are increasingly facing a double burden of malnutrition that includes undernutrition, as well as increasing overweight, obesity and diet related non-communicable diseases. The role of food environments in shaping transitioning diets and the double burden of malnutrition in LMICs is increasingly gaining policy attention. However, food environment research to date has predominantly been undertaken in response to obesity and associated diet-related non-communicable diseases in high-income countries (HICs). Empirical research in LMICs is in its infancy. There is a need to create a cohesive research agenda to facilitate food environment research and inform action across the globe, particularly with regard to LMICs. In this paper, we address three fundamental questions: First, how can the food environment be defined and conceptualised in a way that captures the key dimensions that shape food acquisition and consumption globally? Second, how can existing knowledge and evidence from HICs be leveraged to accelerate food environment research in LMICs? Third, what are the main challenges and opportunities in doing so? We conduct a brief synthesis of the food environment literature in order to frame our critical perspectives, and introduce a new definition and conceptual framework that includes external and personal domains and dimensions within the wider food environment construct. We conclude with a discussion on the implications for future research in LMICs.

Turner et al. (2018) Concepts and critical perspectives for food environment research: a global framework with implications for action in low- and middle-income countries. Global Food Security;18:93–101



Turner et al. (2018) Concepts and critical perspectives for food environment research: a global framework with implications for action in low- and middle-income countries. Global Food Security;18:93–101

WIDER FOOD SYSTEM DRIVERS

Climate, land use and tenure systems, agrobiodiversity

Drivers of Food Choice
Competitive Grants Program

EQUITY AND GENDER DYNAMICS

Gender norms, livelihoods through a gender lens

SOCIAL CAPITAL

Networks, trust, reciprocity

SOCIAL FORCES

Social interaction (family, children, and parental preferences)

PRICES
Monetary value of food products

MARKETING AND REGULATION
Promotional information, branding, advertising, labelling, policies

AFFORDABILITY
Purchasing power

DESIRABILITY
Preferences, acceptability, tastes, desires, attitudes, culture, knowledge and skills

EXTERNAL FOOD ENVIRONMENT

PERSONAL FOOD ENVIRONMENT

AVAILABILITY
Presence of food sources or products

VENDOR AND PRODUCT PROPERTIES
VENDOR PROPERTIES (Typology, opening hours, services)
PRODUCT PROPERTIES (Food quality, composition, safety, level of processing, shelf life, packaging)

ACCESSIBILITY
Physical distance, time, space and place, individual activity spaces, daily mobility, mode of transport

CONVENIENCE
Relative time and effort of preparing, cooking and consuming food products, time allocation

PEER INFLUENCE

Inter-personal dynamics

STABILITY

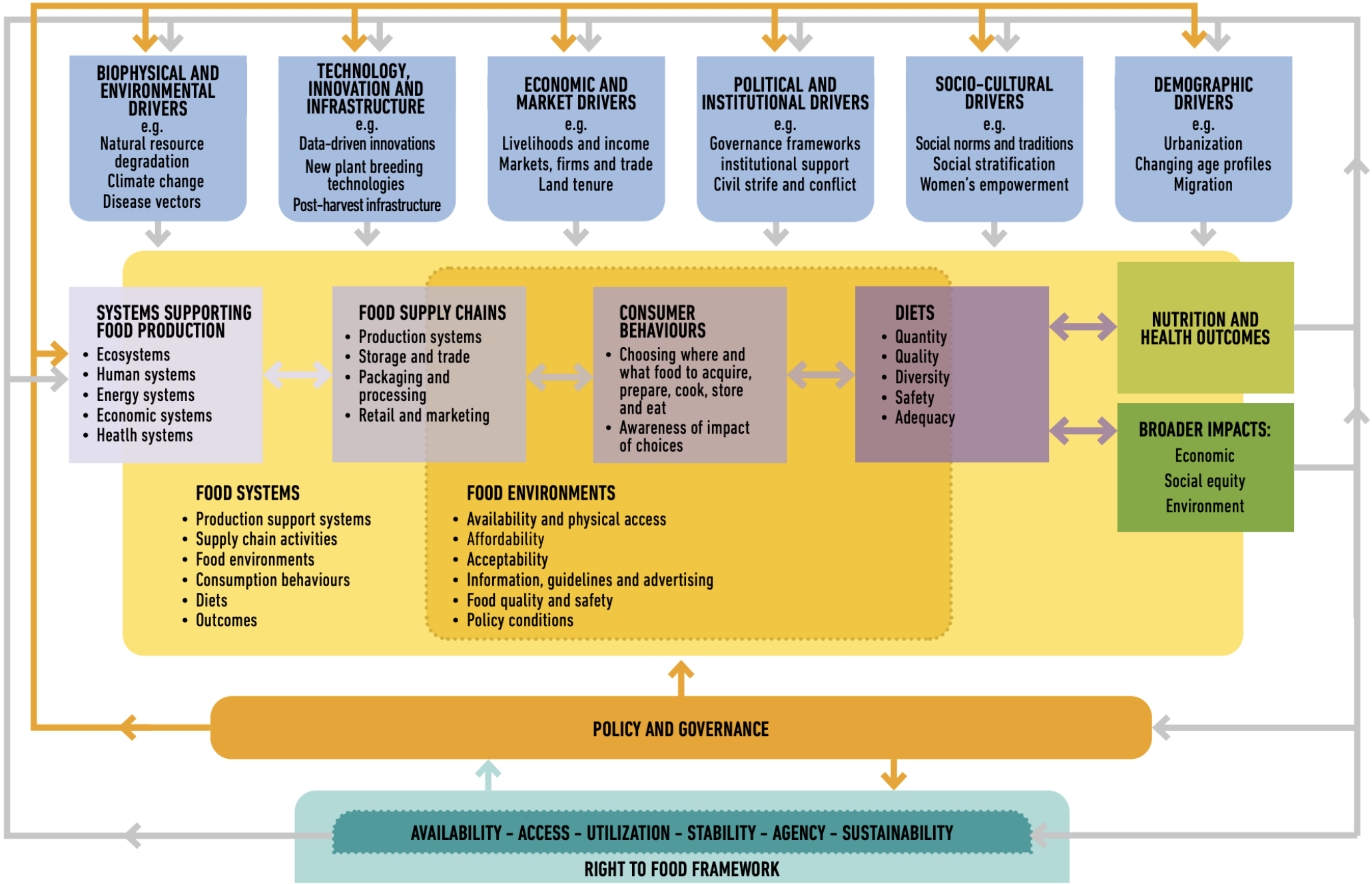
Seasonality, food security

FOOD SAFETY

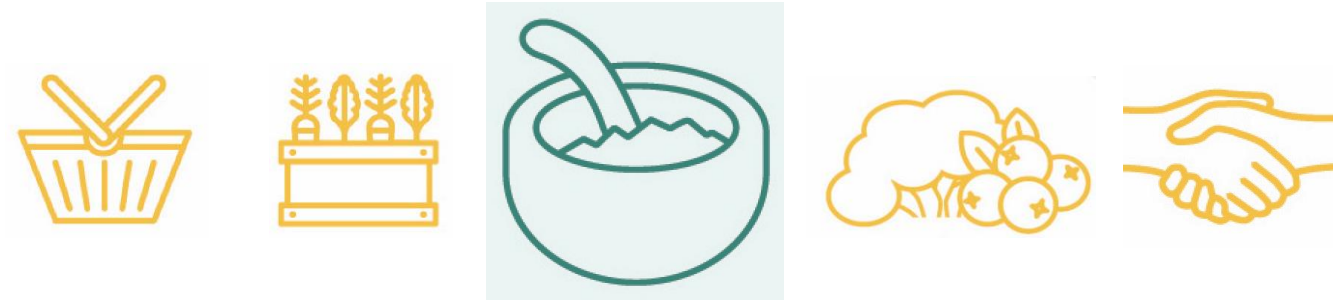
Adulteration and contamination

PERCEPTIONS OF SAFETY AND QUALITY

Linked to desirability



HLPE (2020) *Food security and nutrition: building a global narrative towards 2030.* A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.



A synthesis of emerging evidence from LMICs

Food Environment Research in Low- and Middle-Income Countries: A Systematic Scoping Review

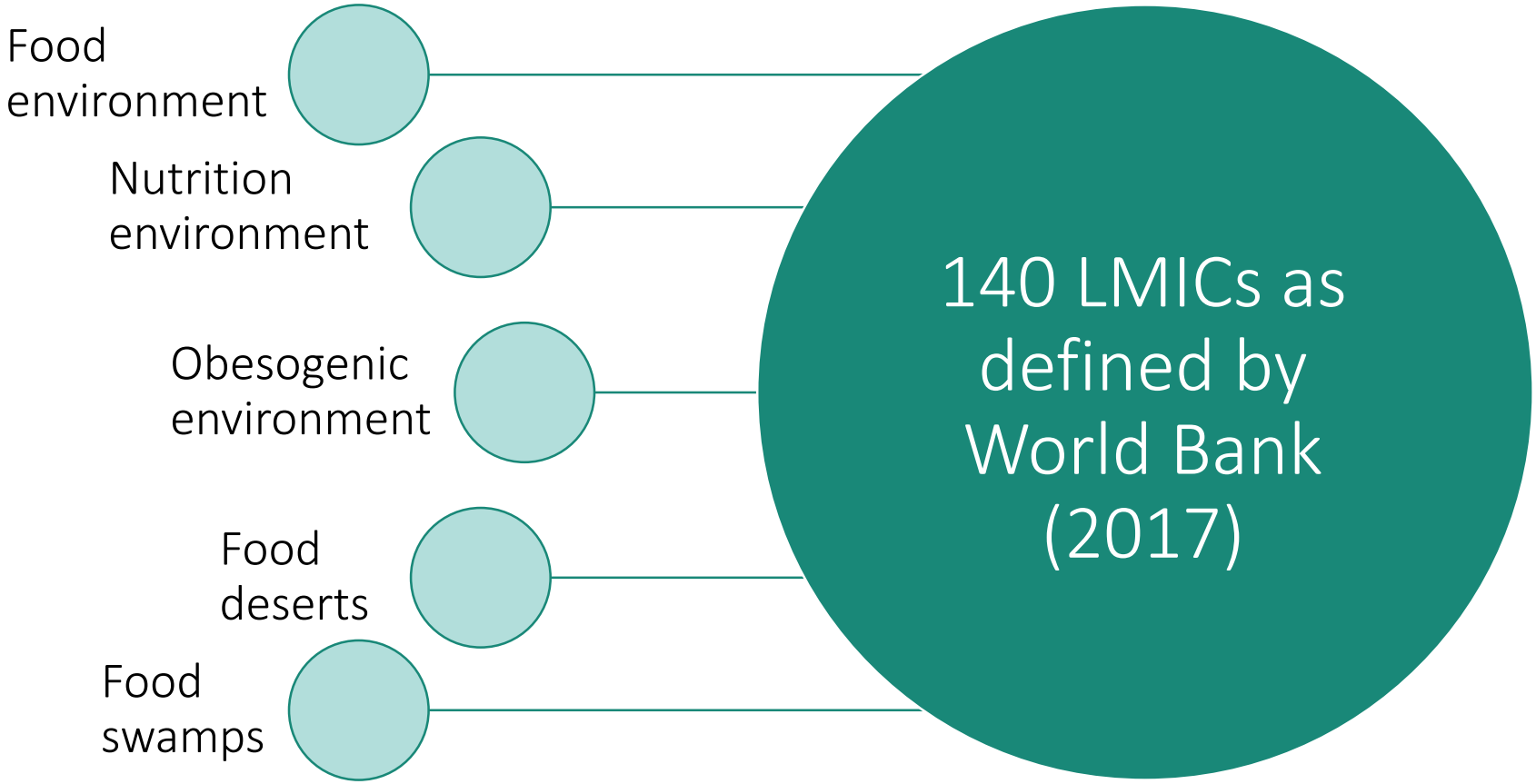
Christopher Turner,[1] Sofia Kalamatianou,[1] Adam Drewnowski,[2] Bharati Kulkarni,[3] Sanjay Kinra,[1] and Suneetha Kadiyala[1]

[1]London School of Hygiene and Tropical Medicine, Faculty of Epidemiology and Population Health, Department of Population Health, London, United Kingdom; [2]University of Washington, Department of Nutritional Sciences, Center for Public Health Nutrition, Seattle, WA; and [3]National Institute of Nutrition, Tarnaka, Hyderabad, Telangana, India

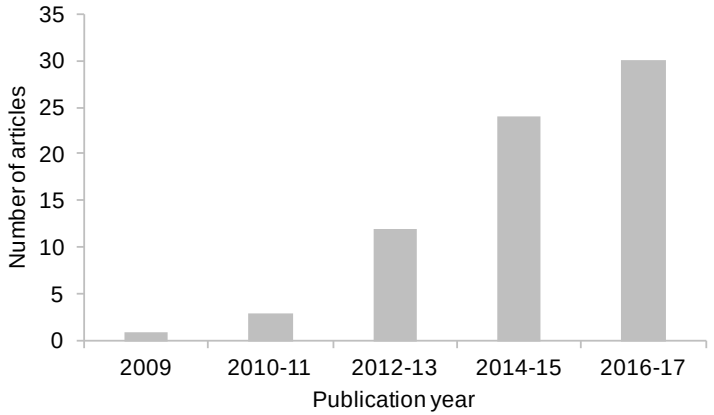
ABSTRACT

Food environment research is increasingly gaining prominence in low- and middle-income countries (LMICs). However, in the absence of a systematic review of the literature, little is known about the emerging body of evidence from these settings. This systematic scoping review aims to address this gap. A systematic search of 6 databases was conducted in December 2017 and retrieved 920 records. In total, 70 peer-reviewed articles met the eligibility criteria and were included. Collectively, articles spanned 22 LMICs, including upper-middle-income countries ($n = 49$, 70%) and lower-middle-income countries ($n = 18$, 26%). No articles included low-income countries. Articles featured quantitative ($n = 45$, 64%), qualitative ($n = 17$, 24%), and mixed-method designs ($n = 11$, 8%). Studies analyzed the food environment at national, community, school, and household scales. Twenty-three articles (55%) assessed associations between food environment exposures and outcomes of interest, including diets ($n = 14$), nutrition status ($n = 13$), and health ($n = 1$). Food availability was associated with dietary outcomes at the community and school scales across multiple LMICs, although associations varied by vendor type. Evidence regarding associations between the food environment and nutrition and health outcomes was inconclusive. The paucity of evidence from high-quality studies is a severe limitation, highlighting the critical need for improved study designs and standardized methods and metrics. Future food environment research must address low-income and lower-middle-income countries, and include the full spectrum of dietary, nutrition, and health outcomes. Improving the quality of food environment research will be critical to the design of feasible, appropriate, and effective interventions to improve public health nutrition in LMICs. *Adv Nutr* 2019;0:1–11.

Keywords: food environment, nutrition environment, obesogenic environment, food desert, low- and middle-income countries, double burden of malnutrition, food and nutrition security, diets, nutrition, health



Turner et al. (2019) Food environment research in low- and middle-income countries: A systematic scoping review, Advances in Nutrition, Volume 10, Issue 4, Page 730


35
30
25
20
15
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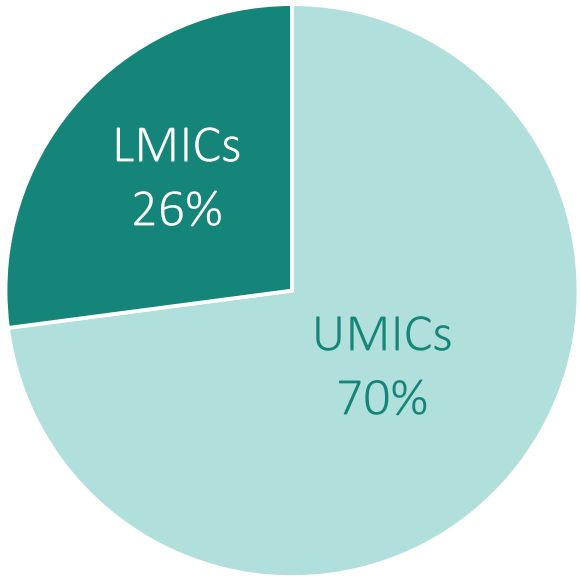
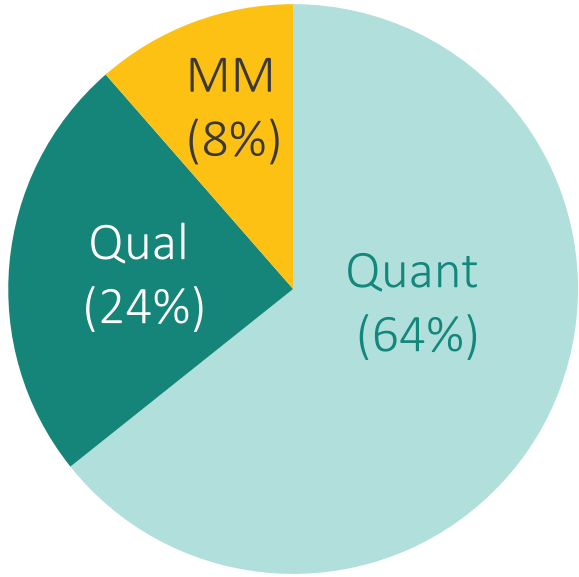
5
0
Number of articles
2009
2010-11
2012-13
2014-15
2016-17
Publication year


LMICs
26%
UMICs
70%


MM
(8%)
Qual
(24%)
Quant
(64%)


Croatia*
Bulgaria
China
India
Thailand
Philippines
Malaysia
Vietnam
Indonesia
Fiji*
Mexico
Dominican Republic*
Guatemala
El Salvador*
Ghana
Brazil
Samoa*
Tonga*
Paraguay
Mauritius*
Swaziland*
South Africa
Legend
Number of articles
0
1 - 2
3 - 9
10 - 16
HICs
* n = 1 - 2

Characterizing and analyzing food environments in LMICs

Quantitative evidence:

- Small and medium sized market-based vendors dominate, but non-market based sources important in some settings.
- Evidence of +ve associations between levels of urbanization and the availability of market-based food vendors (restaurants, supermarkets) (23, 31, 60).
- School food environments saturated with unhealthy foods and beverages (62–68), and targeted marketing of SSBs to children evident (62, 64).

Qualitative evidence – common themes:

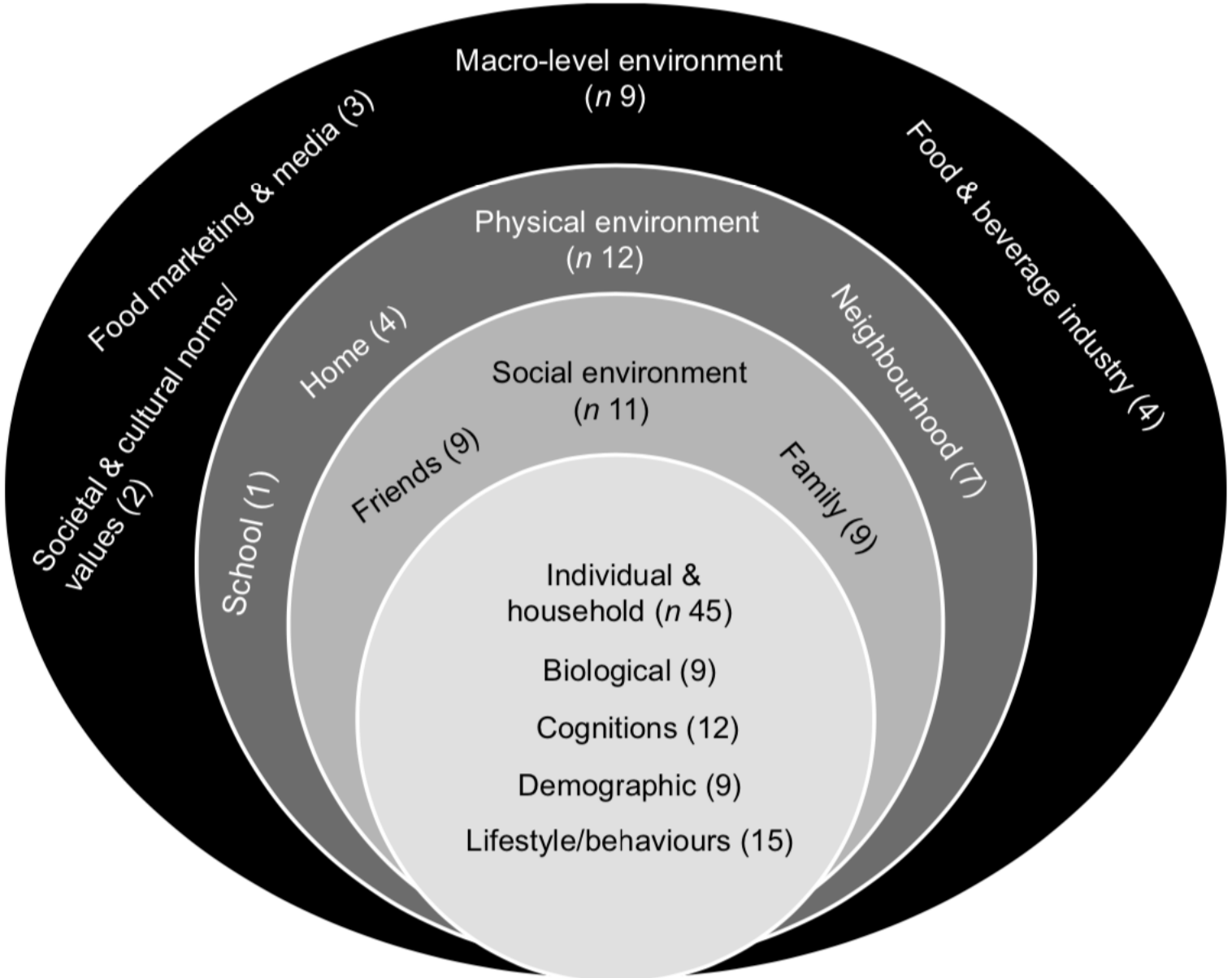
- Increasing availability and acceptance of cheap, convenient, tasty, and desirable ready-made 'unhealthy' foods (32, 33, 45, 51).
- Limited opportunities for healthier alternatives due to economic constraints (32, 33, 45, 51).
- School FE: Healtheir options often limited (35, 36, 42, 43) and concerns raised around food safety, misleading marketing, peer influence, and prestige of 'non-traditional' foods (35, 36, 41).
- School policies were found to be highly contested (36, 40, 43).

Analytical studies (n=23; 55%)

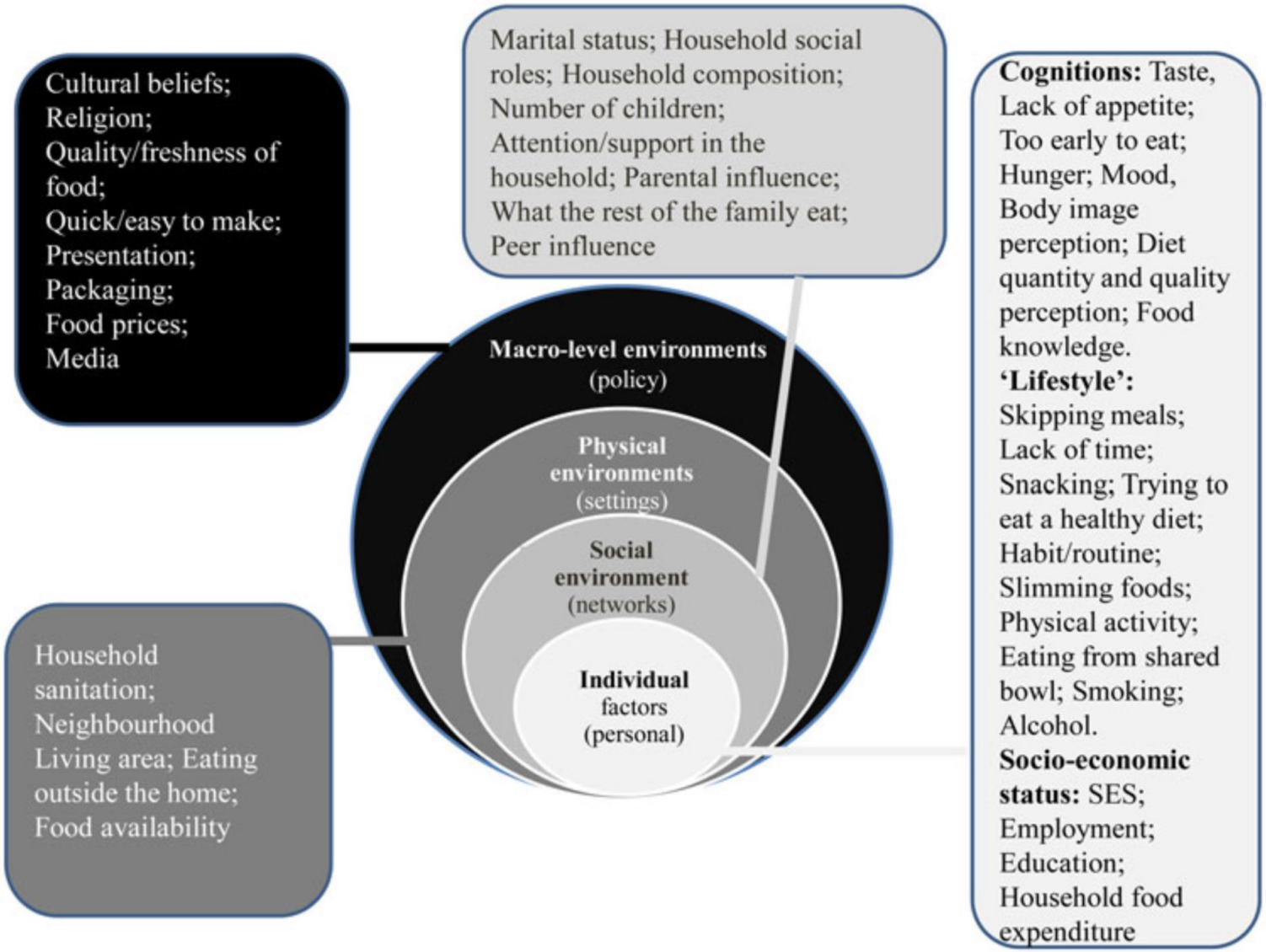
- **Dietary outcomes (n=14):** Food availability was associated with dietary outcomes at the community and school scales across multiple LMICs, although associations varied by vendor type.

- Evidence from 2 RCTs in Mexico and South Africa indicate the potential for supportive school food environments to improve adolescent diets (25, 26). **However, the evidence is far from conclusive!**

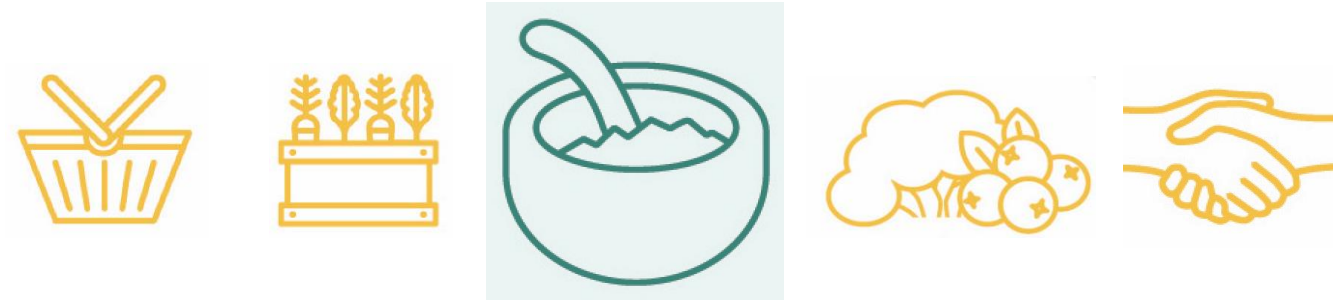
- **Nutrition (n=13) and health (n=1) outcomes:** Evidence inconclusive at present.



Osei Kwasi et al., (2020) Factors influencing dietary behaviours in urban food environments in Africa: a systematic mapping review, Public Health Nutrition: 23(14), 2584–2601. doi:10.1017/S1368980019005305



Holdsworth, M., & Landais, E. (2019). Urban food environments in Africa: Implications for policy and research. *Proceedings of the Nutrition Society, 78*(4), 513-525.
Gissing SC, Pradeilles R, Osei-Kwasi HA et al. (2017) Drivers of dietary behaviours in women living in urban Africa: a systematic mapping review. Public Health Nutr 20, 2104–2113.



Conclusions

- FE research is developing rapidly in LMICs, and there is growing global interest in food environments in response to the need to improve dietary, nutrition and health outcomes.

- There is a need to align theoretical concepts with empirical research in order to operationalize coherent methods and metrics across diverse settings and multiple scales.

- Interventions, policies and program actions need to be socio-ecological in scope, addressing both individual and environmental contexts and conditions.

Recommendations for food environment research in LMICs

(*1*) Research should seek to harmonize theoretical concepts with empirical research.
(*2*) Low-income countries and lower-middle-income countries should be considered a priority given the current paucity of studies from these settings and the pressing public health nutrition challenges at hand.
(*3*) Research should address the double burden of malnutrition, including undernutrition, overweight, obesity, and NRCDs.
(*4*) The development, testing and validation of standardized instruments and metrics to profile food environments should be prioritized to track transitioning diets across diverse settings in LMICs.
(*5*) Rigorous mixed-methods designs should be implemented to provide comprehensive assessments of external and personal food environment domains and dimensions.
(*6*) Research should apply robust longitudinal and experimental designs at multiple scales to assess the impact of interventions on diets, nutrition status, and health outcomes in LMICs.

Turner et al. (2019) Food environment research in low- and middle-income countries: A systematic scoping review, Advances in Nutrition, Volume 10, Issue 4, Page 730