Urbanisation, Migration and Food System Transformations

Concepts and methodologies for a better understanding of the dynamics of urban food systems and migration settlements

Siemen van Berkum, Jan Broeze, Marion Herens, Bertram de Rooij, Katrine Soma and Lotte Roosendaal

WAGENINGEN
UNIVERSITY & RESEARCH

Urbanisation, Migration and Food System Transformations

Concepts and methodologies for a better understanding of the dynamics of urban food systems and migration settlements

Siemen van Berkum,[1] Jan Broeze,[2] Marion Herens,[3] Bertram de Rooij,[4] Katrine Soma[1] and Lotte Roosendaal[3] *

* Writing team led by Siemen van Berkum; authors in alphabetic order. Comments on earlier drafts provided by Jim Groot,[2] Bas Hetterscheidt[2] and Katrine Pittore[3]

1 Wageningen Economic Research
2 Wageningen Food & Biobased Research
3 Wageningen Centre for Development Innovation
4 Wageningen Environmental Research

This study was carried out by Wageningen University & Research and was commissioned and financed by the Dutch Ministry of Agriculture, Nature and Food Quality within the context of KB-*motif* 'Feeding cities and migration settlements', in KB-35 *Food Security and the Water-Food Nexus*.

Wageningen University & Research
Wageningen, June 2020

REPORT
2020-046
ISBN 978-94-6395-433-4

WAGENINGEN
UNIVERSITY & RESEARCH

Siemen van Berkum, Jan Broeze, Marion Herens, Bertram de Rooij, Katrine Soma and Lotte Roosendaal, 2020. *Urbanisation, Migration and Food System Transformations; Concepts and methodologies for a better understanding of the dynamics of urban food systems and migration settlements.* Wageningen, Wageningen University & Research, Report 2020-046. 30 pp.; 11 fig.; 2 tab.; 59 ref.

Interdisciplinary knowledge in the agri-food domain is needed to support transitions towards resilient and sustainable urban food systems and to contribute to achieving the SDG2 Zero Hunger and SDG 11 Sustainable cities and communities. This paper proposes an interdisciplinary framework to study urban food system outcomes and options for transformations in Low and Middle Income Countries in the context of changing rural-urban linkages and migration flows. The framework is a combination of a general analytical food system approach with add-ons from spatial and participatory approaches.

Key words: food systems framework, rural-urban linkages, migration, participatory approach

This report can be downloaded for free at https://doi.org/10.18174/524538 or at www.wur.eu/economic-research (under Wageningen Economic Research publications).

P.O. Box 29703, 2502 LS The Hague, The Netherlands, T +31 (0)70 335 83 30,
E communications.ssg@wur.nl, http://www.wur.eu/economic-research. Wageningen Economic Research is part of Wageningen University & Research.

Wageningen Economic Research is ISO 9001:2015 certified.

Wageningen Economic Research Report 2020-046 | Project code 2282700540

Cover photo: Shutterstock

Contents

Preface

This paper is part of KB Food Security and the Water-Food Nexus - Motif 'Feeding Cities and Migration settlements', one of the six building blocks of this KB programme that aims to 'contribute to Zero Hunger by combining (Wageningen) interdisciplinary knowledge in the agri-food and water domains to shape the transitions towards sustainable food systems'. This motif targets at food security in cities. Cities around the world are becoming larger and more complex in logistical and administrative terms. To be able to offer everyone sufficient and healthy food, a robust and sustainable food system is needed.

How do you feed the growing city? Can the surrounding agricultural countryside provide the city with healthy and sufficient food? How is the city connected with the countryside, and how to strengthen connections in order to enhance food security? Little research has been done into the dynamics of urban food systems and the interaction with the surrounding countryside. To contribute to Sustainable Development Goals Zero hunger (SDG 2) and Sustainable cities and communities (SDG 11), WUR is committed within this KB motif to develop appropriate approaches, methods and, above all, strategic interventions and solutions together with relevant stakeholders. The aim is to gain better insight into and therefore better control of urban food systems, with particular attention to the influence of rural-urban migration on food security, in order to achieve sustainable, resilient urban food systems.

This report brings together analytical frameworks from several corners of Wageningen's multidisciplinary research, which the authors try to forge into a joint framework for a better understanding of urban food. As indicated in the report, the Wageningen team of researchers will work in the coming years to further develop existing analytical frameworks in the areas of food, city-country connection and migration and test these in cities in Africa and Asia in close collaboration with stakeholders at different levels.

Prof.dr.ir. J.G.A.J. (Jack) van der Vorst
Managing Director Social Sciences Group (SSG)
Wageningen University & Research

Ir. O. (Olaf) Hietbrink
Business Unit Manager Wageningen Economic Research
Wageningen University & Research

Abstract

Cities around the world are increasing in size and complexity. The flow of people into city regions challenges urban food systems as many cities - in particular in low and middle income countries (LMICs) - are characterised by scarce physical resources and space, weak governance and insufficient logistical capacities. Moreover, in LMICs the prevalence of food insecurity among urban populations is higher than among rural populations. Interdisciplinary knowledge in the agri-food domain is needed to support transitions towards resilient and sustainable urban food systems and to contribute to achieving the SDG2 Zero Hunger and SDG 11 Sustainable cities and communities. In this paper we propose an interdisciplinary framework to study urban food system outcomes and options for transformations in LMICs in the context of changing rural-urban linkages and migration flows. The framework is a combination of a general analytical food system approach with add-ons from spatial and participatory approaches (see Figure A1 below). Participatory approaches explicitly capture stakeholders' engagement in designing and implementing interventions that contribute to improved system outcomes. Following the theoretical benchmark provided in this paper, the elements of the analytical framework will be adapted to local contexts and carried out in food system related research projects in selected metropolitan areas with high relevance for rural-urban migration. Application opportunities are found in (regions around and including) Dhaka, Kampala and Lagos.

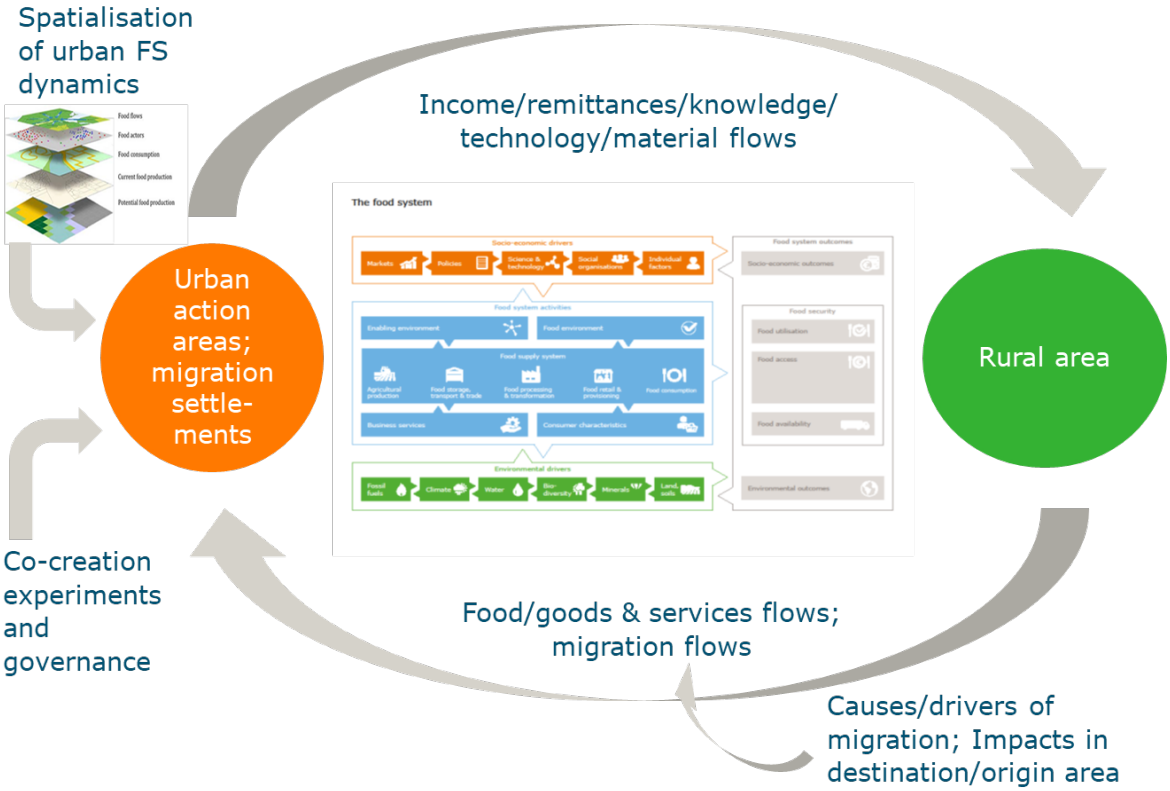

Figure A1 *A food system perspective that captures economic, social and spatial connections between urban and rural areas*

1 Introduction

In many of today's developing countries – in particular in Africa and Southeast Asia - cities are expanding rapidly due to natural population growth and rural-urban migration. The flow of people into city areas challenges urban food systems because of insufficient logistic capacities and weak food market governance. Moreover, urbanisation is linked with dietary changes towards more natural resource-intensive and energy-dense diets, and with the triple burden of malnutrition[1] (e.g. IFPRI, 2018; GLOPAN, 2016); in developing countries the prevalence of food insecurity among urban populations is higher than among rural populations (Tefft et al., 2017). Lately, the number of people struggling with acute hunger and suffering from malnutrition is increasing, with the novel coronavirus disease COVID-19 having an unprecedented impact around the world, in health, socioeconomic and food security terms, in particular in urban areas (FSIN, 2020)s. The need to deal with global challenges, including conflicts, climate change and economic instability demands exaggerated efforts to fight hunger and malnutrition, and building resilience to extreme shocks. Food security in urban areas is an essential part of urban resilience. The concept of urban resilience[2] has been subject to recent research, but the impact of the rapid influx of people on the structure and performance of urban food systems and its elements is mostly unknown (Kirbyshire et al., 2017). Insight into the performance of urban food systems is crucial for achieving the Sustainable Development Goals (SDGs) and building a more stable and resilient world (e.g. IFPRI, 2017; Schipanski et al., 2016).

Rural to urban migration is a critical component of urbanisation. Migration from rural areas is part of the process of structural transformation of economies in which the importance of agriculture for income and employment generation declines. Industry and services benefit from agglomeration in urban centres, offering employment and income perspectives. Increased urban per capita income and the resulting demand for higher-quality and more processed food have the potential to increase farm income and spur the rural transformation process by inducing investments in larger-scale, more capital-intensive farming and other activities in the food supply chain. However, many African countries have experienced urbanisation without growth in per capita income, which can lead to adverse outcomes such as urban poverty and a stagnant rural development. The latter may result in a lack of employment opportunities in the rural areas, which in its turn may encourage migration of rural residents to urban areas. In addition to economic forces, the population age structure drives rural-urban migration in Africa and South-Eastern Asia: both regions have a relatively young population of which many seek future perspectives in urbanised areas. Also, migrants are pushed to urban areas by drought, livelihood loss or debt and (in many countries) conflict, indicating that in addition to economic reasons migration flows have social-political and geographical dimensions as well. Although not a homogenous group at all, migrants seem to be disproportionally represented in the low-income (sometimes illegal) settlements of a city area (IOM, 2015). Consequently, access to sufficient affordable and nutritious foods may be particularly difficult in those parts of fast growing cities.

Linkages between urbanisation, rural-urban migration, food system transformation and food security are little researched (Von Braun, 2007; IFPRI, 2017; IFPRI, 2018; Serraj and Pingali, 2018; Battersby and Watson, 2019). People migrate to cities with important implications for the urban as well as the rural food systems. Indeed, migration affects both the production part of the food system (labour force, knowledge and possible other types of capital move with people) as well as the consumption part (the number of mouths to be fed in a specific location and their purchasing power). At the same time migration decisions are (in part) determined by the performance of a local food system. Migration impacts the diversity of the city, which also brings opportunities in urban development. The influx

[1] Undernutrition (underweight, stunting and wasting), overweight and obesity, and micronutrient deficiencies are the triple burden of malnutrition. Malnutrition has increased in the poorest countries due to overweight and obesity, which is explained by increased consumption of (ultra-)processed foods (see e.g. Popkin et 2020).

[2] Resilience relates to the capacity of the system to withstand and/or adapt to disturbances over time (see Tendall et al., 2015). Urban resilience usually refers to the capacity of a city (system) to continuously change and adapt its structure to changing economic, social and environmental conditions while maintaining its essential function.

could accelerate urban transformation and make full use of new social and economic potential (Olsson, 2016; WEF, 2017; Blocher, 2017; Tacoli and Agergaard, 2017; Bergeret et al., 2019). Due to its scale and impact on the physical infrastructures, migration and mobility should be fully integrated in development and urban planning and processes (Smit, 2016; Battersby and Watson, 2019). Rural-urban migration thus needs to be considered when studying the transition of the urban food system.

The overall aim of the KB motif 'Feeding cities and migration settlements' is to

a. **Better understand the relationships and outcomes of an urban food system in the Africa and South-Eastern Asia context, in particular for the vulnerable groups in migration settlements**
b. **Analyse the rural-urban linkages in order to find leverage points for improved food systems outcomes in the city *and* its region**
c. **Suggest solutions for improved food system outcomes, by simultaneously addressing socio-economic, technological, spatial and organisational (governance) dimensions of food systems functioning and outcomes.**

This overall aim implies the need to develop an overarching approach that can assist in increasing insights into the functioning of the urban food system, which will support in suggesting ways to address simultaneously the socio-economic, technological, spatial and organisational (governance) dimensions of a food system and will help to analyse the impacts of interventions that aim at improving food systems outcomes.

As part of the KB motif, this paper considers methodologies that can be used to analyse urban food system relationships and outcomes with the purpose to design an overarching framework that combines transdisciplinary analytical and participatory approaches and tools that are applicable to urban food systems strongly impacted by migration flows from rural areas. In general terms, this paper looks at the key components of an urban food system framework enabling assessment of food system outcomes in a dynamic setting of rural-urban migration and food security challenges. In particular, the paper explores how spatial planning and participatory approaches can feed into an urban food system framework as critical components to enhance connectivity across space and people in an urban-region context.

This paper builds on existing insights into food system drivers of and leverage points for transformation, and on literature highlighting a spatial lens to food system issues and stakeholder contributions to food system transformations. The result is a first design of an overall approach that will be tested in African and Asian local contexts. The outreach in rapidly growing metropolitan areas such as Dhaka, Kampala and Lagos is critical because identification of real urgencies and needs among populations living in overcrowded, poorly organised and food-insecure cities, of which the contexts are expected to vary substantially, is important for the usability of the analytical approach proposed. As such, primary and secondary data collection and analysis, as well as stakeholder participation are central to the further development of an urban food system approach in which the role and impacts of migration on food system outcomes is particularly addressed. Testing our approach in Wageningen projects will help refine the preliminary design presented in this paper.

The paper is structured as follows. In Chapter 2, major components of an urban food system approach are presented, followed by an explanation of drivers of migration and its impacts on urban food systems in Chapter 3. Chapter 4 shows how the participatory approach can help initiate and guide a stakeholder process in formulating policies and solutions that contribute to improved food system outcomes in city regions. In Chapter 5, an urban food system framework is presented that takes account of the reasoning in this report. Chapter 6 concludes.

2 Major components of a food system analytical approach explaining urban food system and rural-urban migration dynamics

This chapter introduces the major components of a food system analytical framework that will help to understand the relations between food system drivers, activities and outcomes in an urban context, with specific attention to the impacts of migration flows on the urban food system performance. Most food system approaches include economic, social and biophysical factors in their analyses aiming at suggesting ways to improve food and nutrition security sustainably, but do not explicitly take into account the spatial dimensions (e.g infrastructural bottlenecks and opportunities, urban planning) and the social or interpersonal interactions between actors involved that are key in enhancing urban food system governance in order to reduce food and nutrition security for city dwellers. This chapter, therefore, highlights the overall logic of combining a food system approach with spatial and participatory approaches. All approaches described in this chapter are developed and/or applied extensively in current research, but not (yet) in a combined manner.

2.1 A food system framework for mapping out and analysing food system outcomes

Food security, food safety and (access to and availably of) nutritious food are outcomes of an interplay of multiple factors operating at multiple scales. A food system approach is needed to comprehend how food makes its way from producer to consumer and how policies to correct for negative environmental and social outcomes of food system activities should be framed to gain optimal outcomes (Eriksen et al., 2010; Fresco et al., 2017). A food system approach gathers multiple (biophysical, economic, political and social) factors and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outcomes of these activities, including socioeconomic and environmental context and dynamics (HLPE-FSN, 2014:12). The food system approach looks at these activities how they interact, how they result in outcomes and how these results feedback again to system activities and to socioeconomic and environmental drivers of the system.

Food system literature has shown different ways of conceptualising the food system: some have a greater orientation on (impacts on) natural resource (e.g. UNEP, 2016), others on (consequences for) diets (e.g. GLOPAN, 2016). Moreover, there are multiple narratives of what causes food systems failure and how to improve it (see Bene et al., 2018). Van Berkum et al. (2018) provide a generic framework for food system mapping and analysis that helps to identify how different types of policy incentives or business innovations can influence the relationships between multiple stakeholders (input providers, farmers, traders, public officials, processors, retailers) that could lead to adjustments in the interactions of different components (consumption, distribution, value chain, production), with the ultimate aim to improve system outcomes. The scheme in Figure 1 describes the different elements in a food system and the relationships between them. On the one hand, the framework looks at all the activities relating to the provisioning and utilisation of food, and, on the other hand, at the outcomes of these activities in terms of food security (including nutrition, that is, the extent healthy and safe foods are available and accessible), socio-economics (income, employment) and the environment (biodiversity, minerals, water, climate, soils). A defining feature of system thinking is that it views the behaviour of a system as an interplay of interacting subsystems (i.e. for instance, parts of the food supply activities, markets, and biophysical subsystems like land or water), in which feedback plays a key role, rather than as a simple chain of cause-effect relationships.

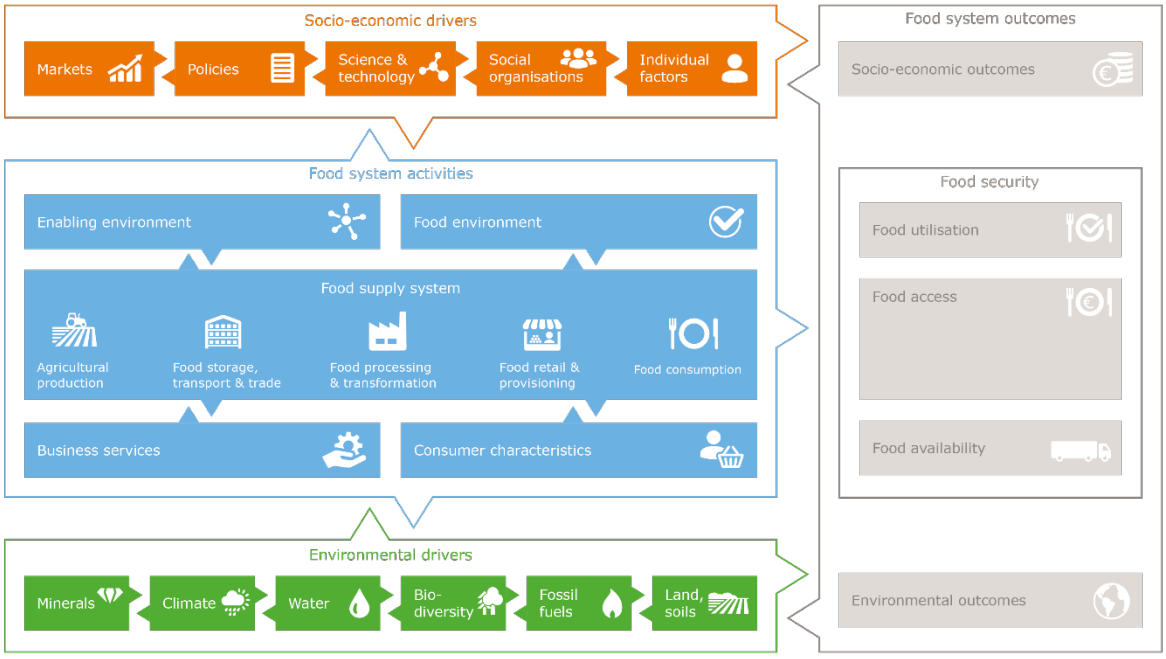

Figure 1 *Conceptual framework of mapping the relationships of food system activities to its drivers and outcomes*
Source: Van Berkum et al. (2018).

Applying a food system framework is showing where the main interactions and feedback between the subsystems occur, and this produces a number of useful insights:

- It maps out inefficiencies from which opportunities for a more efficient use of natural resources can be identified (beyond one product and/or one value chain).
- It highlights the important role of the food system's socio-economic drivers.
- It shows the implications of the food system relationships and interventions for health and malnutrition.
- It helps to shed light on the trade-offs between different intervention strategies.
- It sheds light on non-linear processes and feedback loops in the food system.
- It allows for a better understanding of how policies and other factors may encourage or disencourage specific actions or behaviours.

This list of insights reflects the advantages of using a food system approach for shaping transformative action to enhance food and nutrition security. System thinking broadens the perspective when seeking solutions for root causes of problems such as poverty, malnutrition and climate change. Food system thinking allows to include feedback from the effects of an intervention outside activities that relate directly to food production and/or consumption, and analyse what this feedback implies for food system activities and the outcomes of the (whole) food system. Again, the added value of the approach is the wider perspective it offers for finding sustainable solutions for a sufficient supply of nutritious food.

2.2 Innovations across food value chains

The wider perspective and 'overall inclusion' of system activities and relations with domains not directly central to food production and consumption is what distinguishes a food system thinking from a value chain analysis. Value chains are one of the core elements of a food system (as presented in Figure 1), and surely are a useful framework to unpack the complexities of a food system. However, the main focus of value chain innovations is often on increasing economic efficiency (higher productivity, more profit), and disregards environmental objectives and/or social impacts of these innovations. To take a more holistic view in which measures take the complex social and environmental context into account, value chain structures and development need to be viewed through a food system lens.

Figure 2 presents an FAO sustainable food value chain development (SFVCD) framework, which takes a systems-based approach to measuring, understanding and improving the sustainability performance of the food value chains (FAO, 2014). The framework allows to analyse the relationships between the three interlinked layers of the core value chain, the extended value chain and the enabling environment. The SFVCD framework partly overlaps with the one shown in Figure 1 by presenting a system in which the behaviour and performance of farms and other agri-food enterprises are determined by a complex environment. This SFVCD framework highlights the core functions in the chain production (e.g. farming or fishing), aggregation, processing and distribution (wholesale and retail), and the governance structure (the nature of the linkages (e.g. via prices, information flows, contracts and so on) both between actors at particular stages in the chain (horizontal linkages) and within the overall chain (vertical linkages), yet pays less attention to consumer choices and preferences,[3] or to socio-economic and environmental drivers and how (changes in) these may affect value chain developments.

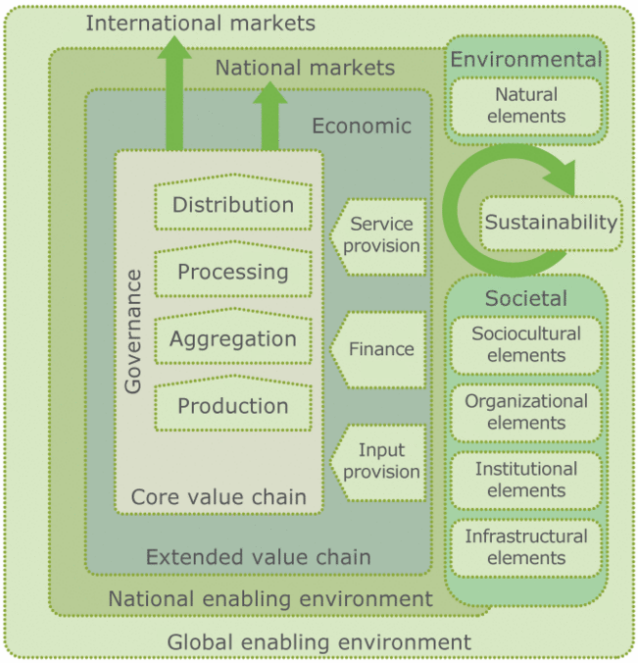

Figure 2 *Sustainable food value chain framework*
Source: FAO (2014).

Food value chain development comprises development at different levels (Figure 2):

- The core value chain development, connecting agricultural production to the market/consumer. In low-income countries the governance of core value chain as well as input provision, finance and service provisions are weak (e.g. Gereffi et al., 2005; Trienekens, 2011). Consequently technological interventions, although highly relevant for food and nutrition security, cannot be supplied, maintained or earned back unless integrated (multi-stakeholder) innovations at the level of 'extended value chain' are implemented.
- Access to international markets as well as competition with foreign supply on domestic markets generally poses more challenges to value chains, e.g. with respect to product quality and safety (requiring quality management next to efficiency orientation), supply management, aligning product and supply to the market's preferences, etc. Due to globalisation, urbanisation and changing consumer preferences (e.g. towards more processed foods) urban food systems are highly import-

[3] Changes in consumer preferences are driven by a complex interaction of individual characteristics of the consumer (e.g. income), social and cultural features of the group the consumer is part of, and policies (related among others to the food and agricultural domain, to trade, environmental, health and/or spatial planning policies) affecting for instance relative prices and food safety requirements. See for example Lusk and McClusky (2016) on how to understand food consumer choices and the role of policy to address health, environment, and food security impacts of consumer choices.

dependent. Therefore, value chain development is strongly associated with the opportunities and threats international linkages offer and imply.

In medium and high-income countries,[4] with a relatively high level of food system organisation, individual entrepreneurs can pick up value chain opportunities related to socio-economic and environmental drivers as shown in Figure 1. In low-income countries, however, where food market governance is generally weak, a transdisciplinary approach to food systems is essential in ensuring sustainable food system developed. Value chain development holds great potential to contribute to improving outcomes of the food system, yet should take into account the social and environmental context and effects. *In food system development* tensions and trade-offs occur, for instance when combining the objectives of developing economically viable value chains and improving food and nutrition security; the first may not coincide with a better income for all value chain actors or automatically lead to enhanced food access or inclusiveness. Likewise, a solely efficiency focus may compromise environmental objectives as well, while offering cheap food may not satisfy the nutrition requirements of the population (food supply should enable diet diversity). Identifying and addressing these potential trade-offs while searching for opportunities for convergence and multi-stakeholder partnerships are an integral part of the value chain framework that fits in a food system perspective. This also implies that value chain innovations (investments) of technical nature should simultaneously consider their socio-economic and environmental implications, and when trade-offs occur, should be complemented with organisational (governance) interventions that help change behaviour in order to enhance the sustainability of a food value chain producing healthy and safe food (see for examples e.g. Bijman et al., 2016).

According to the concept of entrepreneurial opportunity, innovations in supply systems are driven by changes in demand, changes in supply, information asymmetries (related to governance) and exogenous shocks (Kuckertz et al., 2019). Both changes in demand and exogenous shocks are pertinent in urbanisation as well as migration. Various types of value chain development will be necessary: managing increasing volumes (related to increased demands), shifts in product quality and safety standards, shifts in product categories (enabling diet diversity) and changes in food supply channels. Wageningen Research has a rich experience and sets of tools for monitoring and intervening, which may support value chain developments to adapt to changing circumstances and requirements. However, as explained above, a broader food system approach is essential for developing adequate solutions for a specific situation/context in this motif's focus areas.

2.3 Spatial features and issues in food system analysis

A food system analysis of how interventions may affect behaviour and outcomes of the system does not define spatial boundaries of analysis *per se*. Nevertheless, spatial organisation and features have a significant impact on the food system and its outcomes. For instance, logistics throughout food value chains and the way logistical facilities and services are spatially dispersed have impacts on food system outcomes. This affects not only the distribution and availability, but also accessibility of food. After all, food systems cover specific and various geographical and organisational levels, like city-region, national or international. A spatial lens to food systems work could therefore add important insights as it helps to understand the geographical context and spatial issues that need to be addressed for food system transformation at different places within the food system; from enabling environment to food system outcomes and possible feedback loops. Methodologies to understand the spatial aspects of urbanisation and food system transition described below focus on the urban food system and analyse the connection between agricultural production and the city's food provisioning. Bringing the food system into a specific spatial context (spatialisation) helps in making the operation of the system more explicit and possible interventions more tailored. In doing so, multilevel approaches should be taken into account. Activities and policies at all these spatial levels are interrelated, with decisions being made at one level affecting outcomes and decisions on other levels.

[4] Respectively the 'efficiency-driven' and 'innovation-driven' economies, whereas low-income countries are defined as 'factor-driven' in WEF, 2014.

Challenges in spatialisation come with defining the proper areas of interest, or system boundary. There is no single agreed definition of 'urban area', nor is distinguishing 'urban' from 'rural' areas always feasible. Often, borders are blurred, forming a continuum from rural to urban rather than a clearly distinguishable dichotomy. In doing so, people, information, commodities, natural resources, waste, pollution and other elements are continuously exchanged from rural to urban and vice versa. Such rural-urban linkages are an example of how the spatial lens could help to identify actual practices and patterns, in addition to clear planning theories (see also Cotroneo, 2017).

It is also interesting to link emerging planning approaches in response to rapid urbanisation trends to the food system demands and outcomes. This also provides a basis for potential points of intervention (Figure 3).

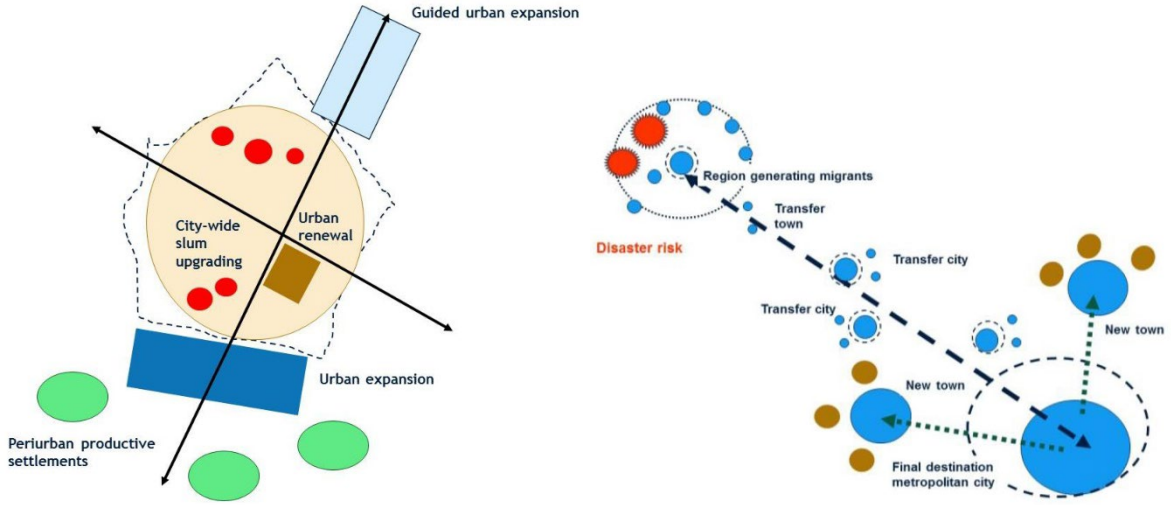

Figure 3 *Emerging planning approaches and their place in the urban system and Migrant corridors and emerging regional planning approaches (UN/POP/EGM/2017/4:3)*

In Kasper et al. (2017) spatialisation serves as 'a lens for analysing food as part of the urban metabolism with flows between components and interfaces with other relevant thematic fields of urban planning'. The authors distinguish five spatialised urban food system components, namely production, processing, distribution/access, consumption, and disposal/valorisation. These five urban food system components serve as a framework for analysing and understanding the systemic linkages and processes with regard to food in the city. The authors consider food as an urban (trans-sectoral and interactive) infrastructure – corresponding to water, waste and energy – which can be tracked down in its spatial manifestation and to spatial entities. The authors plea for a systemic approach with cross-scale considerations and exchange processes, based on a multi-dimensionality of ecological, social and economic interactions and with a view on the urban tissue itself and on the urban-rural linkages. This links well to the Evidence-based Food System which has been developed by Wageningen UR, but also to the City Region Food System approach introduced by FAO and RUAF. Both approaches are elaborated below.

A method applied by Wageningen Research (WR) to study metropolitan food clusters is the Evidence-based Food System Design (EFSD) (e.g. Metropolitan Rotterdam-Amsterdam, MRA, see Kranendonk et al., 2018). EFSD is a method for data analysis to unravel the food system in five layers: food flows, food actors, food consumption, current food production and potential food production (Figure 4). The method depicts food flows, identifies food actors (e.g. restaurants, supermarkets, food processors, farmers etc.), detects logistic flows/travel bottlenecks and estimates the ecological footprint of a region. The method delivers a spatial analysis of food production, transport, distribution and consumption, and work towards ways to enhance the system's resilience and sustainability through scenarios (e.g. increased urban production) and design sessions with stakeholders. The method has a strong focus on (improving) infrastructures, which are not necessarily technology-orientated, but also centres the actors and their social practises, includes trans-sectoral planning and metabolic flows and

processes related to spatial entities (see also Kasper et al., 2017, for some theoretical background to 'understanding food as an infrastructure' and practical examples).

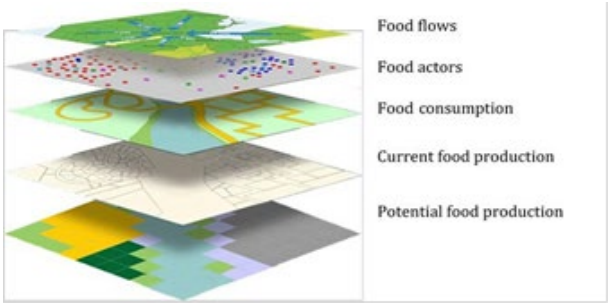

Figure 4 *Unravelling the food system in five layers*
Source: Kranendonk et al. (2018).

2.4 Participatory city region approaches towards urban food policy planning

The relevance of stakeholder participation in a spatial approach to food systems is also underscored by the RUAF Global Partnership that introduced the city region food system (CRFS) concept and developed, together with FAO and WLU, a toolkit for CRFS assessment to get city regions mobilised for further action (FAO, RUAF and WLU, 2018). The CRFS concept is embedded in the New Urban Agenda (an UN endorsed vision on urban development that integrates all facets of sustainable development – see www.habitat3.org), specifically addressing how urban food is understood in the context of a regional food system and the discourse on spatial planning (Battersby and Watson, 2019). The CRFS concept is defined as 'the complex network of actors, processes and relationships to do with food production, processing, marketing, and consumption that exist in a given geographical region that includes a more or less concentrated urban centre and its surrounding peri-urban and rural hinterland; a regional landscape across which flows of people, goods and ecosystem services are managed' (Blay-Palmer et al., 2018). In the toolkit, seven components are specified: 1) getting prepared, 2) defining, 3) scanning, 4) assessing, 5) policy support and planning, 6) vision and 7) governance (Figure 5). Urban and rural communities are connected by markets operating on national and international scale, yet working at city region level can leverage the complexity of rural-urban linkages at a practical level by making food the common denominator.

Figure 5 *A toolkit to asses and plan sustainable city region food systems*
Source: FAO, RUAF Foundation and WLU (2018).

FAO/RUAF/WLU CRFS toolkit documents describe the logics and steps in the approach that is illustrated in Figure 5. It starts with defining the boundaries of a specific city region. One of the criteria to define the city region boundaries is often the food flows, and particularly the food sources from either the hinterland or from imports. Workshops with stakeholders are the main vehicle for understanding the local context, identifying citizens' food security situations and building a vision on how to improve urban food system outcomes (and who to involve). For more details see the CRFS toolkit guide (FAO/RUAF/WLU, 2018).

Notably, the EFSD and CRFS methodologies have a lot in common, with EFSD emphasising improved spatial planning of activities as its major outcome of analyses, whereas the CRFS shows major attention to enhanced governance as a way to improve urban food system outcomes. Actually, both these approaches are built around stakeholders' engagement.

2.5 What methodologies do we need more in our framework?

The food system framework, value chain analyses, the spatial food system design and CRFS toolkit mentioned above are designed for assessing the functioning of urban food systems as well as suggesting solutions for improved outcomes of these systems. Each of these approaches has its own perspective and main purpose; there are commonalities as well as differences, there are overlaps and synergies in approaches, sometimes complementary and some of which have a specific focus and/or narrative (see Bene et al., 2018 and Van Berkum et al., 2018). None of the existing frameworks includes all of the multidisciplinary dimensions that seem critically important in addressing core bottlenecks of urban food systems. Hence, it might be useful to seek for an integration or a clever combination of the perspectives introduced above, i.e. the general food system approach combined with a spatial lens and participatory approaches that mobilise stakeholders for transformative actions (further combining the 'what' and 'how' with 'who').

In addition to that, intuitively, some important components are missing out in the above overview of approaches or do not get the attention they deserve, particularly when it comes to urban food systems in the light of migration flows. For instance, the general food system analytical framework is largely used for understanding the way the system operates and what effects interventions may have (for actors and outcomes), but not how the transformation process may get shape. For this part, an intensive and clearly designed participatory approach is needed for which some specific tools and expertise should be applied. Notably, the most critical factor missing in the above described analytical methodologies is the migration part: how to understand the impact of migration flows on food system performances and how to use these dynamics for improved food system outcomes. In the following we first address some of the main causes of migration and the issue of how population dynamics of rural-urban migration can be better integrated in food system analyses, and next – in Chapter 4 - we come up with further details of a participatory approach to support urban food system transformations. Eventually, in Chapter 5, an approach is designed that fits the purposes of the research questions of this KB motif.

3 Rural-urban migration and food security

Migration settlements are not explicitly mentioned in the approaches describes in section 2, but they can influence the outcomes of the urban food system in different ways, for instance due to their specific spatial features ('slums', little basic utilities such as water, power and sanitation, etc.) and the highly informal market relations most migrants typically rely on as food consumer, as employee, entrepreneur and user (usually not as owner) of land and other resources (e.g. WEF, 2017; Tacoli and Agergaard, 2017; IFPRI, 2018; Serraj and Pingali, 2018). Often, migrants are still part of rural households (part of the week, part of the year), exchanging resources (such as labour and knowledge) and earnings (remittances) with their place of origin. In that position, migrants may play an important role in enhancing rural-urban linkages in order to improve food system outcomes (including food security) in both urban and rural areas.

Nowadays, large numbers of voluntary and non-voluntary displaced people find their way into urban areas. It is estimated that more than 13.5 million refugees (58% of the global caseload) and some 32.2 million internally displaced persons (80% of the global caseload) reside in large, medium and small cities (UNHCR, 2018; Muggah, 2018). In some countries this number is even higher. For instance, 93% of the internal displaced persons in Colombia moved into urban areas (Albuja and Ceballos, 2010, Kirbyshire, 2017).

Although much (media) attention goes to forced displacement due to extreme events, sudden disasters and (armed) conflicts, the largest share of migration is motivated by economic incentives and livelihood conditions, moving to areas with higher economic growth and more possibilities for work and education, for instance to Catalonia from other parts of Spain (George and Jiménez, 2012) or for seasonal fishing in Brazil and Uruguay (Trimble and Berkes, 2015). This regular migration is also partly related to slow on-set disasters, for instance, through climate change and environmental degradation. Stuiver et al. (2019) show the multifaceted linkages between the Water-food nexus and migration and explores possibilities of improving existing models and tools for providing better understanding these relationships. Figure 6 (from Guadagno, 2017) on the next page illustrates that migration is driven by a wide variety of issues in the areas of origin (push factors) and felt opportunities elsewhere (pull factors), with both positive and negative consequences for the community and household of origin and destination. Causes of migration have been categorised into economic, socio-political and ecological reasons (see also WEF, 2017:31). Environmentally forced migration can have varying scope of agency, including fleeing a life-threatening environmental disaster which leaves little room for other motivations (IOM, 2018). Moreover, migration can be a temporal factor, for instance, when due to conflicts, extreme weather events, or short-term water or food shortage.

Some migration is motivated by food insecurity (Sudmeier-Rieux et al., 2015), when sufficient, safe and nutritious food for local populations is lacking and prospects for improvements are poor. The 'permanent disaster of food insecurity' is actually seen as one of the most significant drivers of global migration (Sykes, 2014), whereas others claim that relatively little attention has been paid to the role of food security as core driver for migration, nor to the effects of migration on food security in the region where they moved from (i.e through remitting) or where they moved to (see for instance Crush, 2013; Crush and Caesar, 2017; Falco, Donzelli and Olper, 2018). This may be explained by the complexity of food security – migration relations, as food security and migration are impacted by many factors affecting both phenomena, such as climate change, water shortage and soil and land degradation.

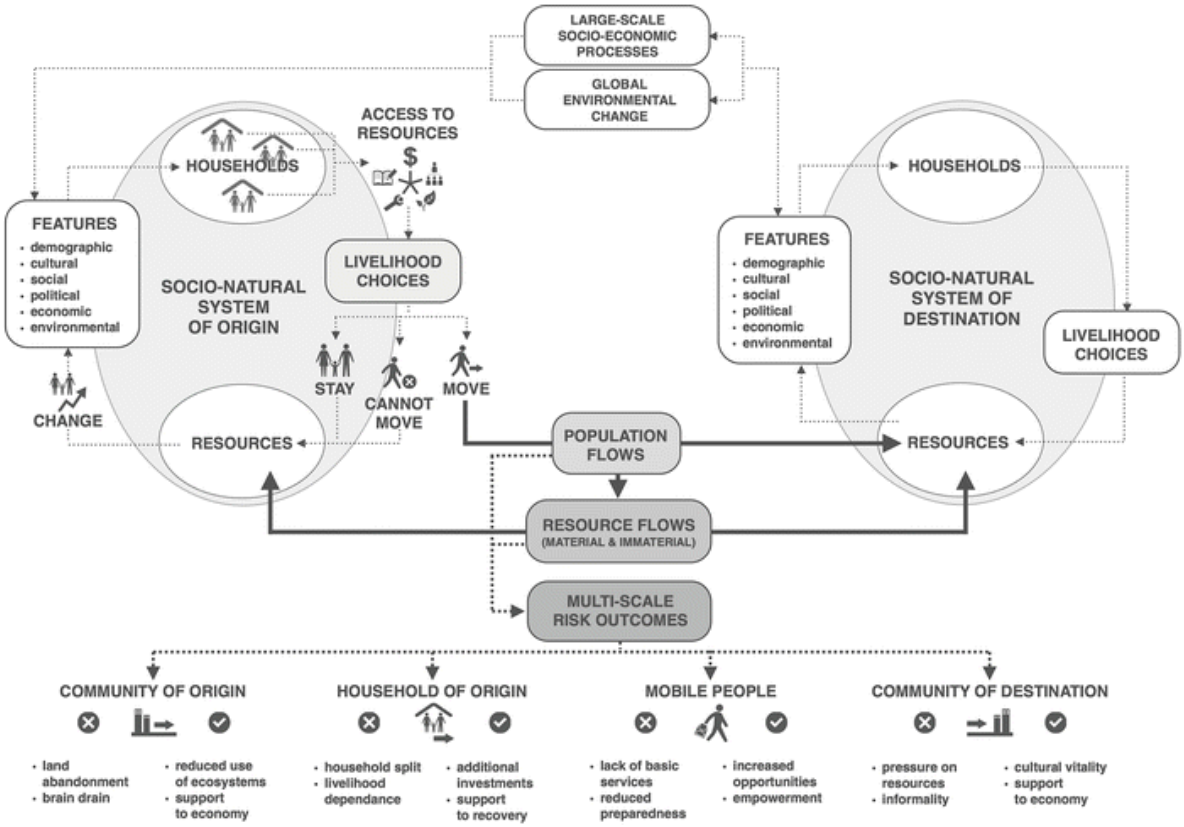

Figure 6 *Livelihood choices moderating the decision to move*
Source: Guadagno (2017).

Acknowledging the dynamics and complexities of migration and food and nutrition security becomes important but also challenging while attempting to translate global policy and governance goals such as the SDGs and the Paris climate agreement into tangible policies at local level. For example, operationalising the SDG 2 aiming at ending all forms of hunger and malnutrition by 2030 (UNDP, 2018) requires a transition towards sustainable food systems.

Given the strong rural-urban migration trends, future food systems must capture the dynamics of moving populations, and the circularity between home locations and working locations elsewhere (Atuoye et al., 2017). Therefore, it is important to understand the role food insecurity actually plays as a driver for people to migrate. Moreover, and equally important, the consequences of people moving to cities for the place of origin should be considered: migration has economic, social and environmental impacts on both the destination as well the origin of residency, and hence affect food and nutrition security at both the location of origin and of destination. Box 1 presents some preliminary findings of a study that looks into food and nutrition security situation of households that migrated from rural areas to either other rural areas or to urban areas.

Box 1: Welfare analyses of migration settlements in Uganda

Uganda is one of the African countries with the highest migration rates. Internal migration has implications for food security both in origin and destination. Using *Uganda National Panel Survey (UNPS, including 2244 households in 2010/11 and 2966 households in 2015/16)*, Mekonnen (2019) analyses the extent to which food and nutrition security *(measured in terms of food energy deficiency, Food consumption score (FCS), Dietary diversity scale (DDS), and vulnerability (expenditure on food>70% of income)* improves or deteriorates after households have migrated. The outcomes show that on average, with the exception of food energy deficiency, migrant households are more food secure than non-migrant households. Moreover, with the exception of food energy deficiency, the prevalence of food insecurity of (rural-)rural migrants is higher than (rural-)urban migrants. On average, remittance-sending households are more food secure (i.e. they are better off) than non-sending households. Notably, this dataset covers the whole country and does not focus on areas such as slums or secondary cities, and thus includes households with high welfare. This survey will advance in 2020 and outcomes will be published as an article in a peer-reviewed journal.

4 Co-creation experiments and outreach in selected action areas

4.1 Co-creation experiments driving food systems transformation

As indicated in Section 2.5, in addition to a framework for understanding and assessing possible impacts of interventions on urban food system outcomes, we seek to strengthening our toolkit to support transformative actions. Bringing about change in complex situations with issues at play at different scales requires different set of perceptions and knowledge. Therefore, we suggest a mixed methods strategy whereby stakeholder engagement plays an important role. Stakeholder engagement is a proven approach for identifying the needs and track expectations of people who may be affected by policy or business investment decisions in the food domain. Stakeholder participation has been judged as a strategy which potentially can enhance the food governance, for instance as people may feel more represented and engaged in the decision-making process and more accountable for its consequences (Soma et al., 2018). Therefore, participatory approaches are highly recommended to be included throughout a transition process towards a more resilient and sustainable food system in areas with high food insecurity (such as migration settlements). Which participatory techniques are applied best, depends on the specific purpose of stakeholder engagement, and the context in which it takes place; here we focus on urban planning participatory approaches. Based on a survey on stakeholder participation in urban contexts, Soma et al. (2018) identify three core objectives of stakeholder participation; including citizens engagement (and enabling them to take ownership for actions), decision support to governance and research contributions. One category is meetings with the purpose of enhancing public (government) decision making including urban planning. A second category is supporting scientific analyses, and the third category is enhancing empowerment. A generic transition approach to integrate stakeholder contributions into urban development have been defined for these three specific groups and illustrated in Figure 7. Note that in the next steps of this (KB-related) research, stakeholder meetings will be held with consideration of these distinctive purposes, with the overall aim to contribute to a transition towards more reliable and sustainable urban food systems with migration settlements. The co-creation experiments will apply working method applicable to specific purposes of the stakeholder involvement.

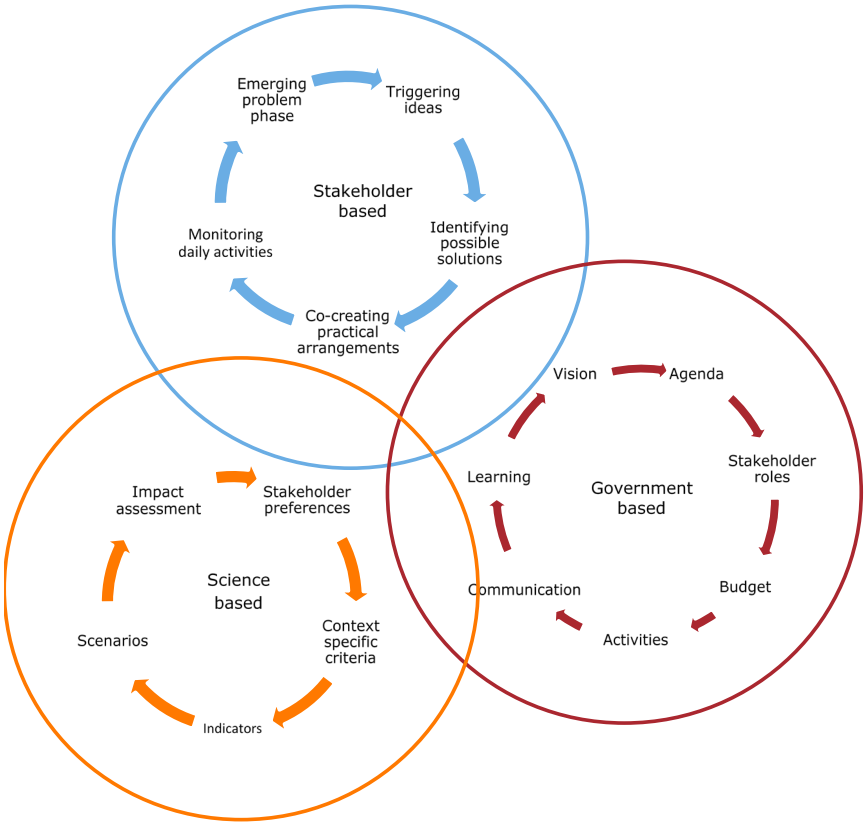

Figure 7 *A transition approach to initiate urban development by means of stakeholder contributions motivated by science based, government based and stakeholder based approaches Source: Soma et al. (2018).*

As key elements of the co-creation experiments, we value a systematic inclusion of public–private–people partnerships, integrating research and innovation processes in real-life communities and settings, following the core properties of the so-called 'living labs' (ENOLL, 2013). In each step of co-creation, we aim at timely and active involvement of relevant stakeholders. It is also relevant to link and reflect jointly on the tailored processes of each case study. Nonetheless, the basic elements of the participatory approaches and 'living labs' (see Steen & van Bueren, 2017) will be cherished, but tailored to the needs and support in the case studies and reflected to a more general approach.

A solid shared basis via joint fact finding and participatory mapping is crucial. The overall participatory process can be connected around the development of a particular innovation focused on solving a particular problem, or within a geographical area focusing on various problems.

The activities that take place in co-creation should contribute to the overall aim of increasing urban food system resilience and sustainability, via local solutions. Activities envisaged are threefold:

- Development of new innovations (not to test or implement a pre-developed solution)
- Co-creation among participating actors who together give shape to the innovation process
- Iteration between activities by means of feedback obtained during implementation and impact evaluation to allow further enhancements of the proposed innovation.

The participants are multi-sectoral and multi-level, including food consumers, traders, producers, public actors and knowledge institutes who are active contributors to the innovation and development process. Expectation management, shared responsibility, full engagement and commitment should be the standard. All participants have decision power in the various stages of the innovation process and also have responsibility in building knowledge and solutions. And, last but not least, all activities are enacted in a real-life use context.

The most challenging criterion is co-creation. In the envisaged approach the idea is to innovate with users. The process of innovation covers research, development, testing, and implementation (e.g.

commercialisation). Initially, the 'problem' has to be defined and actors with which initial ideas on how to solve the issue can be discussed have to be selected. The steps to follow in the ideal way of working is provided in Figure 8.[5]

Before even beginning to involve stakeholders, a plan is needed of a trajectory that involves different stakeholder participation tools for different purposes. In any trajectory that aims at transition of food systems in urban areas, a series of events will most likely take place. This is to ensure that trajectory follows a reasonable planning.

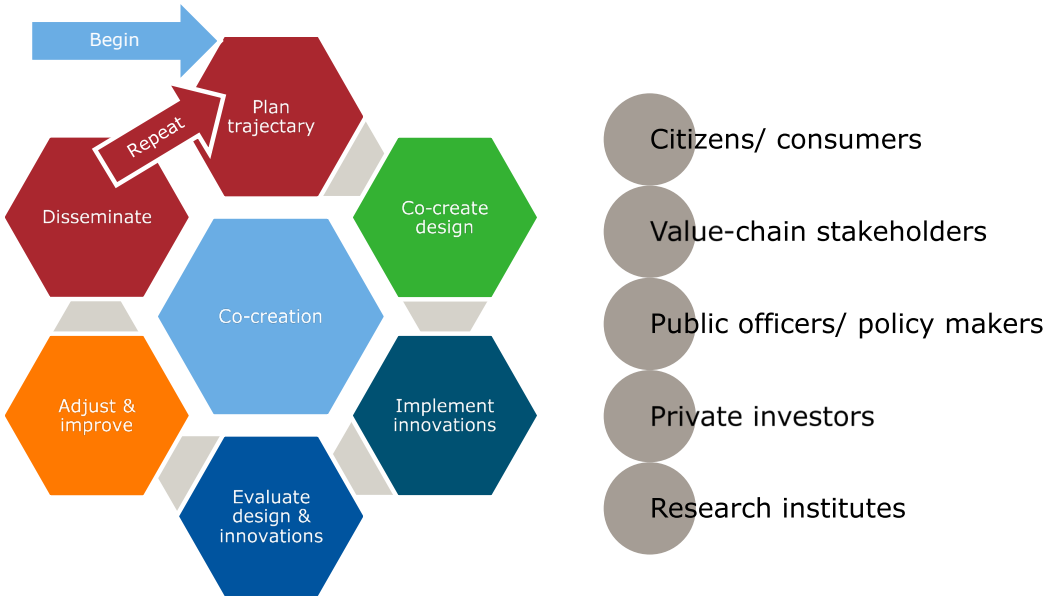

Figure 8 *Co-creation – participatory planning with multiple stakeholder groups*

4.2 Outreach in action areas for different purposes

In the approach sketched out for urban food systems in this KB motif, stakeholder participation covers a series of purposes, such as:

1. Connecting with context specific network beyond the people who take part directly
2. Defining a common vision
3. Identifying bottlenecks and enabling factors
4. Mapping out different stakeholder preferences
5. Contributing with insights useful for spatial planning
6. Contributing with insights useful for innovation in the value chain
7. Contributing with insights useful for policy making
8. Contributing with insights into household consumption behaviour and/or production decisions
9. Supporting conflict management.

No single participatory approach can contribute to such different purposes simultaneously, and the purposes listed may be relevant to different extents when investigating options for interventions contributing to food system transformation. Therefore, multiple participatory tools will fit this KB motif (related) research. Table 1 below presents a list with examples of participatory tools applicable to co-creation for the relevant purposes, such as: conducting in-depth interviews, using documentaries in workshops or online, and workshops.

[5] Example of design and planning, plus a variety of different tools to do so can be found in http://www.mspguide.org/sites/default/files/case/msp_guide-2016-digital.pdf

Table 1 *Different purposes and examples of participatory tools/strategies applicable to different purposes*

Participatory approach	
Tool/strategy (examples)	**Purposes**
• Workshops • In-depth interviews • Scenario development • Documentaries	• Connecting with context specific network beyond the people who take part directly
	• Defining a common vision
	• Identifying bottlenecks and enabling factors
	• Contributing with insights useful for spatial planning
	• Contributing with insights useful for innovation in the value-chain
	• Contributing with insights useful for policy making
• Online preferences survey (VARI App)	• Mapping out different stakeholder preferences
• Household survey	• Contributing with insights into household consumption/production
• Deliberative negotiation	• Supporting conflict management

With interviews, workshops and a survey as well-known tools, a so-called VARI application is included as a newly designed online preference survey. The so-called 'Value Analyses of Relative Importance' or VARI App is developed and documented in Stuiver et al. (2019). The tool is designed based on the Analytic Hierarchy Process (AHP) method (Pöyhönen et al., 2001; Renn, 2006; Saaty, 2004; Soma, 2010; Soma et al., 2013; Ramos et al., 2014). An upgraded version of the VARI Tool for value-based assessments has been designed in this project to prepare for action area interviews of people to identify urgencies for specific people and contexts that are expected to differ (Stuiver et al., 2019). The VARI-Tool approach is circular, thus consisting of sequences of mapping out value trees, assigning weights by pairwise comparisons, evaluating and presenting information, upgrading information and re-designing value trees, and so on. (For more details, see Stuiver et al. 2019.)

5 An integrated urban migration food system framework

In the previous chapters, the challenges of the dynamics in urban food systems and migration settlements have been explained and activities that can support transition towards more resilient and sustainable food systems introduced. This chapter brings together the different perspectives to analyse food system transformations and presents a joint urban migration food system approach as an integrated framework that concentrates on the core elements of value chain activities and relationships with enabling factors and system drivers. The focus of the spatial dimension is on urban areas with migration settlements, but rural-urban linkages are considered as well.

5.1 An integrated urban migration food system framework

The broad scope of this KB research motif and the complexities of the relationships between urbanisation, migration and food system transformation calls for the combination of different research methods and tools. This KB motif's overall aim is to better understand the relations between rural-urban migration, on the one side, and food and nutrition security and socio-economic and environmental sustainability of the food system, on the other side. In particular, we investigate and suggest ways to enhance connectivity (linkages) between urban and rural areas that will help to improve food system outcomes in both locations. This certainly depends on the leverage points chosen and how interventions (e.g. policy measures or business investments) are implemented. This implies that a conceptual framework should be broad but also applicable to specific action areas in order to dive into local contexts.

A conceptual integrated urban migration food system framework is illustrated in Figure 9. Figure 9 centres the potential WR activities (in terms of conceptual research approaches or methodologies) around drivers and bottlenecks of value chains. This is useful for analysing how migration and (changes in) rural-urban linkages (partly as a result of the influx of migrants, see bottom line in the figure) affect food system outcomes (see top line in the figure). WR scientific and evidence-based research can support stakeholders to move to behavioural changes that contribute to more resilient and sustainable food systems in cities and nearby regions. Socio-economic and environmental drivers affect the dynamics in the food system and are positioned around the food system activities in the illustration below.

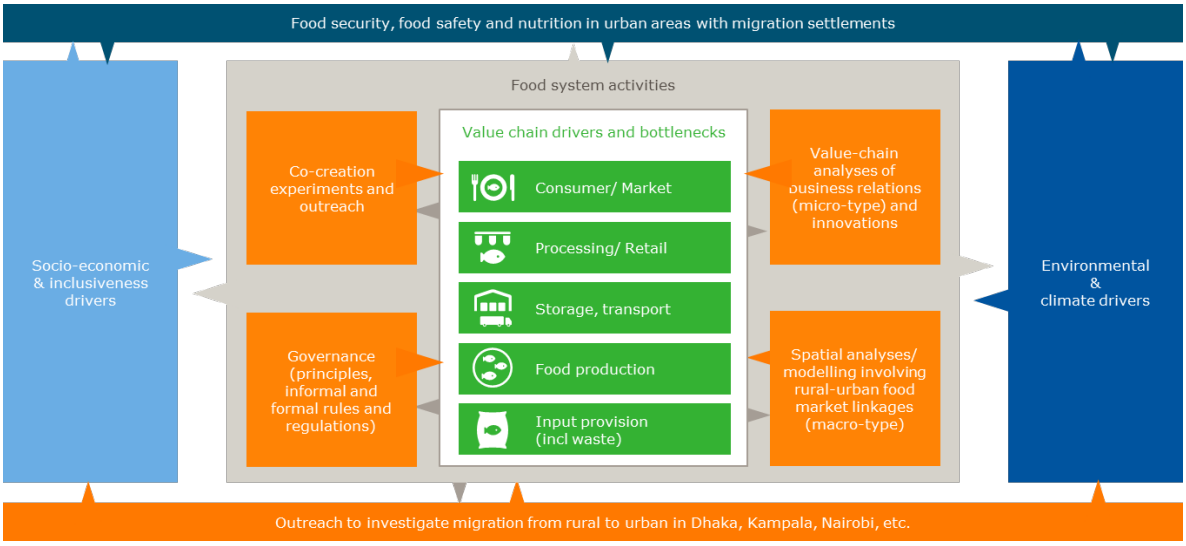

Figure 9 *An urban migration food system approach, centred around value chains, attached with supporting activities (value-chain innovations, spatial modelling and governance), and enabling factors (socio-economic, inclusiveness, environmental and climate)*

An alternative illustration captures the subjects of research (not the methodologies, as in Figure 9), the issues that need to be addressed and the relationships between the different approaches in one frame and is presented in Figure 10. This figure shows the two spatial dimensions – urban (including migration settlements) and rural areas - which are linked by a set of (im)material flows, affecting the food system outcomes in both cities and their hinterland. The linkages are captured by market features (e.g. prices or value chain relationships), drivers of migration flows and value chain activities (e.g. production, trade). All activities are affected by policies, social organisation, biophysical characteristics and other 'drivers' – in short, by all elements of the food system, which is represented by the food system scheme of Figure 1. Migration flows are highlighted as a typical cause of the rapid urbanisation process in many developing countries (which is a main driver of food system transformations). Causes and impacts of migration flows are to be included in the food system analysis in order to better understand how these flows affect food and nutrition security in the urban *and* rural context, and what can be done to improve food security and socioeconomic impacts (for instance, in migration settlements in urban areas). Interventions to initiate changes and/or transformations are based on a thorough analysis of food system relationships, on impacts of proposed measures on stakeholders involved and on trade-offs or synergies between food system outcomes. Moreover, the analysis should include spatial bottlenecks and planning objectives, and provide governance suggestions how to bring about change. The latter means that proposed solutions should build on stakeholder participation to ensure that there is support for decisions made. All these elements are pictured in the figure below and their relationships sketchy presented.

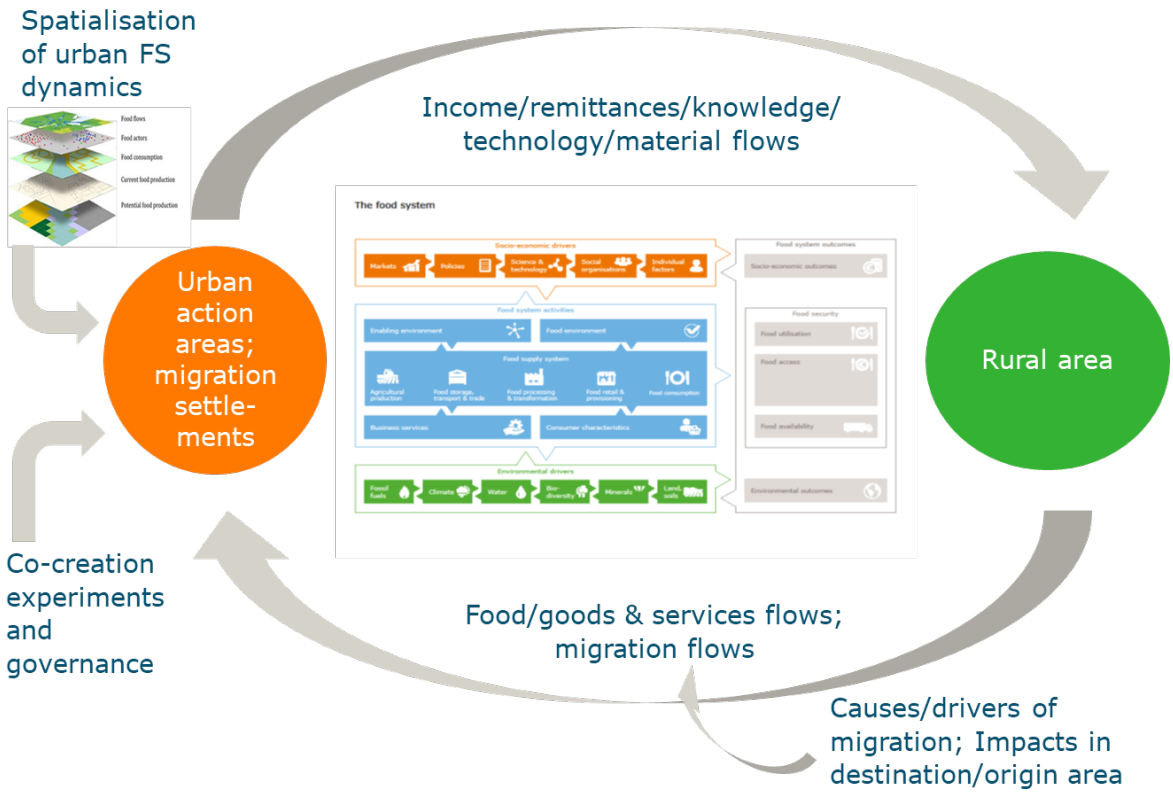

Figure 10 *A food system perspective that captures economic, social and spatial connections between urban and rural areas*[6]

Table 2 summarises the main issues that will be addressed in a city-region context and indicates which of the analytical frameworks will be used - yet not exclusively - to provide insights in current situations, causal relations and proposed strategies for measures and innovations to improve food system outcomes. In all case studies elaborated a mix of the approaches presented in the previous section will be applied, also because locally addressed issues and proposed solutions will need to be

[6] Example of guideline can be found by the UN habitat rural-urban linkages guidelines (2019)

looked into at a 'higher' scale as well in order to capture responses (and feedbacks) from other parts of the food system.

Table 2 *Overview of Wageningen Research approaches and tools that can support core food system actors in dealing with critical bottlenecks for enhancing resilient and sustainable urban food systems*

WR	Approach and tools to be applied
Urban food system activities and outcomes	The generic urban migration food system approach can be applied to map the food system, identify critical drivers and bottlenecks, identify outcome indicators, and show patterns and trade-offs/synergies
Migration - food security relations	The generic urban migration food system approach (Figure 9 and 10) facilitates analyses of complex relationships between food system outcomes and (rural-urban) migration dynamics
Spatial analyses/ modelling involving rural-urban food market linkages (macro-type)	Spatial tools are applicable to visualise food flows and distribution/consumption, urbanisation and migration patterns, settlement planning approaches, value chain analysis
Value-chain analyses of business relations (micro-type) and innovations	Value chain analysis in relation to a specific commodity/product and other chain specific characteristics. Value chain analyses describes the performance (before and after an intervention) of the value chain, using indicators to picture the supply-side (e.g. production, profits, food losses, GHG emissions per unit product, nutritional value supplied, water/energy usage per unit of product) or from the demand-side (emissions per unit sold, nutrition intake, food security). The analysis helps to quantify part of the food system drivers and outcomes
Co-creation	Linked with a series of different purposes, a set of different participatory tools have been suggested (including in-depth interviews, workshops, scenario development, use of documentaries, identification of preferences (VARI tool), household survey and deliberative negotiations)
Governance	Apply principles to judge on performance level towards a more resilient and sustainable urban food system
Multiple case design	Building on the case-based evidence, done in the action areas, a cross case synthesis will be done to create an overview of food system transformations

The two figures and table above suggest that several of the existing analytical frameworks of food system dynamics used by WR experts can be used to depict the relationships between urbanisation, migration and rural-urban linkages and be used to analyse impacts of proposed solutions for improved food system outcomes. The 'newly designed framework' is therefore rather a toolbox of existing approaches and methods, intended to cleverly combine the different perspectives and scope of analysis of each of them. That also means that we do not seek to define a fully integrated methodological approach, but rather apply the approaches and tools that are useful for specific context and purpose, and combine several of them when appropriate. How this works (or not) will be tested in the real-life applications in action areas of our toolbox that are planned the coming years. The selected outreach locations cover a number of rapidly growing cities and their hinterland in Africa and/or Asia where WR currently already runs research projects, including Dhaka, Kampala, Nairobi and Lagos.

5.2 Framework application challenges

This research into urban food system dynamics will address specifically – although not exclusively - food sourcing and other food system outcomes in rapidly expanding urban neighbourhoods characterised by an inflow of migrants. This focus is based on the assumption that recently arrived migrants mainly live in low-income neighbourhoods of towns and cities, still have strong sociocultural ties with families and the community of origin, and often depend on informal networks. Such informal networks are hardly documented and thus research requires fieldwork, with interviews, surveys and stakeholder meetings as main tools. The research will try to unveil the interaction between formal and informal activities in the food systems considered.

The analysis of food system relations and estimates of impacts of proposed solutions is extremely dependent on relevant, consistent and reliable quantitative data over at least a few years period. However, publicly available data on food system activities and performances is often scarce in the countries this research will focus on. Moreover, data on migration flows, urban resident features and food consumption trends are generally patchy, not to mention yet the more detailed agrifood business and food consumption patterns of specific socio-economic classes. Same data problems will occur as well regarding the spatial analyses of food system characteristics and transformation trends. As a general approach, in each case study or action site involved in this KB (related) research (projects) a data gap analysis will be part of the data collection process. The project team will reflect on the output of the data collection and will follow up the crucial data gaps, by deciding on ways how to complement the lack of quantitative information. For instance, participatory data gathering and modelling could play an important role in building a more complete set of data that can be worked with.

Because of the preliminary thoughts on how to bring together research approaches from different angles and the complex realties of how food systems operate, the analytical framework proposed here needs further thorough thinking and refinement. Moreover, because of human mobility towards urban areas, the social and economic relationships of cities with their rural hinterland alter continuously. Some of these are associated with stronger links (e.g. increasing family and/or community networks in different locations, increasing flow of remittances from urban tot rural communities) while others have the effect of loosening connections (e.g. food value chains with more intermediates). Both forces impact the agricultural transformation process and the performance of the agri-food system in their own way. Our conceptual framework may still fail to capture every single food system relationship in the most thoroughly way, but will hopefully contribute to a better understanding of these complexities. Application experiences of the framework will give new invaluable insights, which will further shape the WR urban food systems research projects, in which the toolbox of approaches presented in this paper will be used. Experiences in those projects can feed back in thinking on how to enhance our common toolbox on (urban) food system analysis.

6 Concluding remarks

This paper provides an overview of analytical approaches that can help to analyse the relationships between urbanisation, migration and food system transformations. Several approaches of which most of them already are applied by WR experts are combined in a kind of overarching approach that can increase insights into the elements and functioning of the urban food system in relation to rural-urban migration flows. The design of the urban migration food system framework is based on the thinking that connectivity across areas and among people are critically important, and that in different contexts, specific drivers of food system activities need to be encouraged, while context specific bottlenecks need to be dealt with. The toolbox of methodologies (presented in Figure 9 and Table 2) offers the essential components for analysis and evidence-based recommendations for improved outcomes of urban food systems.

Moreover, WR has different fields of expertise that can supplement each other and support transition towards a more resilient and sustainable food system in vulnerable cities in Asia and Africa. In brief, the expertise includes analyses of food system failures and leverage points for improvements, of rural-urban migration and links with food security, on innovation for efficient and sustainable value-chains, on spatial aspects of food system transformation, on governance of urban food systems and on designing and conducting a series of participatory approaches, covered by the umbrella term of co-creation which can support change given a specific purpose or goal.

Insights from this study reflect the advantages of using a food system approach for shaping transformative action to enhance food and nutrition security. System thinking broadens the perspective when seeking solutions for the root causes of problems such as poverty, malnutrition and climate change. Food system thinking allows to include feedback from the effects of an intervention outside activities that relate directly to food production and/or consumption, and analyse what this feedback implies for food system activities and the outcomes of the (whole) food system. Overall, the value added of the approach is the wider perspective it offers for finding sustainable solutions for a sufficient supply of healthy food.

This is one of the very first outcomes of the KB Urban food systems and migration settlement project, and forms the basis for a series of activities that will take place the years to come. It integrates a multidisciplinary approach into an urban migration food system framework, which facilitates the possibilities for integrating different knowledge a research disciplines into a common approach. This approach addresses the need to deal with global challenges, including conflicts, climate change and economic instability, targeting people struggling with acute hunger and those suffering from long-term malnutrition. The global outbreak of the COVID-19 pandemic in 2020 only highlights the vulnerability of the current food systems and emphasises the need to rapidly build sustainable and resilient urban food systems.

References and websites

Atuoye, K.N. et al. 2017. 'Residential Remittances and Food Security in the Upper West Region of Ghana.' 55(4).

Battersby, J. and V. Watson (eds.) (2019). Urban food systems governance and poverty in African cities. Oxford, Routledge.

Bergeret, P., M. Stuiver and L.L. de Rooij (2019). Innovation at the Service of the prevention and adaptation to migration, Mediterra, CIHEAM, Paris.

Blay-Palmer, A., G. Santini, M. Dubbeling, H. Renting, M. Taguchi and T. Giordano. *Sustainability* 2018, *10*, 1680.

Blocher, J. (2017), Cities of Welcome: Inclusion of Migrants and Refugees in Urban Areas, Tokyo, United Nations University, pp. 14-17.

Bijman, J. and V Bitzer (2016): Quality and innovation in food chains, Lessons and insights from Africa. Wageningen Academic, Wageningen.

Cotroneo, A., (2017). Specificities and challenges of responding to internal displacement in urban settings, International Review of the Red Cross, 99 (1), 283–318. Migration and displacement.

Crush, J., and M. Caesar. 2017. 'Introduction : Cultivating the Migration-Food Security Nexus.' 55(2014): 10–17.

Crush, Jonathan. 2013. 'Linking Food Security, Migration and Development.' 51(5).

ENOLL, 2013. https://enoll.org/

Falco, C., F. Donzelli and A. Olper (2018). 'Climate Change, Agriculture and Migration: A Survey.' *Sustainability* 10(1405): 1–21.

FAO (2014). Food systems and value chains: definitions and characteristics. http://www.fao.org/climate-smart-agriculture-sourcebook/production-resources/module-b10-value-chains/chapter-b10-2/en/

FAO, RUAF Foundation and WLU (2018), City Region Food System Toolkit Assessing and planning sustainable city region food systems.

FSIN. 2020. Global report on food crisis joint analysis for better decisions. Food Security Information Network Founded (FSIN) is a UN network funded by FAO, IFPRI and WFP. https://www.fsinplatform.org/

Fresco, L.O., Ruben, R., Herens, M. (2017) Challenges and perspectives for supporting sustainable and inclusive food systems. GREAT Insights Magazine, Volume 6, Issue 4.

Gereffi, G., J. Humphrey and T. Sturgeon (2005) The governance of global value chains. Review of International Political Economy, 12, pp. 78–104.

George, D., and J.R. Jiménez (2012). A History of Theatre in Spain *Modernism and the Avant-Garde in Fin-de-Siécle Barcelona And Madrid*.

GLOPAN (2016). (Global Panel on Agriculture and Food Systems for Nutrition) (2016). Food systems and diets: Facing the challenges of the 21st century. London, UK.

Guadagno, L. (2017). Human Mobility in a Socio-Environmental Context: Complex Effects on Environmental Risk. In K. Sudmeier-Rieux, M. Fernández, I.M. Penna, M. Jaboyedoff and J.C. Gaillard (eds.), Identifying Emerging Issues in Disaster Risk Reduction, Migration, Climate Change and Sustainable Development: Shaping Debates and Policies (pp. 13–31). Cham: Springer International Publishing

HLPE (2014). Food losses and waste in the context of sustainable food systems. A report by the High Level of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome.

IFPRI (2017). Global Food Policy Report 2017, Washington D.C., IFPRI.

IFPRI (2018). Global Food Policy Report 2018, Washington D.C., IFPRI.

IOM (2015). World Migration Report (2015). https://www.iom.int/

IOM (2018). *World Migration Report 2018*. http://www.iom.int/.

Kasper, C, J. Brandt, K. Lindschulte, and U. Giseke (2017). The urban food system approach: thinking in spatialized systems, Agroecology and sustainable food systems, 2017, Vol.14, No.8, 1009-1025.

Kirbyshire, A, W. Wilkonson, V. Le Masson and P. Batra (2017). Mass displacement and the challenge for urban resilience, Overseas Development Institute, Working paper 2017.

Kranendonk, R., D. Wascher, J. van Bossum and L. ten Brug (2018), Evidence-based Food System Design (EFSD), AMS project report.
Kuckertz, A., S. Hinderer and P. Roehm (2019). Entrepreneurship and entrepreneurial opportunities in the food value chain. Science for Food. April 2019. DOI: 10.1038/s41538-019-0039-7
Lusk, J.L. and J. McCluskey (2017). Understanding the Impacts of Food Consumer Choice and Food Policy Outcomes. Applied Economic Perspectives and Policy (2018) volume 40, number 1, pp. 5–21. doi:10.1093/aepp/ppx054
Mekonnen, D. (2019). The link between internal migration and food security in Uganda. Wageningen Economic Research report, forthcoming.
Olsson, E.G.A (2018). Urban food systems as vehicles for sustainability transitions, Bulletin of Geography: Socio-economic series No. 40 (2018): 133-144.
Popkin, B.M., C. Corvalan and L.M. Grummer-Strawn (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. The Lancet: Volume 395: Issue 4–10 Pages 65-74. https://doi.org/10.1016/S0140-6736(19)32497-3
Pöyhönen, M., H. Vrolijk and R.P. Hämäläinen (2001). Behavioral and procedural consequences of structural variation in value trees. European Journal of Operational Research, 134(1), 216–227. http://doi.org/10.1016/S0377-2217(00)00255-1
Ramos, J., K. Soma, Ø. Bergh, T. Schulze, A. Gimpel, G. Fabi and T. Ma (2014). Multiple interests across European coastal waters: The important of a common language. ICES Journal of Marine Science, 1–12. http://doi.org/10.1093/icesjms/fsu095
Renn, O. (2006). Participatory processes for designing environmental policies. Land Use Policy, 25, 34–45. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264837704000882
Saaty, T. L. (2004). Decision making – the Analytic Hierarchy and Network Processes (AHP/ANP). Journal of Systems of Science and Systems of Engineering, 13(1), 1–35.
Schipansky, M.E., G.K. MacDonals, S. Rozenzweig, M.J. Chapell, E.M. Bennett, R. Bezner Kerr, J. Blesh, T. Crews, L. Drinkwater, J.G. Lundgren and C. Schnarr (2017). Realizing resilient food systems. *BioScience* 66: 600–610. doi:10.1093/biosci/biw052
Serraj, R. and P. Pingali (eds.) (2018). Agriculture and food systems to 2050. Global trends, challenges and opportunities. World Scientific Series in Grand Public Policy Challenges of the 21st Century.
Smit, W. (2016). Urban governance and urban food systems in Africa: Examining the linkages. Cities 58 (2016) 80–86; http://dx.doi.org/10.1016/j.cities.2016.05.001
Soma K, Dijkshoorn-Dekker MWC, Polman NBP. 2018. Stakeholder contributions through transitions towards urban sustainability. Sustainable Cities and Society 37, 438-450. https://www.sciencedirect.com/science/article/pii/S2210670716307521
Soma K, van Tatenhove J, van Leeuwen J. (2015). Marine Governance in a European context: regionalization, integration and cooperation for ecosystem-based management. Ocean & Coastal Management, 117 (2015), pp. 4-13, 10.1016/j.ocecoaman.2015.03.010
Soma, K. (2010). Framing participation with multicriterion evaluations to support the management of complex environmental issues. Environmental Policy and Governance 20 (2), 89-106.
Soma, K., J. Ramos, Ø. Bergh, T. Schulze, H. van Oostenbrugge, Duijn, A.P. Van, … Buisman, E. (2013). The 'mapping out' approach: Effectiveness of marine spatial management options in European coastal waters. ICES Journal of Marine Science, 29, 1–13.
Steen, K, and E. van Bueren (2017). Urban Living Labs. A living lab way of working. Amsterdam Institute for Advanced Metropolitan Solutions. https://buiksloterham.nl/
Stuiver, M, K. Soma, L.L. de Rooij and H. Agricola (2019). Nexus Migration, Wageningen University & Research, (to be published).
Sudmeier-Rieux, K. et al. (2015). 'International Journal of Disaster Risk Reduction Opportunities, Incentives and Challenges to Risk Sensitive Land Use Planning : Lessons from Nepal, Spain and Vietnam.' *International Journal of Disaster Risk Reduction* 14: 205–24. http://dx.doi.org/10.1016/j.ijdrr.2014.09.009
Sykes, K. 2014. The International Law of Disaster Relief *Hunger without Frontiers: The Right to Food and State Obligations to Migrants.*
Tacoli, C. and J. Agergaard (2017) Urbanisation, rural transformations and food systems: the role of small towns. IIED, London. http://pubs.iied.org/10806IIED
Tefft, J., M. Janosova, R. Adjao and A. Morgan (2017). Food systems for an urbanizing world: knowledge product. Washington D.C., World Bank.

Tendall, D.M., J. Joerin, B. Kopainsky, P. Edwards, A. Shreck, Q.B. Le, P. Kruetli, M. Grant, J.Six (2015). Foodsystemresilience:Defining the concept. *Global Food Security 6 (2015) 17-23*. http://dx.doi.org/10.1016/j.gfs.2015.08.001

Trienekens, J. (2011). Agricultural value chains in developing countries. A framework for analysis. International Food and Agribusiness Management Review, vol. 14, issue 2, pp.51-82.

Trimble, M., and F. Berkes (2015). 'Towards Adaptive Co-Management of Small-Scale Fisheries in Uruguay and Brazil : Lessons from Using Ostrom's Design Principles.' *Maritime Studies*. http://dx.doi.org/10.1186/s40152-015-0032-y

UN DESA. 2018. *Revision of World Urbanization Prospects*. UN DESA – Population Division. https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf.

UNEP (2016). Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel. United Nations Environment Programme (UNEP). Westhoek, H., J. Ingram, S. van Berkum, L. Özay, and M. Hajer.

Van Berkum, S., J. Dengerink and R. Ruben (2018). The food systems approach: sustainable solutions for a sufficient supply of healthy food. Wageningen, Wageningen Economic Research, Memorandum 2018-064.

Von Braun, J. (2007). Rural-urban linkages for growth, employment and poverty reduction. Key note at the Ethiopian Economic Association Fifth International Conference on the Ethiopian Economy. June 7–9, 2007.

Vorley, B. and F. Lançon (2016). Urban Food consumption, urbanisation and rural transformation: The trade dimensions. IIED, London. http://pubs.iied.org/10767IIED.

WEF (2014). The Global Competitiveness Report 2014-15, Geneva, World Economic Forum.

WEF (2017). Migrations and its Impact on Cities, Cologny, World Economic Forum.

Wageningen University & Research
P.O. Box 29703
2502 LS The Hague
The Netherlands
T +31 (0)70 335 83 30
E communications.ssg@wur.nl
www.wur.eu/economic-research

Wageningen Economic Research
REPORT
2020-046

To explore the potential of nature to improve the quality of life

Wageningen Economic Research
P.O. Box 29703
2502 LS Den Haag
The Netherlands
T +31 (0)70 335 83 30
E communications.ssg@wur.nl
www.wur.eu/economic-research

Report 2020-046
ISBN 978-94-6395-433-4

The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 5,000 employees and 12,000 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.