

# Analytical framework on food consumption and healthy nutrition

Deliverable 2.1 | HealthyFoodAfrica



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862740.

# Summary

When aiming to promote healthier and more sustainable food system transitions, developing a well-informed framework is crucial. To achieve this, deliverable 2.1 in WP2 co-proposes an analytical framework that places food consumption and healthy nutrition in the wider context of the food system. The framework takes a practice-based approach to nutrition, covering four main interrelated components: dietary intake, food acquisition practices, food environment, and food chain. Additionally, the report proposes a selection of indicators connected to each of the framework's components and elaborates on the methodological approach used to operationalize them.

Deliverable tile: Analytical Framework on food consumption and healthy nutrition

Deliverable number: 2.1

Authors: Claudia Segreto, Sigrid Wertheim-Heck, Henk Renting, Céline Termote, Christine Chege, Consolata Musita.

Due date: 28-02-2021

Submission date: 24-02-2021

Nature<sup>1</sup> : Report

Dissemination Level<sup>2</sup>: Confidential

Work Package: 2

Lead Beneficiary: Aeres University of Applied Science

Contributing Beneficiaries: Bioversity International

## Version log

Issue date	Revision N°	Author	Change
22-02-2021	1	C.Segreto et al.,	Draft
23-02-2021	2	C.Segreto et al.,	Comments and edits G. Medyna
24-02-2021	3	C.segreto et al.,	Final

---

<sup>1</sup> R = Report, P = Prototype, D = Demonstrator, O = Other

<sup>2</sup> PU = Public, CO = Confidential, only for members of the consortium (including the Commission Services)

---

## Table of Content

1. Introduction .....	4
1.1 Scope and purpose of the deliverable .....	4
2. Literature review .....	4
3. Analytical framework and key indicators for assessing food consumption and healthy nutrition.....	7
3.1 Theoretical perspective used in our analytical framework .....	8
3.2 Description of the components in the analytical framework .....	9
3.4 Indicators selection methodology.....	10
4. Methodological design and data collection methods for each key indicator set to assess food consumption and nutrition .....	13
4. References.....	16

# 1. Introduction

## 1.1 Scope and purpose of the deliverable

The overall goal of the HealthyFoodAfrica (HFA) project is to 'increase the resilience of food systems and link food production to nutrition performance, thereby increasing the range and quality of food products for a healthy diet.' To achieve this, the project engages with different actors in food systems across 10 Food System Labs (FSLs) in which various project activities are performed with the final aim to promote more resilient, sustainable and healthy food systems for all.

Within this context, WP2 has the specific objective of improving healthy dietary patterns by increasing awareness and achieving a sustainable transformation of consumption habits. To support this objective, WP2 has to co-develop an analytical framework, which provides a list of selected indicators for assessing food consumption practices and healthy nutrition among different target groups.

Deliverable 2.1 is articulated in three sections: i) Literature review on the most used conceptual frameworks on food consumption and nutrition ii) Proposed analytical framework and key Indicators for assessing food consumption and healthy nutrition iii) Methodological design and data collection methods for each key indicator.

## 2. Literature review

When it comes to understanding how to improve nutrition, investigating the different factors driving food consumption is crucial. The two most commonly used frameworks conceptualizing these factors are the socio-ecological and the Agriculture, Nutrition, and Health Academy Food Environment Working Group (ANH-FEWG) frameworks.

### Socio-ecological framework

The socio-ecological framework has mainly been used for health promotion within public health-related disciplines (Stok et al., 2017; Story et al., 2008). In advancing health promotion the socio-ecological approach explores the connection between people and their environment. The framework is based on the notion that food choices are not only driven by individual factors but also by multiple-level factors that all interact directly and or indirectly (Story et al., 2008). Although it was developed for high-income countries, it has been recently implemented by Gissing et al., (2017) to systematically map drivers of dietary habits in urban African areas (Fig 1). The framework describes four levels of factors:

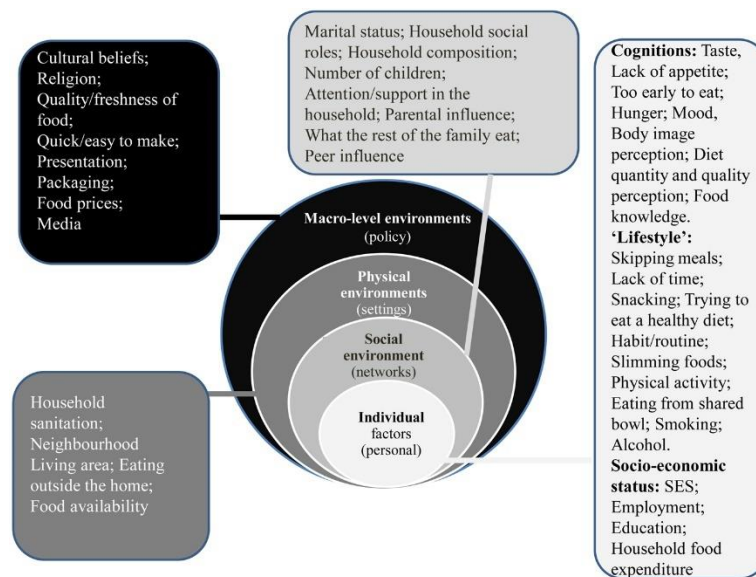


Figure 1: Socio-ecological approach to factors influencing dietary behavior in urban Africa by Gissing et al., 2017

**Individual level (personal):** The Individual level considers personal factors that can contribute to a healthy or unhealthy food choice. This level encompasses cognitive factors (e.g. food preferences, knowledge, values), lifestyle factors (e.g. habits/routine), skills and behaviours, demographic factors (e.g. socio-economic variables) and biological factors (e.g. age, gender). These individual factors influence food choice-specific mechanisms such as motivations, self-efficacy, outcome expectations, and behavioral capability.

**Social environment (networks):** The social environment includes everything related to social interactions. Family, friends and peers shape dietary behaviours through modelling social norms and social support (Story et al., 2008).

**Physical environment (settings):** The physical environment represents the material setting in which people acquire, prepare, and consume their food. Examples of the physical environment can be the retail food environment, the school environment, and the home food environment. The physical environment works on the availability and accessibility of certain foods, creating barriers and opportunities to obtain food.

**Macro-level environment (policy):** The final level is the macro environment, which touches the policy dimension, including societal and cultural norms, food and agricultural policies, economic and pricing issues, and food marketing and media influences.

## Agriculture, Nutrition and Health Academy Food Environment Working Group (ANH-FEWG) framework

The ANH-FEWG conceptual framework, developed by Turner et al., (2018) uses a more holistic approach, placing the food environment in the broader context of the food system. The authors define the food environment as: *The interface that mediates one's food acquisition and consumption with the wider food system (p.95)*. The interface –pictured in the white sphere of Fig 2– includes four different strategies in which people can acquire their food: A) Market-based sources formal and Informal B) Own production (urban, peri-urban, and rural); C) Wild harvested foods, and D) Food transfers – including gifts.

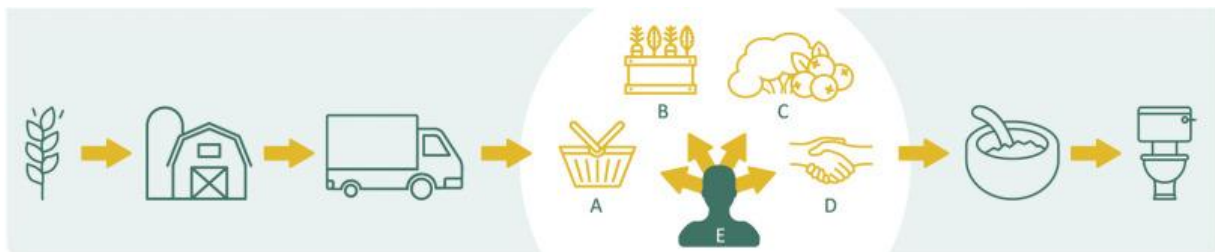


Figure 2: Situating the food environment within the wider food system by Turner et al., 2018

The food environment depicted by Turner draws from a socio-ecological perspective and consists of two domains: external and internal. Each domain has four measurable dimensions (Fig 3). The external domain represents the physical setting that influences food acquisition and consumption. The dimensions considered within this domain are: availability, prices, vendor and product properties, and promotional information. On the other hand, the internal food environment relates to a set of individual dimensions encompassing food accessibility, affordability, convenience, and desirability. A description of each dimension is shown in Fig 3.

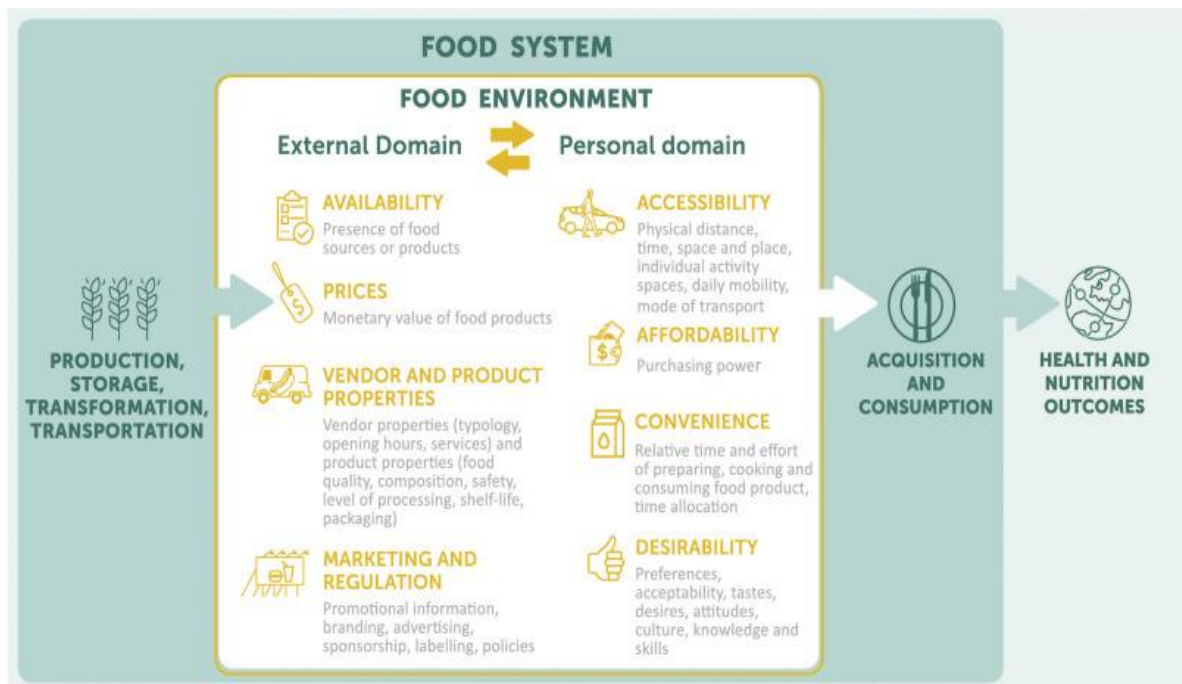


Figure 3: ANH-FEWG framework using a food system approach by Turner et al., 2018. Food production, storage, transformation, and transportation influence the food environment. Changes in the latter food environment impact people's food acquisition and consumption.

### 3. Analytical framework and key indicators for assessing food consumption and healthy nutrition

The analytical framework proposed by WP2 draws from the conceptual approaches described in the above literature review. However, it looks at nutrition from a social practices perspective. This perspective is particularly relevant since the social environment and the contextual factors affecting food choices have been highly neglected among African urban realities. In fact, a recent systematic review, mapping drivers of dietary habits in urban African areas, revealed a clear tendency to study the individual-level factors (Holdswort and Landais, 2019). Cognitive drivers such as perceptions of body image and food quality, food tastes, and knowledge are predominantly investigated (Holdswort and Landais, 2019). However, food choices are not merely steered by rational processes (Nicolini, 2012). Hence, individual drivers alone cannot define what people eat. How people interact in the food environment is deeply organized in the structure of everyday life, where unconscious and routinized behaviours occur. Therefore, to develop effective interventions

and improve nutrition among different target groups, a more in-depth understanding of the contextualized food consumption practices is required.

### 3.1 Theoretical perspective used in our analytical framework

As already mentioned above, in this project, we take a practice-based approach to nutrition, where food choices are embedded in the organization of everyday life and go beyond purely rational and conscious processes (Nicolini, 2012, Shove, 2010). At the center stage of this project, we place food acquisition practices (e.g. shopping and growing). Starting from the lived experiences of food acquisition, we aim to depict the food environment that people encounter in their everyday lives. With this in mind, we approach food acquisition practices and thus consequentially dietary intake as embedded in the broader set of routinized activities, like working outside the home and caring for children, that together constitute the everyday life (Fig 4). Additionally, in this project, we want to understand the trajectories of change. Therefore, food acquisition practices, as well as the food environment and the lifestyle to which those practices are connected, are dynamic concepts that interact and shape each other.

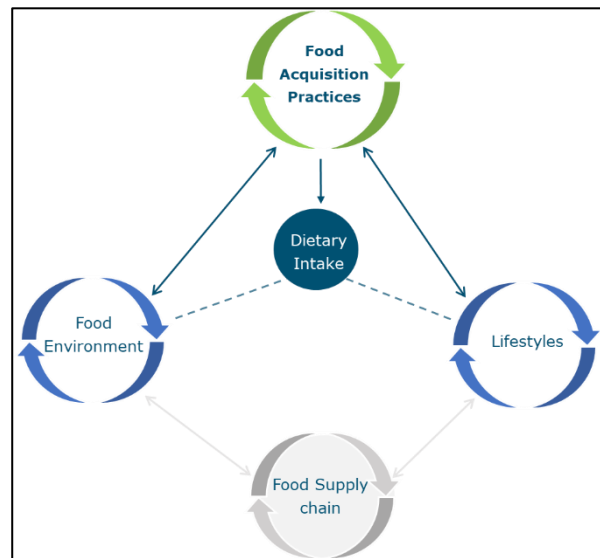


Figure 4: Analytical framework (adapted from Wertheim-Heck and Ranieri, 2019)



## 3.2 Description of the components in the analytical framework

The components of the analytical framework cover:

A) Food acquisition practices: Food acquisition practices, which encompass the different ways in which people obtain their food, form the core of our analytical framework. Examples of such practices could be shopping through formal or informal channels, kinship, and self-provisioning (own-growing). In the framework, food acquisition practices directly depend on both the food environment and the bundle of practices that together constitute the everyday life (Fig 4). Additionally, changing practices can also, in turn, transform the food environment and the lifestyle of people. (Warde 2016).

B) Dietary Intake: WP2 aims to improve nutrition and mainstream healthy dietary patterns through increased awareness and rapid but sustainable transformation of consumption habits. Measuring dietary intake is, therefore, crucial to assess the diet quality of the different target groups. In the framework, dietary intake is the dependent variable of primarily food acquisition practices (A), and secondarily the food environment (C) and lifestyle (D).

C) Food environment: We theorize the food environment in terms of lived experiences. So rather than starting from mapping bricks-and-mortar infrastructures and food availability, we capture the lived experiences of the food environment through the food acquisition practices of the target group (see A). The reason to take this approach is that informal and potentially also online acquisition is hard to capture through mapping. Building on Turner et al., (2018), we define the food environment "as the interface that mediates one's food acquisition and consumption with the wider food system" (p.95) and includes both market-based sources (formal and informal) and home growing. In the framework, the food environment shapes –and it is shaped by– the food acquisition practices and the food production chain. Additionally, given that WP2 wants to connect different FSLs covering various food production and/or value chains, we complement the food acquisition practices research (see A) with a mapping of the food sources in terms of availability and affordability. This will help us better understand 1) the type of food sources available, 2) if the source provides nutritious food, 3) if changes in the in the food production (e.g. Rwamwanja where maize production is promoted) have an impact on the food environment and consequentially on the food acquisition practices of people.

D) Lifestyle is defined as a set of loosely linked practices based on co-existence in time or space (Schatzki 2011; Shove et al. 2012). In simple words, studying the bundle of practices means understanding how the different practices connect with each other (Shove et al.

2012). In the framework, lifestyle is the dependent variable of the acquisition practices (A) and the food supply chain (E). However, a lifestyle change could enable a shift in both food acquisition practices and the production chain.

E) Food supply chain: The lived experiences of the food environment are part and parcel of the total system of food provisioning. This includes the whole food chain from production to aggregation, processing and distribution (FAO, 2018) as well as rules and regulations in food provisioning systems. Simply put, the food supply chain represents everything that happens before the so-called interface that mediates one's food acquisition and consumption. The food production chain will not be assessed by WP2, as it goes beyond its scope. However, we have included it in our framework to indicate how it relates to the other work packages in HealthyFoodAfrica.

### 3.4 Indicators selection methodology

We have selected several indicators following the city region food system (CRFS) toolkit (Carey et al., 2018). The CRFS toolkit is a planning tool designed to help cities assess their current food system status, following a whole-system approach. As suggested by the toolkit, to select the most relevant indicators, it is first necessary to define the **overarching objective**, the **outcome(s)**, and **impact areas (key issues)** that need to be addressed.

**Overarching objective:** The overarching objective of WP2 is to improve nutrition and healthy dietary patterns through increasing awareness and rapid but sustainable transformation of consumption habits (Table 1).

**Outcome:** Outcome or 'desired direction of travel' are the types of changes that cities may want to see in the future. Our outcome was defined as: "Target populations have access to affordable, sufficient, nutritious, safe, adequate, and diversified food that contributes to healthy diets and meets dietary needs". This is in the second column of Table 1.

**Impact areas:** The impact areas in the third column (in red) are more specific types of changes that could be measured. We selected the most relevant impact areas based on the project's information about the FSLs and after the first consultation with our WP2 partners.

Table 1: Toolkit overarching objective, outcomes, impact areas		
Overarching objective WP2	Outcome: desired direction of travel	Impact areas: Key issues to be measured
Improve nutrition and healthy dietary patterns through increasing awareness and rapid but sustainable transformation of consumption habits	Target groups have access to affordable, sufficient, nutritious, safe, adequate, and diversified food that contributes to healthy diets and meets dietary needs	Accessibility: Degree of the ease with which target groups can buy and prepare fresh, nutritionally balanced food
		Affordability: Trends in food consumption and expenditure for different types of consumers in the city
		Health and wellbeing
		Education and awareness: Extent to which consumers are equipped with knowledge and skills on safe, diversified and nutritious food and healthy diets

Finally, within each impact area, we have selected a number of possible indicators that can be measured in relation to our analytical framework components (Table 2). For example, within the impact area "affordability", we have selected indicators that fall within the framework's component "food acquisition practices" (e.g. proportional consumer expenditure by income group on key food items) and "food environment" (e.g. costs of fresh fruits and vegetables in the food sources).

As for the impact areas, the project's information and the consultation with our WP2 partners helped us select the most relevant indicators. However, it is important to note that the specific set of indicators will be agreed upon in an upcoming work session in which the task team will discuss indicators in relation to FSLs' time and other resources.

Table 2: Components of the analytical framework with their specific indicators and purpose/objective			
Analytical framework component	Impact area	Indicator	Purpose
Food acquisitionin g practices	Accessibility	Where, when, and how target groups obtain their food	To explore current food acquisitioning practices of target groups
	Affordability	1) Proportional consumer expenditure by income group on key food items (actual doings). 2) Customer preference/willingness to pay for key food items (preferred/desired doings)	
	Education and awareness:	Consumers knowledge about, attitude, and intention on healthy diets among different groups	
	Accessibility	Changes in food acquisitioning practices over time	To explore how food acquisitioning practices changed over time
Food Environment	Accessibility	1)Presence of nutritionally balanced food in the food sources where target groups usually acquire their food 2) Number of caterers/restaurants/school canteens/similar providing healthy food more accessible as a result of lab initiatives	To understand the characteristics of the external domain of the food environment in which target groups navigate
	Affordability	Costs of fresh fruits and vegetables in the food sources where target groups usually acquire their food	
	Accessibility	Changes in the food environment over time	To explore how the food environment changed over time
Dietary intake	Health and wellbeing and *nutrition utilization	Diet quality by income group	To assess the diet quality of target groups

Lifestyle (bundle of practices)	Accessibility	Employment: How employment conditions affect food acquisition practices of target groups Gender dynamics: How gender dynamics play a role in the food acquisition practices of target groups Households composition: How household composition impacts the food acquisition practices of target groups Household dynamics: How household dynamics impact food acquisition practices of target groups.	To understand the context in which food acquisition practices are performed.
	Accessibility	Changes in the lifestyle over time	To explore how the lifestyle (Bundle of practices) changed over time

## 4. Methodological design and data collection methods for each key indicator set to assess food consumption and nutrition

Methodologically, this project takes a three steps approach, following a sequential quantitative-qualitative mixed-method design. This methodological approach has already been discussed among WP2 partners. However, the feasibility of the design will further be addressed during the upcoming work session. Therefore, variations can be expected.

**Table 3:** Methodological design, methods of data collection for each key indicator

### Step 1: Measuring

#### Qualitative data collection

Methods	Impact area: Related indicator(s)	Related component
---------	-----------------------------------	-------------------

<p><b>Survey:</b> <i>The survey will provide information on where, when, why, and how people obtain their food in their everyday life. The survey will also include knowledge, attitude, and intention on healthy and sustainable food, socio-demographic parameters, household composition, and whether the respondent cares for the elderly or children</i></p>	<p><b>Accessibility:</b> Where, when, and how target groups obtain their food <b>Affordability:</b> 1) Proportional consumer expenditure by income group on key food items (actual doings). 2) Customer preference/willingness to pay for key food items (preferred/desired doings) <b>Education and awareness:</b> Consumers knowledge about, attitude, and intention on healthy diets among different groups</p>	<p>Food acquisitioning practices</p>
<p><b>Mapping of outlets</b> <i>To obtain the specific food provisioning structure that people experience in their lives, we map the food environment according to the participants' information</i></p>	<p><b>Accessibility</b> 1) Presence of nutritionally balanced food in the food sources where target groups usually acquire their food 2) Number of caterers/restaurants/school canteens/similar providing healthy food more accessible as a result of lab initiatives <b>Affordability:</b> Costs of fresh fruits and vegetables in the food sources where target groups usually acquire their food</p>	<p>Food environment</p>
<p><b>24h dietary recall</b> <i>To assess the diet quality of people responsible for the food acquisition and to identify where the consumed food was obtained</i></p>	<p><b>Health and wellbeing and *nutrition utilization:</b> diet quality by income group</p>	<p>Dietary intake</p>
<p><b>Step 2: Understanding</b> <i>Qualitative data collection</i></p>		
<p>Interviews, shopping trips, and household visits <i>To provide an understanding of the context in which food</i></p>	<p><b>Accessibility:</b> Employment: How employment conditions affect food acquisitioning practices of target groups Gender dynamics: How gender dynamics play a role in the food acquisitioning practices of target groups</p>	<p>Lifestyle/bundle of practices</p>

<i>acquisitioning practices are performed</i>	Households composition: How household composition impacts the food acquisitioning practices of target groups Household dynamics: How household dynamics impact food acquisitioning practices of target groups.	
Multi-generational interviews <i>To assess patterns of change in the food acquisitioning practices, as well as in the food environment and in the lifestyle to which those practices are connected</i>	Changes in food acquisitioning practices, food environment, and lifestyle over time	Food acquisitioning practices, food environment, and lifestyle/bundle of practices

Step 3 of our methodological design moves beyond indicators and data collection. Instead, it adopts a participatory intervention design to increase awareness and promote a sustainable transformation of consumption habits (WP2 objective).

The intervention includes two sections:

**Section 1: Problem articulation.** During a workshop, participants and actors of the food system (food producers, policymakers etc..) will be invited. In this section, participants and policymakers will be gathered in groups to initiate a conversation about potential barriers to accessing healthy and sustainable food.

**Section 2: Solution development.** In section 2, participants try to co-create possible solutions to those barriers. Participants will be asked to imagine what the food system of the future looks like. A conceptual map will be developed, and possible futures will be discussed by imagining concrete contexts of use. A specific plan on implementing solutions will be extended once agreement on the above methodological design is reached.

---

## 4. References

- Carey, J., Dubbeling, M., & RUA Foundation. (2018). *City region food system toolkit tool/example*. Published by Food and Agriculture Organization of the United Nations, RUA Foundation and Wilfrid Laurier University, Centre for Sustainable Food Systems. <http://www.fao.org/3/i9255en/i9255EN.pdf>
- FAO. (2018). Sustainable Food Systems, Concept and Framework.
- Gissing, S. C., Pradeilles, R., Osei-Kwasi, H. A., Cohen, E., & Holdsworth, M. (2017). Drivers of dietary behaviours in women living in urban Africa: a systematic mapping review. *Public health nutrition*, 20(12), 2104-2113.
- Holdsworth, M., & Landais, E. (2019, January). Urban food environments in Africa: implications for policy and research. In *Proceedings of the Nutrition Society*. Cambridge University Press.
- Nicolini, D. (2012). *Practice theory, work, and organization: An introduction*. OUP Oxford.
- Schatzki, T.R. 2011. Where the action is (on large social phenomena such as sociotechnical regimes). Working Paper 1, Sustainable Practices Research Group
- Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. (2008). Creating healthy food and eating environments: policy and environmental approaches. *Annu. Rev. Public Health*, 29, 253-272.
- Shove, E. (2010). Beyond the ABC: climate change policy and theories of social change. *Environment and planning A*, 42(6), 1273-1285.
- Shove, E., M. Pantzar, and M. Watson. 2012. *The dynamics of social practice: Everyday life and how it changes*. Thousand Oaks, CA: Sage
- Stok, F. M., Hoffmann, S., Volkert, D., Boeing, H., Ensenauer, R., Stelmach-Mardas, M., ... & Renner, B. (2017). The DONE framework: Creation, evaluation, and updating of an interdisciplinary, dynamic framework 2.0 of determinants of nutrition and eating. *PloS one*, 12(2), e0171077
- Stokols D: Translating socio-ecological theory into guidelines for community health promotion. *Am J Health Promot.* 1996, 10: 282-298. 10.4278/0890-1171-10.4.282).



Turner, C., Kadiyala, S., Anju, A., Coates, J., Drewnowski, A., Hawkes, C., ... & Walls, H. (2017). Food Environment WORKING GROUP: TECHNICAL BRIEF Concepts and methods for food environment research in low and middle income countries

Warde, A. (2016). The practice of eating. John Wiley & Sons.

Wertheim-Heck, S. & Raneri, J.E. & Oosterveer, P. (2019). Food Safety and nutrition for low income urbanites: exploring a social justice dilemma in consumption policy. *Environment & Urbanization*. 10.1177/0956247819858019.