The ‘food environment’ of cities can be defined as the location and type of food sources, as well as the broader environmental factors that affect the production, retail and consumption of food in cities (such as levels of infrastructure). The food environment of cities has an impact on the health and wellbeing of residents, although the measurement of this impact has proved to be difficult. Although there is a growing body of research on the effect of food environments on health, this relationship has been under-recognised and under-studied in the global south (Herforth and Ahmed, 2015; Turner et al., 2017).

Understanding the food environments of African cities is important because there are high levels of food insecurity in African cities, driven by high levels of poverty and income variability (Battersby and Watson, 2018), and interventions in urban food environments can potentially contribute to improving health outcomes. Food security can be defined as people’s ‘physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life’ (Food and Agriculture Organization of the United Nations (FAO), 2009: 1). The reality in African cities is very different. A survey of food security in eleven southern African cities found 76 per cent of sampled households to be moderately or severely food-insecure, in other words they often do not have enough food to eat for their minimum dietary needs (Frayne et al., 2010). An estimated 47 per cent of
residents in Nairobi, Kenya, are estimated to be food-insecure, and food insecurity is highest in slum areas: for example, 85 per cent of residents of slum areas of Nairobi are estimated to be food-insecure (Dixon et al., 2007; Kimani-Murage et al., 2014). Food insecurity is exacerbated by low levels of dietary diversity; food-insecure households in southern Africa typically only eat three to five different food groups, compared with an average of eight for food-secure households (Frayne et al., 2010). These high levels of food insecurity and lack of dietary diversity have an enormous impact on health and wellbeing. For example, surveys in Accra, Ghana, and Kitwe, Zambia, found ‘disturbingly high levels of stunting (chronic malnutrition) and wasting (acute malnutrition) among children in both the lowest income and the poor–middle income populations’ (de Zeeuw and Prain, 2011). Unhealthy eating patterns have also led towards a ‘dual burden’ of undernutrition and obesity for poor households, often within the same household (Doak et al., 2004).

This chapter draws on work undertaken as part of a project funded by the Economic and Social Research Council (ESRC), Consuming Urban Poverty, on governing food systems to alleviate poverty in secondary cities in Africa (Kisumu in Kenya, Kitwe in Zambia, and Epworth, part of the Harare city-region in Zimbabwe), as well as other work undertaken by the African Centre for Cities on health, food and urban development in Cape Town (South Africa). The survey findings drawn on in this chapter include workshops and interviews in Cape Town, a food retail survey in Kisumu, and food consumption surveys in Kisumu and in Kitwe.

First, the chapter examines the food environments of African cities, with a focus on the built environment, highlighting the diverse range of food outlets and complex patterns of food access. Kisumu in Kenya is used as an example. Second, the chapter explores the multi-faceted ways in which the food environment of cities can affect human health and wellbeing. Finally, the chapter discusses possibilities for how food environments that are more conducive to health and wellbeing can be created and sustained, and suggests some avenues for future research on urban food environments.

**The concept of urban food environments**

Food environments can be defined in various ways. Broadly, building on the socio-ecological perspective, they can be defined as ‘the collective physical, economic, policy and sociocultural surroundings, opportunities
and conditions that influence people’s food and beverage choices and nutritional status’ (Swinburn et al., 2013: 25). Food environments are essentially the context in which the acquisition and consumption of food occurs, providing a series of opportunities and constraints that influence decisions about what to eat (FAO, 2016).

Most studies of urban food environments have focused on the categorisation, measurement and geographic analysis of different types of food outlet (McKinnnon et al., 2009). Various tools, such as the Food Environment Classification Tool (Lake et al., 2010), and measurement indices, such as the Retail Food Environment Index (Spence et al., 2009), have been developed. The Retail Food Environment Index is a simple measure of food environments (the number of fast-food outlets divided by the number of supermarkets and grocery stores), based on the questionable assumption that supermarkets and grocery stores always sell healthier food than convenience stores and fast-food outlets.

Glanz et al. (2007) distinguish between three types of food environment: the community nutrition environment (essentially the number, type and location of stores within a defined geographical area), the within-store consumer nutrition environment (availability of healthy options, price, nutrition information) and the organisational nutrition environment (home, school or work). Similarly, one can distinguish between the ‘external food environment’ (which has an impact on the availability of food) and the ‘personal food environment’ (which includes factors such as accessibility, affordability, convenience and desirability) (Turner et al., 2017).

The statistically significant findings of a relationship between the physical urban environment and health have been modest. For example, a systematic review of thirty-eight studies ‘found moderate evidence in support of the causal hypothesis that neighbourhood food environments influence dietary health’ (Caspi et al., 2012: 1181). This is not necessarily because there is not a significant relationship but is perhaps more a reflection of the fact that the overall quality of food environment research has generally been low (Cobb et al., 2015) and because the research was arguably often not focusing on the right questions. For example, Zenk et al. (2005) have noted that although the focus of much food environment research has been on distance to food outlets (which is easy to measure), in fact, travel time instead of distance should be considered, and social barriers (such as crime) and individual mobility issues need to be given more prominence.
Recent research on food environments has highlighted the importance of understanding the multiple environments in which people spend their time on accessing and consuming food (Townshend and Lake, 2017). There is a need to understand ‘foodways’, which relate to the interplay between individual processes and broader context (Alkon et al., 2013; Cannuscio, Weiss and Asch, 2010). The term ‘foodways’ refers to ‘the cultural and social practices that affect food consumption, including how and what communities eat, where and how they shop and what motivates their food preferences’ (Alkon et al., 2013: 127). Alkon et al. (2013: 126) conclude that ‘cost, not lack of knowledge or physical distance, is the primary barrier to healthy food access, and that low-income people employ a wide variety of strategies to obtain the foods they prefer at prices they can afford’.

In this chapter, I focus on the built-environment aspects of the ‘community’ or ‘external’ food environments of cities: for example, on the location and type of food outlets and food vendors, and the extent of urban agriculture. At a higher level, food environments also include broader contextual factors that influence the production, retail and consumption of food in cities (such as levels of infrastructure and enforcement of regulations related to the built environment).

**Urban food environments in African cities**

Urban food environments in cities in Africa and elsewhere in the global south are characterised by the ‘co-existence of formal and informal food markets, as well as non-market based food sources such as own production and food transfers’ (Turner et al., 2017: 3). A survey of southern African cities reflected the complexity of foodways, with the main sources of food including supermarkets, informal markets, small shops, self-production (e.g. growing of vegetables), sharing of food, borrowing of food, food remittances, community food kitchens and food aid (Frayne et al., 2010).

The term ‘formal’ is usually used to apply to legal or officially registered activities or entities, while the term ‘informal’ is used to apply to extra-legal or unregistered activities or entities (Hansen and Vaa, 2004). It should be borne in mind that classifying a particular activity or entity as solely formal or informal is usually impossible: there generally are multiple layers of formality and informality. For example, ‘informal traders’ may be formal in many respects – they may pay for a permit
from the local government and may have a health permit – but informal in other respects, in that, for example, they do not pay company or individual income tax, or the physical structure they use does not comply with planning and building regulations. Formality and informality should be regarded as a continuum rather than a dichotomy, and I use the terms to refer to the respective ends of the continuum.

Most food outlets in African cities are at the informal end of the formality–informality continuum, and they account for a large proportion of food sales. For example, the Urban Consumption Survey in Zambia found in 2007–8 that 42 per cent of households primarily bought food from informal retailers. The informal economy was a particularly important source for chicken and poultry (73 per cent of households), eggs (70 per cent) and milk (52 per cent) (Mason and Jayne, 2009). Big traditional marketplaces (with hundreds or thousands of traders) play a key role in food retail in African cities, and there is a wide range of other types of outlets, such as spaza shops, kiosks and ka tables, that cater to the different needs of residents (in terms of affordability, variety, quality, quantity, etc.). The urban food environment of African cities is transforming rapidly, however, with the dramatic expansion of supermarkets. This expansion of supermarkets is linked to the nutrition transition towards highly processed foods, which is still underway in Africa. While ‘traditional’ foods still dominate, there is an increasing growth in the sale and consumption of items like sugar-sweetened beverages, potato chips and sweets (which are, respectively, the third, seventh and ninth most commonly sold food items in Kisumu) (Opiyo, Ogindo and Fuseini, 2018).

Kisumu in Kenya is an example of a secondary city, and represents many of the key characteristics of urban food environments in African cities. It was founded in 1901 by the British as a railway terminus port (Anyumba, 1995), and now is the third-largest city in Kenya, with a population of about 500,000 people (Nodalis Conseil, 2013). Kisumu has a vast range of informal food outlets, ranging from big markets to house shops and pavement traders, and has had a rapid recent increase in supermarkets. Most residents of Kisumu purchase food from informal outlets: a survey of 841 households in Kisumu (across a cross-section of income groups) found that 82 per cent of households purchased food from informal house shops at least five days a week, 75 per cent of households purchased food from other types of informal outlets (kiosks, tuck-shops, traders and hawkers) at least five days a week, 25 per cent of households purchased food from informal markets at least five days per week, and
only 7 per cent of households purchased food from supermarkets at least five days a week (although 40 per cent of households purchased food from supermarkets at least once a week) (Opiyo et al., 2018). In addition, 45 per cent of households were severely food-insecure, and a further 21 per cent were moderately food-insecure (Opiyo et al., 2018).

Physically, the urban food environment can be conceptualised as a complex configuration of food outlets (shops, markets, street vendors, etc.) consisting of the following main elements:

- **Nodes**: Traditional marketplaces (which can have thousands of traders), shopping malls, and clusters of formal or informal shops and traders. Formal and informal trading activities are intertwined, often with a symbiotic relationship (for example, informal sellers of fresh fruit and vegetables are often found outside formal supermarkets).
- **Lines**: Formal and informal food outlets and traders along major transport routes in various formal informal structures (which may be permanent or temporary, and which often only operate at particular times of the day).
- **Dispersed Pattern**: Formal and informal food outlets and traders, usually in residential areas. Many outlets take the form of a ‘house shop’, a dwelling that is also used as a shop.
- **Mobile Food Vendors**: Vendors that move around within and between areas.

These patterns are overlaid on the typical spatial patterns of African cities. Kisumu shows many of the key spatial features of African cities. At the core of the city area is the colonial city, with a grid pattern. The central business district (CBD) is here, with a concentration of commercial activities. An industrial area and some formal residential areas are adjacent to the CBD. Most supermarkets and formal shops are also located here, particularly in the CBD, but also along major transport routes and at major interchanges. The main marketplaces are also located here. In 2009, 16 per cent of the population of Kisumu lived in the colonial core (Nodalis Conseil, 2013). Surrounding the historical core of Kisumu is a zone of informal settlements, which forms a continuous belt (usually referred to as the ‘slum belt’). Large numbers of informal shops are located here, and in 2009, 42 per cent of the population of Kisumu lived in these unplanned areas (Nodalis Conseil, 2013). Finally, there is a peri-urban zone, largely characterised by agriculture, but with dispersed development, much of which falls outside formal
planning approval processes. In 2009, 42 per cent of the population of the city of Kisumu lived in these peri-urban areas (Nodalis Conseil, 2013).

The survey of food retailers in Kisumu was undertaken in the main street in the CBD, two key markets (Kibuye Market and Jubilee Market) and Nyalenda, one of the largest informal settlements in the city. A total of 2,166 food outlets were surveyed (this information is from the unpublished raw survey data). Although not representative of the city as a whole, the numbers of different types of food retail outlets give a sense of the diversity of the food environment:

- Two big markets with a total of 697 traders with stalls or stands;
- Nine large supermarkets;
- 212 small ‘formal’ shops (sometimes called ‘superettes’);
- 340 ‘informal’ shops (kiosks or ‘tuck shops’);
- 139 house shops;
- 366 street vendors (typically with their goods on a table or on the pavement);
- 210 mobile vendors.

The key elements of the physical urban food environment are discussed below: traditional marketplaces, supermarkets, informal shops, street food vendors and the broader urban food environment in which food outlets are located.

**Traditional marketplaces**

Traditional marketplaces are a key part of the food environment of African cities, selling essential foodstuffs such as maize, dried fish, fruit and vegetables. The infrastructure of marketplaces can vary enormously. In Kisumu, for example, there are three large metropolitan markets (Jubilee Market, Fish Market, Kibuye Market), sixteen smaller urban markets and ten peri-urban markets (Nodalis Conseil, 2013). These range from the relatively well-equipped Jubilee Market near the centre of the city, through fairly basic markets such as the Manyatta Peace Market, to largely informal markets like Kibuye Market.

Kibuye Market has approximately 7,000 traders (in a mix of shops, kiosks, stalls and open-air traders), while Jubilee Market has about 2,000 traders (Onyango et al., 2013). Market associations generally play an important role in managing marketplaces in Africa (King, 2006; Porter, Lyon and Potts, 2007). They ‘control the selling space and can therefore
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exclude others and have wider effects on the vegetable production and marketing system’ (Lyon, 2003: 20). In Maputo, for example, ‘the market committees provide infrastructure (water, toilets, etc.), maintenance and security services, and organise cleaning in their respective markets … The committees also act as the principal regulators in the markets’ (Lindell, 2008: 1889). Local governments also usually play a role in managing marketplaces, partially because trader fees can be a significant source of local government revenue (King, 2006). As most local governments lack adequate power to plan, regulate and provide infrastructure and services, this role is often limited to collecting fees (Meagher, 2011).

Jubilee Market in Kisumu is a typical example. Kisumu City collects fees from these traders on a daily or monthly basis: at the Jubilee Market, for example, the fee is 30 Kenyan shillings per day for traders outside the market (collected every day) and 350–600 Kenyan shillings per month for stalls inside the market (paid monthly to the city) – but provides relatively little in return (other than security) (Smit, 2016). In addition to this fee, all delivery vehicles pay an unloading fee for each delivery. Market fees in Kisumu are a significant part of local government revenue, typically making up about 10 per cent of Kisumu City’s local revenue (Opiyo, Ogindo and Fuseini, 2018). The Jubilee Market traders’ associations collect additional fees to provide services, including sanitation and cleaning.

Supermarkets

Over the past two decades there has been a rapid increase in supermarkets in African cities (Abrahams, 2010; Crush and Frayne, 2011; Reardon et al., 2003; Reardon, Timmer and Berdegué, 2004; Reardon, Henson and Berdegué 2007; Weatherspoon and Reardon, 2003). For example, between 1995 and 2012 Shoprite Checkers, a South African supermarket chain, opened 131 supermarkets in sixteen different African countries outside South Africa (Battersby and Peyton, 2014). In Kisumu, the number of supermarkets has grown rapidly over the past two decades, to about twenty. Formerly, supermarkets were situated only in the CBD, but now there are a growing number located in or near residential areas (Hayombe, Owino and Awuor, 2018).

In some cases, supermarkets play an important role in the food strategies of low-income residents. Fieldwork in Khayelitsha in Cape Town, South Africa, showed that households generally do their major (weekly or monthly) grocery shopping at one of the local shopping malls in
Khayelitsha or neighbouring Mitchells Plain (Smit et al., 2016). Larger shopping rounds usually consist of canned food, flour, rice and sometimes meat. Several respondents in the informal settlement of Taiwan in Khayelitsha said that they did their shopping at the Site B Mall: they travelled there by train, and then they take a minibus taxi back. For residents who shop at the much closer Thembani Shopping Centre, it is a twenty-five-minute walk, but as another respondent added, ‘For an elderly person it can even take an hour and a half’ (Smit et al., 2016: 200).

In general, the proportion of households that obtain their food from supermarkets is fairly low in most African cities, especially among low-income groups. For example, the Urban Consumption Survey in Zambia found that only 12 per cent of all households bought staple foods (wheat, sorghum, millet and cassava flour, maize meal, rice, samp, pasta, bread, sugar, cassava and potatoes) at supermarkets. The proportion of households shopping at supermarkets varies considerably by income group. For example, in Zambia in 2007–8, 28 per cent of households in the upper income quintile bought staple foods at supermarkets, compared with only 1 per cent of the lowest income quintile (Mason and Jayne, 2009).

Informal shops
Informal shops (known by a variety of names, such as ‘spaza shops’ and ‘tuck shops’) are a very common type of food outlet in African cities. They can either be in purpose-built structures (usually ‘informal’ in the sense that they do not have planning permission or comply with building regulations) or within dwellings in residential areas. In Kisumu, for example, about 50 per cent of food retail outlets are estimated to be outside of formally zoned retail space (Opiyo, Ogindo and Fuseini, 2018).

Informal shops play an important role in household food strategies in that they sell food in very small quantities and provide credit, so that many households depend on them for their daily purchases, whereas they would often do their major shopping of bulk foodstuffs at supermarkets (Smit et al., 2016). In Kisumu, 52 per cent of informal food traders offer credit (Opiyo, Ogindo and Fuseini, 2018).

Also common in many cities are unregulated alcohol outlets and taverns (called ‘shebeens’ in South Africa and some other countries). In the Western Cape province in 2010 there were an estimated 20,000 to 35,000 shebeens, compared with 7,538 officially licensed alcohol outlets...
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Street food vendors
Street food vendors play an important role in providing affordable cooked food to low-income urban residents (Dixon et al., 2007; Njaya, 2014; Steyn et al., 2014; Van’t Riet et al., 2001). However, they generally do not have any suitable infrastructure (shelter from the elements, energy, water, etc.), and are frequently subject to clampdowns and evictions (Devas, 2001; King, 2006; Potts, 2007; Setsabi, 2006). In Kisumu, there have been frequent attempts to relocate street traders from the CBD to designated trading areas (Opiyo, Ogindo and Fuseini, 2018).

The broader urban environment
Over and above the location of different types of food outlet, the broader urban environment can have also a key impact on the food environment, mainly in terms of infrastructure and shelter and the extent of urban agriculture.

Large proportions of residents of African cities live in informal settlements without adequate shelter or basic services, which makes the storage and preparation of food difficult and can cause health risks. In 2014, an estimated 56 per cent of sub-Saharan Africa’s urban population lived in informal settlements or other types of slum, in other words areas lacking adequate housing and services. The number of households living in slums in sub-Saharan Africa has been growing steadily, from an estimated 111 million in 1995 to 201 million in 2015 (UN-Habitat, 2016).

Fieldwork in Cape Town showed that residents who lived in informal settlements without access to electricity had to carefully strategise about how to keep perishable food fresh. They either had to buy electricity (illegally) from neighbours or ask neighbours with electricity and refrigerators to store food for them. Often, however, this led to conflict. Other residents who stored food in plastic containers were at risk of the food being eaten by rodents (Smit et al., 2016).

Many African cities have fairly inefficient transport networks and linkages. Most food is transported by road, with trucks used to transport bulky items and large volumes, while smaller quantities of food are transported by buses, matatus (minibus taxis) and even boda bodas (motorcycle taxis) (Sibanda and Von Blottnitz, 2018). With the exception of major roads between cities, the road system is often not conducive to
the transport of foods, complicating supply chains from rural hinterlands to cities. The net result is that imported foods can be cheaper than locally produced foods. For example, in Kisumu, imported frozen Nile perch and tilapia are cheaper than locally caught fish from Lake Victoria (Sibanda and Von Blottnitz, 2018).

The importance of urban agriculture varies considerably between cities and countries in Africa, and is often quite limited (Crush, Hovorka and Tevera, 2011; Zezza and Tasciotti, 2010). It is important to note that there are different types of urban agriculture in Africa, with different dynamics. The distinction between rainy-season urban agriculture and dry-season urban agriculture is particularly important; the example of Lusaka, Zambia, shows that dry-season urban agriculture requires permanent access to land and sources of water and is therefore often dominated by higher-income households, whereas rainy-season agriculture is more likely to be undertaken by low-income households (Drescher, 1999).

While significant numbers of urban households are engaged in urban agriculture, their contribution to food security is usually fairly minor. For example in Zambia in 2015, 17.9 per cent of households in urban areas were engaged in agriculture activities (maize was overwhelmingly the main crop grown), but the monetary value of own food production by urban households as a share of total expenditure was only 3.5 per cent (Central Statistical Office, Republic of Zambia, 2016). Given that, on average, urban households in Zambia spent 37.4 per cent of their monthly outgoings on food, urban-agriculture own production accounted for less than 10 per cent of urban food consumption in terms of the estimated financial value of food consumed (Central Statistical Office, Republic of Zambia, 2016). Similarly in Kisumu, Kenya, only 15 per cent of households who live in the city are involved in urban agriculture (Opiyo et al., 2018).

**Food environments and health**

Food environment research in the global north has largely been ‘in response to the high prevalence of obesity and associated nutrition related non-communicable diseases’ (Turner et al., 2017). As a result, the findings generally highlight that ‘unhealthy food environments foster unhealthy diets through the widespread availability of cheap, highly palatable, heavily promoted, energy-dense and nutrient-poor
foods’ (Swinburn et al., 2013: 25). As shown above, however, food environments in African cities are extremely complex, and the key issues are food security and malnutrition (including persistent maternal and child undernutrition) as well as the emerging rapid increases in obesity- and nutrition-related non-communicable diseases (Turner et al., 2017).

The food environment of African cities influences food security, nutrition and health in a variety of ways. For example, the location and type of food outlets influence the availability and accessibility of food in particular areas. Similarly, the extent of urban agriculture may also have an effect on the availability and accessibility of food. The lack of provision of infrastructure for traders and street food vendors may influence food safety. Shelter and infrastructure conditions in residential areas can affect the ability to store food and to prepare and consume food in healthy conditions. In many cases, the resulting food environments are unconducive to food security and healthy diets, contributing to low levels of food security combined with unhealthy diets.

**Location and type of food outlets, and access to food**

The location and type of food outlets can influence the availability and accessibility of food. In cities of the global north, low-income areas are often characterised by low numbers of food outlets that sell healthy food. These areas have been conceptualised as ‘food deserts’ (for example, Shaw, 2006). Extending the metaphor, Bridle-Fitzpatrick (2015) has identified ‘food swamps’ (areas with high levels of unhealthy food) and ‘food oases’ (areas with high levels of healthy foods). The concepts of food deserts and food swamps are linked to the ‘obesogenic environment thesis’, that is, that certain environments can promote sedentary behaviour and unhealthy diets, thus resulting in higher levels of obesity (e.g. Hill and Peters, 1998; Lake and Townshend, 2006; Townshend and Lake, 2009). Low-income residential areas in many African cities can be characterised as food swamps rather than food deserts, in that they have a large number of food outlets that, although fresh fruit and vegetables are still widely available, increasingly sell highly processed foods (Frayne and McCordic, 2018). The net result is ‘poor, often informal, urban neighbourhoods characterised by high food insecurity and low dietary diversity, with multiple market and non-market food sources but variable household access to food’ (Battersby and Crush, 2014: 143).
The impact of the rapid increase in supermarkets in African cities on food security and health is poorly understood, but it is possible that in certain cases it can have a negative impact on dietary patterns and food security. For example, a comparison of Blantyre, Malawi, and Gaberone, Botswana, suggests that the shift from local production of food and a largely informal retail sector to formal supermarkets with international supply chains may result in decreased levels of food security (Riley and Legwegoh, 2014).

Urban agriculture
The relationship of urban agriculture to urban food security and nutritional health is disputed. While some authors (e.g. Lee-Smith, 2010; Maxwell, Levin and Csete, 1998) suggest that urban agriculture has a tangible and beneficial effect on urban food security and health, other authors (e.g. Frayne, McCordic and Shilomboleni, 2014: 187) are of the view that there is ‘no significant relationship’ between urban agriculture and urban food security and health, as low-income households are usually constrained in access to land and other resources necessary to undertake urban agriculture, and high-income households (who are already food-secure) often tend to participate and benefit more.

Food safety
There are numerous studies that show how inadequate access to water and sanitation and inadequate refuse removal can result in the contamination of food (Barro et al., 2006; Gadaga et al., 2008; Muyanja et al., 2011; Umoh and Odoba, 1999). For example, a study of poultry meat sold at markets in Maputo, Mozambique, found that all the samples purchased were contaminated with faecal matter and had the potential to cause diarrhoea (Cambaza dos Muchangos et al., 2015). A study of street food vendors in Tshwane, South Africa, found that vendors generally followed good hygiene practices, but that the overall environment in which they cooked and sold food resulted in the contamination of food: ‘Unavailability of potable water and lack of proper infrastructure for the production of safe food has led to the quality of street-vended ready-to-eat chicken being contaminated by faecal and environmental contaminants and pathogenic organisms’ (Oguttu et al., 2015: 202).

In addition to the risks to the safety of the food, many risks are associated with producing and preparing food, for example those from using ‘heat generated by unprocessed biofuels and residual oil products’
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(Clancy, 2008: 467). The use of waste timber for wood fuel can also expose those who cook food with it to high levels of arsenic (Niyobuhungiro and von Blottnitz, 2013).

Although studies of food safety in Africa have largely focused on food traders, the same sorts of issues would often apply in residential areas without adequate access to water and sanitation and safe forms of energy supply. In the informal settlement of Taiwan in Cape Town, for example, in theory five households have to share a communal toilet, but many of these toilets are kept locked (and thus are inaccessible to other households) and many are in a state of disrepair (e.g. with missing doors) (Smit et al., 2016). This inadequate provision of sanitation is a serious health hazard. Also contributing to the problem is that water has to be collected from communal standpipes and has to be stored in containers, and therefore is at risk of contamination.

Another issue that can influence food safety is solid waste. Solid waste is a by-product of the food system, and uncollected solid waste can have a negative impact on food safety and health, attracting flies and polluting water. In general, fairly low proportions of solid waste are collected in African cities. For example, in Kisumu it is estimated that only between 20 and 35 per cent of solid waste is collected (either directly by the city or by private collectors who sell their services to companies and institutions), leaving about 65‒80 per cent (of which most is organic waste) uncollected (Sibanda, Obange and Awuor, 2017).

Creating food environments that are conducive to food security and better health

Currently, food environments in African cities are generally not conducive to food security and healthy diets, but there are possibilities for improving food environments to promote food security and healthy dietary patterns. The key levers for creating food environments that are conducive to food security and better health are land-use zoning; the provision of infrastructure provision; and improving the governance of urban food systems.

**Land-use zoning**

Land-use zoning has a major impact on food environments, in that it determines where food retail and urban agriculture can legally take place. Although large parts of African cities often, in practice, fall outside such
zoning schemes, many key parts of them are subject to the enforcement of land-use zoning. While land-use zoning is a less important tool here than in cities of the global north, it can still have a significant influence on the shaping of urban food environments.

Following conventional urban planning practice, space officially set aside for retail activity is usually in central business districts and community shopping centres and along activity streets. Over the past two decades there has been an increase in shopping malls in African cities, linked to the rapid growth of supermarkets. There is a need to set aside accessible locations for food outlets and to work with shopping mall developers to ensure that informal traders are not excluded from shopping malls. This is hindered by the lack of capacity and resources. For example, Kitwe City Council in Zambia, responsible for a city with a population of about 470,000 people, in 2009 had only nine urban planners and ‘just a few old paper maps, which are outdated and inadequate for effective development planning and monitoring in the city’ (UN-Habitat, 2009: 9).

Land-use zoning also has an impact on urban agriculture. Part of the reason for many African cities having fairly low levels of urban agriculture is that most African national and local governments are intolerant of urban agriculture, seeing it as incompatible with their ‘modernist’ visions of what cities should look like (Simatele and Binns, 2008). There needs to be recognition of the need to set aside land for urban agriculture in appropriate areas within cities. In addition, support is needed for low-income households to engage in urban agriculture, for example, with regard to inputs, extension services, credit and financial access, production and marketing infrastructure, and knowledge (Frayne et al., 2014).

**Provision of infrastructure**

In addition to being a socio-economic right, the provision of infrastructure has a major impact on the food environment. Water, sanitation and energy infrastructure can influence the preparation and consumption of food, in both collective and household spaces, and transport infrastructure can influence the distribution of food. The preparation and consumption of healthy food are extremely difficult in a context in which adequate water and sanitation and a safe energy supply are absent.

The increased provision of household infrastructure is crucial, and given the large proportion of residents living in informal settlements,
upgrading these informal settlements is key. City-region transport infrastructure also needs to be improved to help ensure more efficient local supply networks.

Markets are also a particular area of concern. For example, Chisikone Market in Kitwe plays a key role in the local urban food system, but its approximately 10,000 traders have to sell food in very poor conditions, with inadequate access to water and sanitation, and many parts of the market have little storm water drainage. Providing potable water, sanitation and adequate protection from the elements for markets and informal traders is important for helping to ensure food safety. The provision of infrastructure for street traders is also important, to give protection from the elements, water supply and sanitation, and a safe supply of energy (Smit et al., 2011).

**Governance**

Linked to land-use zoning and the provision of infrastructure, the challenges of urban governance in many African cities needs to be acknowledged. These include incomplete decentralisation (and in some cases recentralisation), resulting in weak and under-resourced local governments, and the diffusion of power among a range of governance actors, including community groups that play the role of local government in many informal settlements and traditional leaders that often play the role of local government in peri-urban areas (Meagher, 2011; Smit and Pieterse, 2014; UN-Habitat, 2008). There also are high levels of political contestation, often linked to ethnic identity and client–patron relations (Resnick, 2011).

There is an urgent need to bring urban governance actors together in order to develop and implement coherent strategies to improve urban food security (Smit, 2018). Local governance actors need to think explicitly about the governance of urban food systems, through collaborative mechanisms such as multi-stakeholder food policy councils (Haysom, 2015; Pereira and Drimie, 2016; Rocha and Lessa, 2009; Smit, 2016). For example, the Kisumu Action Team brought together different interests in Kisumu (including big business and informal traders) to develop a strategic plan for the city that included the upgrading of marketplaces (Onyango and Obera, 2015).

Civil society organisations have a particularly important role to play in these processes as they generally represent the interests of marginalised groups, who are often excluded from decision-making processes.
A range of civil society organisations are involved in urban food issues, such as non-governmental organisations that are involved in food production and food philanthropy, community-based organisations that operate food programmes for vulnerable populations, and social movements that ‘operate on broader political, economic or social issues ranging from land reform to food prices’ (Warshawsky, 2016: 310). These civil society organisations need to be brought into formal food governance processes.

**Conclusion**

The first key point highlighted by this chapter is that the urban food environments of African cities are complex, with large numbers of outlets and traders and a wide range of different types of outlet, and multiple layers of formality and informality.

The second key point is that urban food environments are inadequate in many ways: for example, many informal traders lack basic services, supermarkets are often located in inappropriate areas, and the lack of basic services in low-income residential areas greatly constrains the ability of residents to safely prepare and consume food.

Third, there is a need for proactive inter-sectoral planning to improve urban food environments and ensure that they are more conducive for good health and wellbeing, for example through ensuring that markets and street traders are provided with appropriate infrastructure, that residential areas have adequate basic services (such as water and sanitation) and that suitable land is set aside for urban agriculture where appropriate. In addition, it is essential to develop governance mechanisms and processes that can include a more diverse range of stakeholders, such as informal traders and informal settlement communities, in decision-making processes about urban food environments. The views of informal traders and informal settlement communities are essential in creating better-functioning food environments, but perspectives such as these are often ignored in decision-making.

Fourth, in order to provide an evidence base for planning for urban food environments, there is a need for interdisciplinary and trans-disciplinary research on food environments, as this is a complex and multi-faceted issue that cuts across disciplines and sectors. There is a need to explore the interaction of people’s foodways and the multiple urban environments they move through, and this should be placed...
within the broader physical, social, economic and political context of the cities (and rural hinterlands) they live in. We need to move beyond simplistic metaphors such as ‘food deserts’ (and food swamps and food oases) and understand the complex ways in which urban food environments can affect health-related behaviours and outcomes.

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References

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