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ASSESSING AND PLANNING THE CITY REGION FOOD SYSTEM

LUSAKA, Zambia





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Acronyms

AfDB	African Development Bank
AFSUN	African Food Security Urban Network
BNB	Basic Needs Basket
CASH	Commercial Agribusiness for Sustainable Horticulture
CCPC	Competition and Consumer Protection Commission
CRFS	City Region Food Systems
CSO	Central Statistical Office
EIAs	Environmental Impact Assessments
FAO	Food and Agricultural Organization of the United Nations
FCS	Food Consumption Score
FFV	fresh fruits and vegetables
FGD	focus group discussions
FISP	Farmer Input Support Programme
FRA	Food Reserve Agency
GRZ	Government of the Republic of Zambia
HACCP	Hazard Analysis Critical Control Point
IAPRI	Indaba Agriculture Policy Research Institute
IFAD	International Fund for Agricultural Development
JCTR	Jesuit Centre for Theological Reflection
MCDSS	Ministry of Community Development and Social Services
MCTI	Ministry of Commerce, Trade and Industry
MoA	Ministry of Agriculture
MTT	Multi-stakeholders Taskforce Team
NAIP	National Agricultural Investment Plan
NAP	National Agricultural Policy
NDP	National Development Plan
NFBDGs	National Food-based Dietary Guidelines
NFNC	National Food and Nutrition Commission
NGO	Non-Governmental Organization
OECD	Organisation for Economic Co-operation and Development
PEPZ	Private Enterprise Programme-Zambia
RUAF	Resource Centre for Urban Agriculture and Forestry
SCT	Social Cash Transfer
SDGs	Sustainable Development Goals
SMEs	small- and medium-scale entrepreneurs
SNAP	Second National Agriculture Policy
SUN	Scaling Up Nutrition
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
USD	United States Dollars
WFP	World Food Programme
ZABS	Zambia Bureau of Standards
ZDA	Zambia Development Agency
ZRA	Zambian Revenue Authority
ZWMA	Zambia Weights and Measures Agency

Executive summary

It is now an accepted reality that the world is moving towards urbanization as global population continues to rise. Africa's rate of urbanization has soared from 15 percent in 1960 to 40 percent in 2010, and is projected to reach 60 percent in 2050 [UN-Habitat, 2010]. Urban populations in Africa are expected to triple in the next 50 years, changing the profile of the region, and challenging policy makers to harness urbanization for sustainable and inclusive growth. It is estimated that 70 percent of the world's population will be living in urban areas by 2050 [United Nations, 2014]. In Zambia, the total urban population grew at a rate of 4.2 percent per annum during the period 2000–2010 compared to 2.1 percent rural population growth over the same period [CSO, 2015]. In Lusaka, Zambia's capital city, the population growth was very rapid at a rate of 4.7 percent per annum during 2000–2010 [CSO, 2010]. Lusaka is the largest urban centre with almost 25 percent of Zambia's population. Thus, with urbanization expected to continue, it is important to consider prospects for urban food nutrition and security in the city region.

Urbanization is emerging as an overarching policy construct for Africa, with cities and towns expected to serve as policy sites and frontiers for solving some of the most pressing problems on the continent. The food systems are increasingly shifting from being predominantly rural to take an urban dimension. Efforts to re-examine African food systems, poverty reduction and malnutrition as rural phenomena are increasingly being challenged to consider the urban dimension of sustainable food production, marketing and distribution, and sustainable diets. The Food and Agricultural Organisation [FAO] is supporting the shift on food systems to take on the city region approach [CRFS]¹. This report presents summary information gathered during the three-phased project on Lusaka City Region Food Systems. The project was based on the city region approach to understand the status of food and nutrition, and to propose strategies to strengthen the CRFS for Lusaka. The project was phased as follows:

Phase one:

- Inception and situational analysis of food systems

Phase two – in-depth research on:

- Sustainable food production
- Food processing, distribution and marketing
- Food consumption and nutrition

Phase three:

- Identification of strategies and action plans – policy and planning phase

Data for the study was collected from a broad range of the city region food system stakeholders in a number of different ways, including household surveys, key informant interviews, focus groups, consultative workshops and thematic working groups. The study used local knowledge to help analyse and prioritize a range of current and future constraints and explore new ideas to strengthen the sustainability and performance of the food system.

Generally, the assessments indicate that the Lusaka City Region does not have what could be considered as a resilient, dynamic, inclusive and sustainable food system, and the region falls short of the ability to feed itself. The findings show that levels of food production are insufficient to meet the burgeoning food demand, especially for fresh horticultural, meat and aquaculture products. Thus, to feed the city region, supplemental food supplies (imports) from outside the city region are inevitable. The study has also established that only about a quarter of the interviewed farmers practise sustainable farming and that the potential for additional farm product diversification is high. Horticultural production is a critical source of diversification with the triple benefit of increasing value of production, reducing vulnerability to shocks, and improving

¹ <http://www.fao.org/3/a-i4789e.pdf>

nutrition when accessible to consumers. Further, farmers in the region are affected by climate-related shocks, such as droughts, reduced rainfall and seasonal shifts in the onset and offset of the rainy season in the city region. It is certain that the sustainability of food production will require adaptation in farming practices. The assessment and analysis also revealed that the Lusaka CRFS has more challenges in the horticulture sub-sector, as compared to other agricultural sub-sectors. Challenges are identified at production, processing and distribution levels as well as at consumption stages of the value chain.

With regard to marketing and distribution, the findings showed that roughly one-third of farmers sell in the Lusaka City Region; one-third sell in rural areas within the city region and other areas outside the city region; and one-third sell entirely in rural or peri-urban areas within the city region. Some of the products are sold at the farm-gate and at local markets in each of the districts. Further, the study has established that informal markets and street markets, small neighbourhood markets and supermarkets have a defining role in food distribution and access in the city region. Both large- and small-scale farmers sell their produce at supermarkets and informal or semi-formal markets such as Soweto. Based on the findings, it is evident that farmers in the city region face market challenges, especially in relation to market infrastructure, middlemen traders/brokers and limited storage facilities. The market for food is not well developed and is not always accessible in terms of distance, demands by supermarkets on packaging, limited and expensive storage facilities (for example, only three cold-room facilities for the entire Soweto market), and the food pricing structure is not clearly defined. The study has established that the food marketing system and structure presents one of the major hindrances for improving food systems in the city region.

Poor storage facilities and limited access to information on crops, food handling and storage drive an increasing proportion of food waste and food losses in the Lusaka City Region. The components of food waste in the region include leftover food and spoiled agricultural products. There were various methods reportedly used for food waste management and disposal. The waste disposal methods consist of open dumping, land fill, feeding the crop residues to livestock, and use as manure in fields. This report shows that waste management at farms remains a major issue. There is little use of technology and advanced methods of farm waste management and waste re-use as a mechanism to deal with the challenge and reduce the amount of waste being 'wasted' by means of burning, and or burying.

On food consumption and nutrition habits/trends, the study has established that most households depend on maize meal (for nshima) and both fresh and processed meat (beef, pork, goat, chicken and fish). The households that typically eat vegetables mainly rely on rape, cabbage, tomato, onion and fruits (local and imported). Other key foods include bread, beans and groundnuts. Food security and nutritional deficiencies are driven by labour regularity, food production and diverse levels of income. Many households in the city region are low-income and are found in informal settlements. These households are the most adversely affected by food and nutritional insecurity. Further, seasonal variations in food supply and unstable pricing impacts negatively on the food and nutritional security of low-income households. The major reason for food and nutritional insecurity for all socio-economic classes in the study area is lack of adequate and regular income. Social safety nets (which include social cash transfer and input support programmes) all seek to enhance food security but seem poorly administered and are inadequate to curb high nutritional economic insecurity.

The study argues that urban food and nutritional insecurity are multifaceted issues that cannot be addressed by increasing production alone. Efforts need to address issues of food waste and losses, food quality, income poverty and the impacts of environmental change, including climate change. The governance of food systems, including coordination and management of open-air residential and wholesale markets has a significant impact on households, given that a large portion of households rely on these markets for food purchases. It should be noted that food systems in the city region of Lusaka are complex, and are impacted by both rapid urbanization pressures and globalizing food systems. The region also relies on food sources from other regions and on imports. Clear policy is needed to strengthen the current food system in the Lusaka City Region by promoting economically and ecologically viable food supply and value chains as well as sustainable consumption patterns.

1. Introduction

1.1 Background

Until recently, food system planning has been overlooked in urban planning and city policy-making. This is despite the fact that more than 50 percent of the world's population is currently living in urban areas [FAO, 2015]. Currently, about 40 percent of Zambia's population is urban and Lusaka, Zambia's capital, accounts for about 25 percent of this urban population. The Central Statistical Office projects that Lusaka Province should nearly double its population from 2 777 439 in 2015 to 5 465 775 by 2035 [CSO, 2013]. Globally, the proportion of urban dwellers is expected to reach 70 percent by 2050 [UN-Habitat, 2015] and it is anticipated that the conventional food supply and production systems will be severely challenged to assure food and nutrition security, particularly of the urban poor. Africa is urbanizing fast. Its rate of urbanization soared from 15 percent in 1960 to 40 percent in 2010, and is projected to reach 60 percent in 2050 [UN-Habitat, 2010]. The African continent is urbanizing at an historically rapid rate. The share of urban dwellers has increased from 14 percent in 1950 to 40 percent today. By the mid-2030s, 50 percent of Africans are expected to become urban residents [UN DESA, 2014]. In Africa, urbanization is likely to continue and level off at about 56 percent around 2050. Urban populations in Africa are expected to triple in the next 50 years, changing the profile of the region, and challenging policy makers to harness urbanization for sustainable and inclusive growth. Thus, the phenomenon makes it impossible to deal with Africa's growth and poverty issues without sustainably managing urbanization processes [AfDB, OECD, UNDP, 2016]. According to Freire *et al* [2014], urbanization is emerging as the main policy narrative for Africa.

The high rate of urbanization continues to present major policy questions and challenges in almost all aspects of urban life [Henderson, 2005]. Lusaka is the main metropolitan city that is highly urbanized and is the national capital of Zambia. It has a population of around 2.5 million people [CSO, 2010].

With high populations living and working informally, high levels of poor infrastructure and increasing consumption of critical ecological resources, the need for a shift in food policy is high. Urbanization is leading to rapid deterioration of natural environment resources, causing pollution and depletion of water and land resources. As such, important life support systems (biodiversity) are being threatened by the rising tide of urbanization in Africa. The adverse implications for this tide include displacement of food sources (farmland), especially for small-scale farmers. This threatens the gains and efforts to tackle unemployment, reduce poverty, and fight hunger and malnutrition in many cities and urban centres on the continent. As farmland continues to surrender to brown development in many African city regions, the cost of food is rising. Food (fresh produce) is now sourced from far-off areas and the cost of transport is a contributory factor to rising food prices. Thus, financial access to nutritious foods, especially among low-income households in African cities and towns, is increasingly becoming a political, human rights and governance challenge. Accordingly, "access to food, and not availability, is at the heart of the urbanisation-nutrition-development nexus" in Africa [Frayne *et al*, 2014].

1.2 Aims of the project in Lusaka

The Lusaka CRFS assessment helped to identify gaps to be bridged and bottlenecks to be opened to create more resilient and inclusive food systems within the Lusaka City Region. The longer-term aim is to make the CRFS more sustainable and resilient, and improve the livelihoods of rural and urban dwellers in the city region. It gives special attention to the challenges of how to improve production capacities, access to inputs, sustainability of production practices and market access for the smallholder farmers in urban, peri-urban and rural areas in the city region, with a specific focus on fruit and vegetable value chains. The assessment examined current and future constraints affecting the local and regional food value chain. It used local knowledge to help analyse and prioritize these constraints and explore new ideas to strengthen the sustainability and performance of the food system.

This report specifically sought to determine the extent and the potential to which the city region can feed itself in a sustainable manner. In order to find the answer to this overarching question, analysis of the Lusaka City Region food systems analysis was structured around five components: i) definition of the Lusaka City Region and identification of priority food issues; ii) food production; iii) food processing and manufacturing; iv) food consumption and levels of nutritional status; and lastly v) policy and planning required to strengthen the CRFS. In order to answer the overarching question, the researchers attempted to identify types of essential food, to determine food availability and access, and to determine consumption patterns, levels of food security and the nutrition status of different economic groups within the city region.

The CRFS research therefore focused on the following areas of investigation:

- an assessment of key food commodities production and characterization of constraints affecting productivity;
- an assessment of CRFS producers' access to markets;
- the implication of farming practices on the natural environment;
- the identification of food security and nutrition levels and challenges.

1.3 Phases of the project

The CRFS process was implemented following four main phases that are described in detail in the following section:

1. An inception phase² that involved stakeholder mapping, network analysis and establishing a dialogue process in which an informal stakeholder platform was constituted.
2. A situation analysis³ of the local context was carried out through a literature review with collection and elaboration of secondary data. Together, this produced a 'snapshot' of both the local and policy contexts, with institutional analysis carried out through a multi-stakeholder consultation process approach. The situation analysis included statistics, case studies, spatial data sets, etc. It also included a participatory mapping process to define and map the local CRFS and facilitation of local multi-level stakeholder consultations to characterize the local CRFS.

² This corresponds to the Getting Prepared and Defining the CRFS phases in the CRFS toolkit: <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>

³ This corresponds to the Defining the CRFS and CRFS Scan phases in the CRFS toolkit: <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>

3. An in-depth assessment⁴ of the key areas of work and critical issues of the local food system that had to be addressed before proposing efficient interventions.
4. A strategy and policy planning phase⁵ that focused on the organization of different working groups for each of the identified thematic areas. The purpose was for the working groups to: (a) select specific strategies based on stakeholder scenario-building exercises; (b) identify and describe potential future interventions – instruments, institutional arrangements, timelines and funding sources; and (c) write up policy briefs based on the results of the assessment and stakeholder consultations.

⁴ This corresponds to the CRFS Assessment phase in the CRFS toolkit: <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>

⁵ This corresponds to the Policy support and planning phase in the CRFS toolkit: <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>

2. Methodology

This chapter details the processes and methodologies that were applied in each of the four phases of the project: inception phase, situation analysis, in-depth analysis and policy planning.

2.1 Inception phase: Stakeholder mapping and process management

In the inception phase of the project, more than 35 stakeholders [see Annex 1] were identified, which cover the entire spectrum of the food systems – Production, Transportation (distribution), Marketing (wholesaling, retailing) and Consumption – thereby including the public and private sectors, NGOs and Civil Society Organizations. These stakeholders were visited and participated in the initial and subsequent project activities. Based on the level of engagements and depth of the discussions during multi-stakeholder meetings, it is correct to assert that the identified stakeholders provided a good representation of the actors in the food system in the Lusaka City Region. The qualitative information gathered from the stakeholders' consultations were supplemented by a focused desktop literature review of key reports and academic literature about food systems in Lusaka, urbanization in Africa and on the concept of city region food systems.

The purpose was also to create clear understanding of policy processes and how the stakeholders can be engaged to work together in ensuring sustainable food security for the city of Lusaka and its hinterland. The stakeholder consultations were instrumental in defining the following aspects:

- a. Determining the different stakeholders, their roles and relationships/linkages – creating foundations for Lusaka's Multi-stakeholders Taskforce Team (MTT) on CRFS;
- b. Preliminary identification of food sources and issues for Lusaka and determining underlying factors shaping the food value chain in the Lusaka City Region;
- c. Preliminary definition of the extent of the Lusaka City Region based on participatory mapping processes;
- d. Possibility of enhancing linkages and defining pathways in the food value chain among stakeholders.

The primary method used for the stakeholder analysis was the Net-Map method. Net-Map is a participatory interview technique that combines social network analysis stakeholder mapping, and power mapping. Net-Map helps people understand, visualize, discuss and improve situations in which many different actors influence outcomes. By creating maps, individuals and groups clarified their own view of the present food situation in Lusaka, fostered an informed discussion and helped participants develop a 'personalized' approach and participation in the workshop and the entire project.

2.2 Situation analysis and definition of Lusaka food system

As outlined above, the situation analysis involved a literature review and use of secondary information to determine the local food and nutrition contexts in the Lusaka City Region.

The criteria to define the city region mainly focused on food flows of the key commodities that are crucial for Lusaka consumption patterns. A number of districts around Lusaka were identified as the sources of most of the commodities.

2.3 In-depth analysis of Lusaka food system

After establishing the city region boundaries and securing agreement on priority food system issues for the study area, the project team set out to undertake an in-depth analysis.

The in-depth analysis involved primary collection exercises which lead to the development of three case studies – *Sustainable Production and Resilience of Production Systems* (case study I); *Food Processing, Supply and Distribution System* (case study II); *Consumption, Food Security and Nutrition* (case study III) – which formed the basis for phase 3 of the project. This phase was crucial to provide a solid evidence of the main characterization of Lusaka CRFS, including both secondary and primary data collected for the project.

The key issues were studied using both qualitative and quantitative approaches and methods, namely: interviews, focus group discussions (FGDs) and questionnaire surveys. A data triangulation method was used to allow collection of information from multiple sources to get different views about a situation in a single study and thereby increase the validity of the findings.

The methods used to understand production and supply systems referred to the same sample size (food producers and suppliers), while for consumption analysis, only urban dwellers were surveyed (urban consumers).

2.3.1 Selection of key informants for interviews

This part of the study utilized a non-probability sampling design (snowball sampling). The Key Informants were purposively selected. Purposive sampling involved the researchers making a conscious decision about which individuals and which research sites would best provide the desired information. This type of non-probability sampling was chosen to provide the researchers with the most useful data upon which to examine the city region food system in the food chain.

Interviews: Interviews were done with many stakeholders including the following groups:

- **Assemblers:** in the districts to get an idea of what assemblers are purchasing, where they are purchasing, where they are taking what they purchase, and what their estimated profit margin would be.
- **Transporters:** that traverse the districts in order to gather more information about transport routes, conditions of roads, products and prices.
- **Retailers:** in Lusaka in order to gather information on where produce is purchased and sold, how much it is sold for, when the high and low supply/demand seasons are, and if value is added to any produce either before purchase or before sale.
- **Processors:** in Lusaka in order to gather information on where produce is processed and sold, how much it is sold for, when the high and low supply/demand seasons are, and if value is added to any produce either before purchase or before sale.

2.3.2 Focus group discussions

Focus Group Discussions (FGDs) were conducted with food traders and transporters. This was done to ascertain pertinent issues relevant to the CRFS such as commodities produced and consumed, infrastructure along the value chain, roles of middlemen, governance of product prices, energy, food loss and waste. Four FGDs conducted with marketeers had between six to 12 members each. To take care of gender, the FGDs were segregated so that one group comprises only males and while the other comprises only females.

2.3.3 Questionnaire surveys

Food production: The study used primary data collected from a random household survey of farmers in the period September to December of 2016. The researchers collected information through a questionnaire survey about farming and production systems and their impact on the environment from individual farmers. A structured questionnaire was developed and tested before implementation.

Key informants: The discussions with Key Informants were used to identify the areas within each district where the questionnaire survey was implemented. In so doing, the Key Informants identified areas where the population was engaged in the production of products of interest in the case study (vegetables, fruits, fish, poultry, pigs) that were concentrated in each district. The population was grouped into two categories, namely: (i) commercial farmers and (ii) small-scale farmers who were producers of all products of interest. Due to the large spatial extent of the districts, at least three agricultural camps per district were selected from which to sample farmers to be interviewed in the questionnaire survey. Agricultural camps are sub-divisions within a district that are assigned to one extension officer (referred to as Agricultural Assistant or Camp Officer) by the Ministry of Agriculture.

2.3.4 Sampling methodology

Food production and supply

Sampling was different for the commercial and small-scale farms. A census of the very large commercial farmers was done. The number of small-scale farmers was very large and a sample of farmers was selected from each of the districts. As a first step, a sample of small-scale farmers was prepared based on the records available from the District Agriculture Office. Since the list available from the Agriculture Office was mainly based on farmers accessing inputs through the Farmer Input Support Programme (FISP) which is for maize, a further listing was done to include farmers who were not included in the list but were producing the relevant products for this study. With the overall aim of 50 farmers per district, a sample size for each district was estimated and random sampling used to obtain a sub-sample for each of the eight sub-populations. A total of 440 farmers (400 small-scale farmers and 40 commercial farmers) were interviewed during the questionnaire survey, and 418 were used after data cleaning. The findings on food production and food distribution are based on a representative sample and thus can be generalized to depict the food situation in the Lusaka City Region.

Urban food consumption and food security

Methodology used by University of Arizona

The study on food consumption focused on a subset of municipally designated residential areas in the city of Lusaka in 2017. Residential areas were randomly selected from a set of areas designated by representatives from the Lusaka City Council as low- or middle-income areas. This intentional stratification was designed to capture the

dynamics of food purchasing, consumption and labour regularity for the households most affected by periodic shocks in food prices or work opportunities. Within each of 18 residential areas approximately 40 household surveys were conducted using a modified transect approach focused around the central open-air market with each residential area. Enumerators were assigned specific compartments within a residential area and followed a transect along roads/streets from the central open-air market location to the edge of the residential area. Enumerators were instructed to include households on both arterial and side streets so the actual sampling strategy followed a modified transect approach that included a spatial distribution of households near/far from open-air markets and on both high-traffic and low-traffic streets. Enumerators conducted an initial survey with a household near the open-air market and then skipped three to five houses for the subsequent survey. If there was no one present or a prospective respondent declined to participate in the survey the enumerator would move to the next household and proceed with the same three-to-five household interval. Large residential areas (those with more than 1 000 residents) were oversampled such that the actual number of surveys conducted in each residential area varied from 15 to 90. Primary survey sections included household demographic composition (census of all individuals), income and labour regularity and wages for top five earners in the household, dietary diversity (household-level), consumer behaviour (household-level) and a summary of household assets and housing characteristics. A total of 819 surveys were conducted using a team of six enumerators and the average duration of the survey was approximately 35 minutes. Enumerators were trained by the research team and a set of 18 survey pre-tests were conducted. Data were collected on tablets using Qualtrics survey software and validation codes were used to reduce data entry errors.

2.3.5 Stakeholder scenarios and future interventions

The project team also implemented activities to create a platform for stakeholders to initiate policies and plans that can improve the city region food system for Lusaka. Firstly, the results from the in-depth assessment were made available to the stakeholders. Stakeholders were organized according to their area of interest and expertise. These thematic groups were tasked to list two key issues that impacted negatively on the Lusaka CRFS. In addition, through thematic meetings and discussions – three in total for all thematic groups – the groups made suggestions on what could improve the thematic areas. The areas of focus and strategies to improve the Lusaka CRFS is contained in the last section of Chapter Three.

In-depth analysis – research methods used according to different groups:

Groups	Interviews	FGDs	Surveys
Producers	X		X
Traders	X	X	
Retailers	X	X	
Urban consumers	X		X

2.4 Strategy and policy planning

Towards the end of the in-depth assessment phase, stakeholders were involved in a policy-planning and scenario-building workshop. Four thematic working groups were constituted, according to areas of expertise and interest, around each priority area to identify areas of intervention. Establishment of working groups enabled strategy

development and action-plan design for each priority area. For each strategy, a list of activities, the type and role of the various actors that should be involved in the further operationalization and implementation, a timeline for implementation, estimated costs and resource requirements and potential funding sources and mechanisms were identified. An overall Task Force would continue to coordinate the operationalization and implementation process. The working groups met on a regular basis to define strategies and actions plans around identified priorities.

3. Lusaka city region food system

This chapter describes the general characteristics and context of the Lusaka CRFS and summarizes the assessment findings from the situation analysis. It provides an overview of all the activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic, environmental and food security and nutritional aspects (HLPE, 2017). For the purposes of this report, the analysis of food production is restricted to production of horticultural and meat products in the Lusaka City Region [argued earlier]. In this study, a range of horticultural products [fruits and vegetables] has been studied while livestock products include beef, poultry, dairy, pork and small ruminants such as goats, sheep and rabbits. In addition, analysis of food consumption and nutrition status is restricted to the Lusaka urban centre (see methodology).

3.1 Definition of Lusaka city region food system

The delimitation of the Lusaka CRFS was done through a multi-stakeholder engagement workshop held in 2015, supported by further evidence collected through the situation analysis phase (see methodology). The Lusaka CRFS covers surrounding districts which include urban and rural areas. It has been defined on the basis of a set of criteria and in particular on flows of food commodities that represent the typical food basket of the city region dwellers. Specifically:

- Food flows and sources: sources and production areas of the main food commodities consumed in the city;
- Administrative boundaries: region of the city over which the city council and districts have jurisdiction and whose by-laws are applicable within the city region;
- Land cover and use: hills, mountains, lakes, rivers, forests.

It has been estimated that around 60 percent of the food consumed in Lusaka is produced in the city region area. The city region area covers 4.3 million hectares and includes districts from both the Lusaka and Central provinces and more precisely seven surrounding districts, namely: Kafue, Chilanga, Chongwe, Mumbwa, Shibuyunji, Chibomba and Chisamba (Figures 1 and 2). Figure 2 shows the dominance of Lusaka city in the city region in terms of urban set-up and urban food market.

Like any other city region food system, the Lusaka CRFS comprises a complex network of actors, processes and relationships involved in food production, processing, marketing and consumption in each geographical region (Kim *et al*, 2015). Lusaka city has the highest population and serves as a strategic market for the food produced in the region. Further, the city is home to many industries that are involved in food processing and manufacturing. In addition, retailers – formal and informal – are dominant in the city and they play a leading role in ensuring steady food supply. Thus, in the city region, strong but underdeveloped forward and backward linkages exist along the food supply chain.

In particular, Chongwe, Chibombo, and Chisamba are perceived to be critical sources of food for the city of Lusaka followed by Kafue and Chilanga. Other types of food come from beyond Lusaka and Central provinces. Such sources include Southern, Western, Eastern, North-Western, Luapula, Muchinga and Northern provinces. It should be noted also that many food types come from beyond Zambia. The main food types that are imported into the city from other provinces are fish, fruits, beef, milk and maize.

In that respect, the consultations gave clear indication that the assessment should focus on fresh nutritious foods (fresh produce) that have a significant bearing on the diets and nutrition in the city region. It was observed that besides fresh produce, the other important crop for Lusaka residents is maize. As a staple product, maize meal is used to make nshima consumed together with various types of relish. Relish typically includes a selection of fresh products – meats, poultry, vegetables, dairy and aquaculture products.

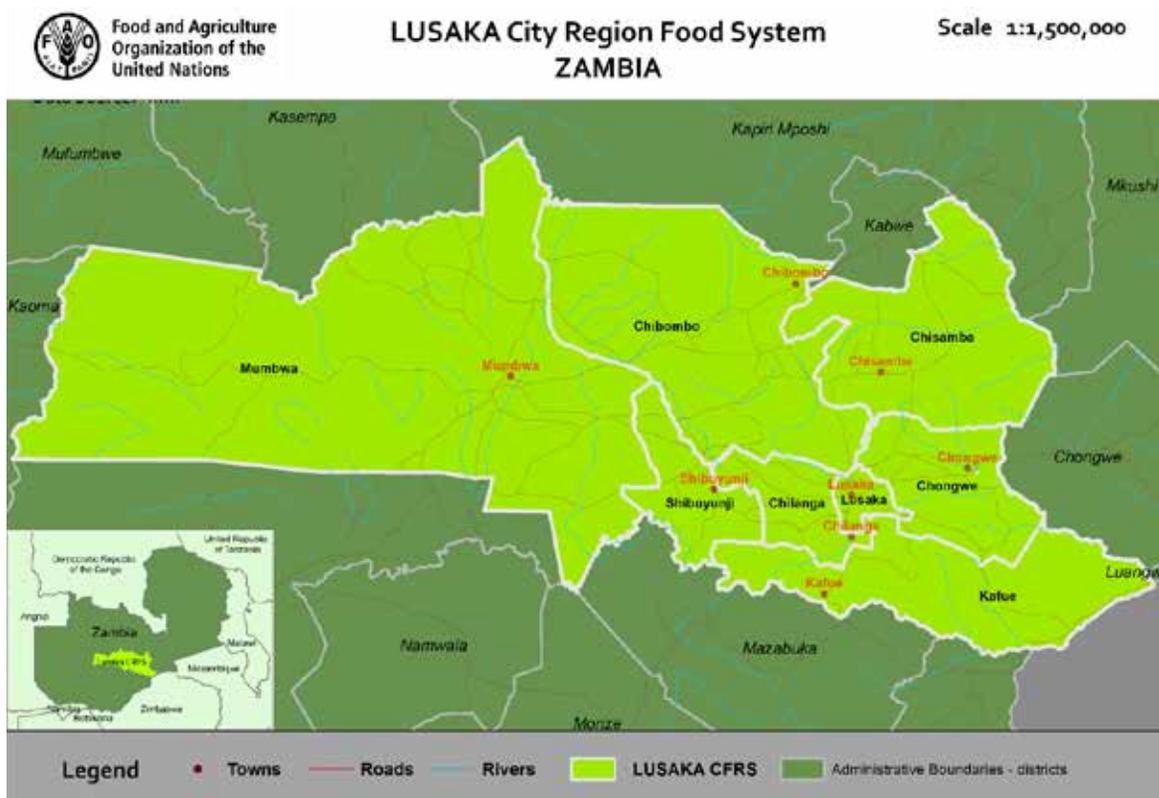
Key issues emerged from the participatory mapping exercise:

- First, it was agreed that the city region goes beyond the administrative boundary of the city to include neighbouring districts and that the city also produces some quantities of food.
- Second, it was agreed that there are complex linkages among the various stakeholders; that the strengths of these linkages vary and that generally retailers have more/most power within these linkages.
- Third, stakeholders agreed that limited local production to meet the food demand at affordable costs for all was both a concern and a high priority area to address.
- It was established at this stage that the food situation for Lusaka is influenced by many factors, some of which are far beyond the jurisdiction of the local and provincial authorities. However, issues of availability of land for food production, cost of capital and availability of accessible markets remain a daunting challenge among the stakeholders in the food sector in the city.
- Policy integration among ministries such as the Ministry of Agriculture, Local Government and Housing, and Lands and market access and marketing information are equally important issues to consider in order to improve city region food systems for Lusaka.

Figure 1

Map showing the extent of Lusaka City Region

The maps below illustrate the Lusaka CRFS area and special distribution of different types of land use within the urban area.



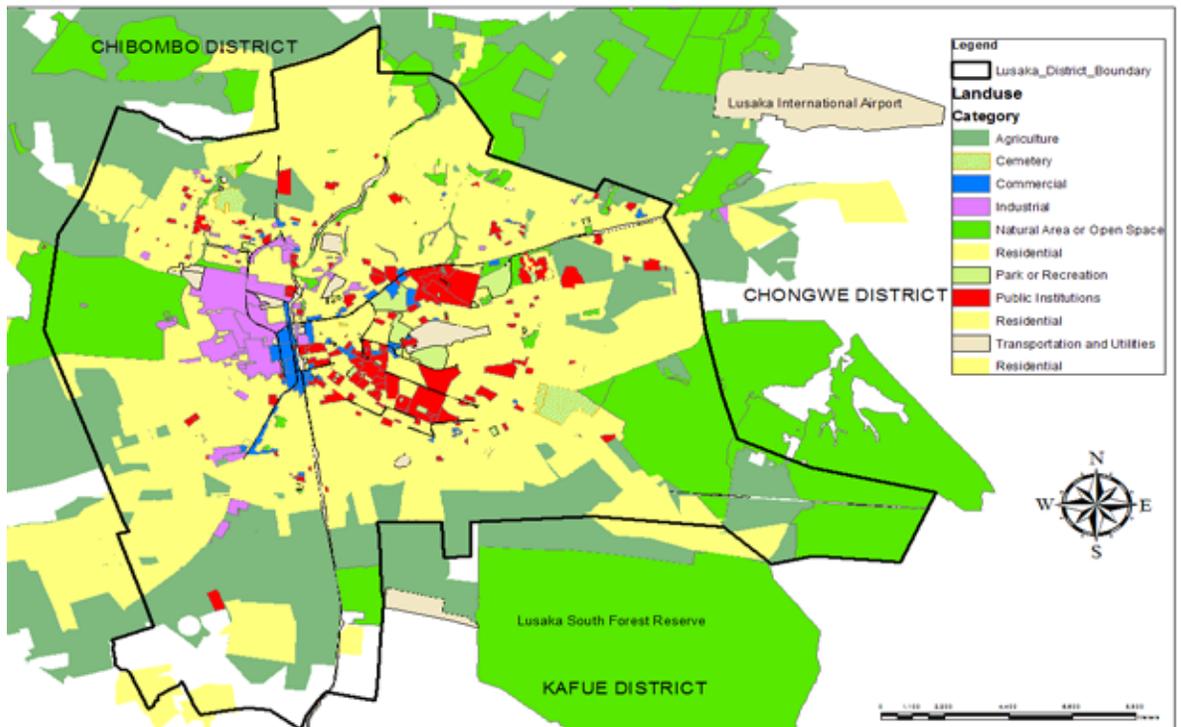


Figure 2

Spatial distribution of land use in Lusaka and surrounding districts (FAO field data, 2016).

3.2 Lusaka city region food system – Policy environment and governance

It is important to understand the policy context in which the food system operates. The sustainability and resilience of Lusaka CRFS is influenced and impacted by various political, social, environmental and administrative structures and systems. These systems and structures have overarching influences and permeate both the national and city scales of governance, because the local authorities in Zambia have limited mandate on agriculture and food security. This section looks at both the lack of clear governance and the limitations of the policy environment.

There is no single institution in charge of food systems within the Lusaka City Region, and nor is there one for the country as a whole. Nevertheless, there are a number of institutions whose mandate include aspects of food system governance, in varying degrees of authority, within their geographical operational areas, and supported by different pieces of legislation, policies and strategies. The agriculture sector is primarily governed by policies and legislation developed and implemented through the Ministry of Agriculture. Other sectors such as National Policy on Environment (2007), Fisheries Policy (2011), National Forestry Policy (2014), environment, land, Minerals Development Policy (2013) and National Water Policy (2010) also have legislation that affects the way the agriculture policy is governed. The principle governing policy is the National Agriculture Policy (2012–2020) whose primary aim is to ensure that agriculture contributes to reducing poverty and increasing incomes at household level. Locally and within each municipal jurisdiction, agriculture is also governed through the local council by-laws. In particular, among the prominent institutions and associated legislations, polices and plans, are:

- i. The *Local Authorities*, i.e. City and District Councils, under the supervision and/or authority of the *Ministry of Local Government*: Local Authorities govern the food systems with legal authority provided by various laws and by-laws, e.g. Markets and Bus Stations Act No. 7 of 2007, Public Health Act Cap 295, Urban and Regional Planning Act, Decentralization Act, By-Laws such as Hawking and Street Vending, Draft Land Administration and Management Policy-2013, National Environmental Health Policy [Draft]-2001, Local Government Act No. 9 of 2004, Cap 281, and Local Government Amendment Act No. 17, 2016;
- ii. *Ministry of Health*, including the *National Food and Nutrition Commission (NFNC)*: supported by various legislations, policies and plans, e.g. Public Health Act Cap 295, Food and Drug Act [Cap 303], National Food and Nutrition Strategic Plan [2017–2021], NFNC Act 1967 [currently under review], National Food and Nutrition Policy-2006, and Nutrition Education Communication Strategy-2014;
- iii. *Ministry of Agriculture*: using various policies, plans and legislations, such as Second National Agriculture Policy [SNAP] [GRZ, 2012a], Agriculture [Fertilizers and Feed] Act [Cap. 226]-2006 [1970], Plant Variety and Seed Act-Cap 236, and CAADP-National Agricultural Investment Plan [NAIP]: 2014–2018;
- iv. *Ministry of Fisheries and Livestock*: with legal mandate under legislations and policies like, the Fisheries Act-2011, Veterinary and Veterinary Para-Professions Act-2010, and Fisheries Policy-2011;
- v. *The Competition and Consumer Protection Commission (CPC)*: this is a government body that seeks to protect consumers from unfair business transactions and competition processes, under the Competition and Consumer Protection Commission Act;
- vi. *Zambia Bureau of Standards (ZABS)*: is one of Zambia's Statutory National Standards Body established in 1982 under the Standards Act CAP 416 of the Laws of Zambia. ZABS falls under the Ministry of Commerce, Trade and Industry [MCTI];
- vii. *Zambia Weights and Measures Agency (ZWMA)*: is also one of the six Statutory Bodies under MCTI;
- viii. *Food Reserve Agency (FRA)*: has the mandate to procure, maintain and/or safely store major foods [grains and cereals] for the national strategic reserves, in order to ensure national food security. It operates under the FRA Act No. 12 of 1995;
- ix. *Ministry of Lands and Natural Resources*: is the institution with overall mandate of land administration in Zambia. It is supported by various legislations and policies, e.g. Lands Act-1995, Draft Land Policy-2015, Draft Land Administration and Management Policy-2013, and National Forestry Policy-2014.

Other overarching policies, plans and regulations that affect governance of the food system in Zambia include: the Seventh National Development Plan [7th NDP], National Policy on Environment-2007, National Biosafety Act-2007, Environmental Management Act No. 12 of 2011, National Environmental Health Policy [Draft]-2001, Vision 2030, and the National Water Policy-2010.

The multiplicity of institutions involved in governance of food systems suggests that legal reform is critical, especially in coming up with one key institution or probably two, to govern and regulate the food system. There is a need for ensuring effective coordination and efficiency, and to ease transparency and accountability, including monitoring. The recommended single food governing institution should have decentralized operational points, throughout the Lusaka CRFS, including other parts of the country, bearing in mind that food governance is or could be complex, and covers the entire value chain of all food types. The following section details the strategies and changes to the existing framework on Lusaka CRFS to strengthen linkages and performance.

3.2.1 National Agricultural Policy

The National Agricultural Policy (NAP) shapes all agricultural activities and influences the decisions of both farmers and food marketeers. The NAP seeks to promote sustainable increase in agricultural productivity of major crops with comparative advantage; continuously improve agricultural input and product markets so as to reduce marketing costs of agribusiness, including small-scale farmers and farmer groups; increase agricultural exports to preferential markets at regional and international levels; improve access to productive resources and small-scale farmers, especially women and young farmers, in outlying areas to enable them to increase production of staple foods, including fruits and vegetables for own consumption and income generation; continuously strengthen public and private sector institutional capabilities to improve agricultural policy implementation, resource mobilization, agricultural research, technology dissemination and implementation of regulatory services [GRZ, 2012]. Analysis of the NAP done in the first phase of the project shows that the agricultural policy is skewed towards crops such as maize and little is provided to support horticultural products and livestock. The implication for this is that the farmers face challenges such as lack of government support for accessing capital for non-crop farming activities.

There are many sub-policies for various subsectors within agriculture that elucidate in detail the policy direction for each sub sector [e.g. livestock, dairy, horticulture]. The dairy sector, for instance, remain private sector driven with government only providing policy guidelines. Yet government involvement and policy and regulatory framework remain critical because not all aspects of dairy industry can be handled by the private sector alone. Literature sources show that the dairy sector experiences limited interaction among the various actors with most of the players in the sub-sector working in isolation instead of complementing each other [Simbaya *et al*, 2009].

It should be noted that lack of focused policy on the horticultural sector in terms of production and marketing impacts adversely on the potential of this sub-sector to make a substantial contribution to the economy.

3.2.2 National Environmental and Land Policy

The National Policy on Environment serves as a guide for the welfare of the nation's environment. This policy is based on three principles, namely: the right of citizens to a clean and healthy environment, local community and private sector participation in natural resources management and obligatory Environmental Impact Assessments (EIAs) for major project undertakings in all sectors of the economy. This policy therefore guides the setting up of large agricultural ventures as well as use of agrochemicals so that production remains sustainable while preserving the environment.

The guiding principles in managing agricultural land are elaborated in the **land policy** although it is still in draft form. The draft land policy seeks to guide among other aspects of land tenure, the tenure arrangements under which agricultural – especially land under customary tenure – which is the basis for small-scale farmers.

The draft policy has recognized the importance of customary tenure under which, in the early 1990s, 94 percent of the country's land was held, and where and state land represented just the remaining six percent of the land. This distribution of land tenure systems has major implications for protection of farmlands and sustainable food production in the Lusaka City Region. Much of the land in the study area (outside Lusaka city) remains under tradition customary tenure. However, traditionally owned farmland is being lost to urban development in the region at a high rate. This makes it more complicated given that land use planners and state regulations currently lack adequate mechanism to control land transactions in customary areas.

In Zambia there exists a dual set of land allocation systems: a customary tenure system managed by tribal elders and headmen and a system of leasehold state lands managed by the central government's Ministry of Lands. Over time, population growth in the customary areas is leading to land pressure and land fragmentation. This increases the difficulty in obtaining contiguous land allocations of sufficient scale to support commercial farming. The farmers we interviewed confront this problem by moving to areas where land is available, or in one case, by purchasing a leasehold farm. Ultimately, customary land authorities will need to devise systems for consolidating land holdings and transferring use rights in blocks of sufficient scale to permit commercial farming. Increasingly, commercialized smallholders are transferring their customary usufruct rights to leasehold tenure systems as permitted under the 1995 Land Act. In the meantime, commercial smallholders rely on inheritance and mobility to ensure access to land. Over time, as farmers move to high-value agriculture – such as horticulture, poultry and dairy production – land requirements fall. Therefore, land constraints affect primarily the low-road farmers trying to scale up cultivated area sufficiently to generate a prosperous existence from low-value crops such as cotton and maize. Even under smallholdings, commercial smallholders will face increasing need to access valuable forms of collateral, such as land. The 1995 Land Act may help to facilitate this transition (IAPRI, 2012).

While peri-urban and urban agriculture is practised, detailed information on the policy framework as relates to urban agriculture remains very limited. There are challenges to recognizing urban agriculture due to conflicts in policy documents and statutory instruments (RUAF, 2008). This is common in African cities, including Zambian towns and cities where urban management and planning laws were inherited without paying attention to contextual issues (Berrisford, 2011). Some of the identified conflicts in land use in the city region relate to competition in accessing adequate water resources for agricultural production (Interview, Lusaka City Official, 2016). It is common to see new urban development activities displace old farm activities, especially livestock such as poultry and small ruminant animals (Interview, Lusaka Province Planning Office, 2016). Furthermore, the Urban and Regional Planning Act of 2015 provides a promise to harmonize land administration between customary and state land administration systems. This act provides for all land as planning land and empowers land use planners to engage with chiefs on any land. When regulations for this act are promulgated, it seems to have the potential to change land use conversations and potentially reduce the threat of loss of farmland in the study area.

Land ownership is a major factor that drives incidence of high poverty, shapes food production systems and processes in the study area. Results indicated that most of the land used for agricultural production was held under traditional tenure with 46.7 percent of the respondents, indicating that their land is traditional land. Since farmers' livelihoods are mainly dependent on land, tenure arrangements may influence food production by influencing access to capital. Most of the land held under customary tenure is normally not recognized as collateral by financial institutions, thus limiting access to credit by small-scale farmers. While it is possible to change from customary tenure to leasehold, the procedures can be very lengthy. This may discourage farmers from acquiring title deeds obtainable once land held under customary tenure is converted to leasehold. The main effect of land tenure on conservation is that the level of land conservation practised by farmers is influenced by security of land tenure as was reported by several studies (Idoma and Ismail, 2014; Place *et al.*; Tenaw *et al.*, 2009). This may then ultimately affect the efforts to reduce poverty and support sustainability of the food systems.

3.2.3 National Food and Nutrition Security Policy

Various studies have shown that hunger, undernourishment and malnutrition rates for Zambia are among highest in the world. According to Mwanamwenge and Harris (2017), the most recent statistics on undernourishment by Food and Agriculture Organization

[FAO], International Fund for Agricultural Development (IFAD) and World Food Programme (WFP) [2014] ranked Zambia as having the highest levels of undernourishment and malnutrition (40 percent of Zambian population) in Africa and second from the bottom in world, for the period 2014 to 2016.

Policies to deal with food security and nutrition exist but execution of these policies seems problematic. According to Mwanamwenge and Harris [2017], the national nutrition and agriculture policy – Zambia's Vision 2030 – clearly articulates a vision for 'a well-nourished and healthy population by 2030.' In line with this vision, Zambia was one of the first signatories to the Scaling Up Nutrition (SUN) movement aiming to improve stunting rates. The country has also adopted the Comprehensive Africa Agriculture Development Plan compact, which aims among other things to improve food security and nutrition; it has signed up to the new universal Sustainable Development Goals (SDGs), which include both nutrition and agriculture targets; and it has adopted the World Health Assembly targets committing the world to end malnutrition in all its forms.

The National Food and Nutrition Act provides for strategies for improved nutrition but was historically focused on managing malnutrition, particularly among the low-income population. **The National Food and Nutrition Policy** operationalizes the National Food and Nutrition Act.

The 2006 National Food and Nutrition Policy called for nutrition to be addressed through a multi-sectoral approach involving the health and agriculture sectors among others, and included a call for food diversification. The 2006 policy on nutrition is clear and provides a strategic basis for the 2011 National Food and Nutrition Strategic Plan that lays out the requirements of the agriculture sector in improving diets, and the 2013 Most Critical Days Programme identifies the promotion of improved child feeding and diversification of maternal and child diets as priority areas.

The first National Agriculture Policy [2004–2015] mentions human nutrition three times, in relation to food production, processing, distribution, breeding for improved food quality and fish production. However, the policy does not mention diets at all, yet improvement of diets is arguably the agriculture sector's most significant potential contribution to nutrition in Lusaka and Zambia in general. The Second National Agriculture Policy (SNAP) of 2016 places the agriculture sector as a key driver of economic growth in Zambia. The SNAP incorporated nutrition more fully into its mandate, including in its overarching vision, mentioning nutrition several times (though still not diets), and dedicating one of its 12 objectives to improving nutrition through the food and agriculture sector. The SNAP explicitly calls for (but does not define) production diversity; however, the accompanying SNAP implementation plan provides little detail on this element and has left out a number of measures that are indicated in the SNAP [Mwanamwenge and Harris, 2017]. For example, in the implementation plan the diversification of agricultural production is defined as cultivation of crops other than maize, such as rice, soya beans and groundnuts, with no specific mention of other potential measures for improving the diversity of diets, such as producing nutritious food groups like vegetables and fruits, bio-fortified crops or indigenous crops. In addition, the policy measures around nutrition education and the utilization of nutritious foods are not mentioned in the implementation plan. Therefore, written agriculture policy explicitly incorporates diversity and nutrition considerations, but the focus of the sector in practice remains on agriculture as an engine of economic development, and goals related to nutrition have fallen out of focus when it comes to implementation. Thus, the challenge of nutrition and food security remains a major issue for Zambia. The foregrounding food and nutrition security narratives are weak on a number of fronts, especially on coordination of efforts and programmes. While narratives about diversifying food production, food preservation and processing are pronounced, government effort remains drowned in the 'political crop' – maize – and the production arm of agriculture. Most government funding has been in promoting maize production. The focus of funding the agriculture sector is therefore very much on calorific food security, rather than nutrition as a

broader definition. For example, less than 0.001 percent of the 2016 agriculture budget was allocated to nutrition activities in 2016. There is little project funding for nutrition available from the agriculture budget, despite the inclusion of a nutrition objective in the 2016 Second National Agriculture Policy. By current estimates, around 0.049 percent ($\pm 30\,000\,000$ ZMW) of government spending was on nutrition interventions in the 2017 budget, largely under the health sector but including the agriculture sector. This does not meet the USD 30 per child recommended internationally for addressing nutrition, nor the USD 48 million per year calculated by the World Bank as the cost to roll out 11 key nutrition-specific interventions in Zambia to full national coverage.

The total donor investment to basic nutrition in Zambia in 2014 was USD 9.73 million, or USD 3.4 per child under five – still not meeting estimated requirements, but dwarfing national investments. Action on nutrition in Zambia is therefore largely internationally funded, while food security policy is largely nationally funded, showing a disconnect between the aims of a donor agenda and a domestic political agenda that extends to action on sustainable and diverse diets. The budget allocations reflect the fact that increasing income and food security is the government's top-line agenda item for agriculture, overshadowing the importance of diets or nutrition. This conceptual division allows food security to be conflated with staple crop production, as opposed to encouraging a comprehensive perspective, which considers the importance of diversity and brings in the concept of utilization when considering food security.

The review above has examined national realities of modern Zambia to assess: conceptual links between agriculture, diets and nutrition; the Zambian food and agriculture context; and the role of government policy and private sector business in dictating the availability and accessibility of diverse foods. This analysis has shown that lack of food type diversity is bad for diets, resulting in micronutrient deficiencies, child stunting and adult obesity; and bad for agriculture, resulting in a lack of resilience in food systems.

3.2.4 Social safety nets – Enhancing food and nutritional security

There are a few safety nets by governments and civil society to help address food insecurity and malnutrition. They include:

Social cash transfer: The Ministry of Community Development and Social Services (MCDSS) does provide some money to vulnerable families to help them meet their financial obligations, especially relating to food. This service is operational only in a few districts and few families. The amount of money involved is small. In 2014 when the Cabinet approved the National Social Protection Policy, UNICEF Zambia supported the drafting of the policy and provided technical assistance for the scale-up of the Social Cash Transfer (SCT) programme, which is the flagship of this policy, resulting in an increase in the number of beneficiary households from 60 000 in 2013 to around 145 000 in 2014. A multi-year cash transfer impact evaluation conducted jointly by Government and UNICEF since 2010, revealed that the cash transfers enhanced resilience and food security, and facilitated livelihood improvements through productive investments and local economy effects. In 2014 the Government increased the annual budget allocated to the Cash Transfer (CT) Programme by an unprecedented 800 percent, to scale up the programme from 19 to 50 districts. In order to become eligible for the programme, households must: i) have a dependency ratio (the ratio of household members unfit-for-work due to age, illness, disability or age to adults in the household who are fit-for-work) of three or more; and ii) have poor living conditions, as assessed by the Ministry of Community Development, Mother and Child Health based on the national Household Living Conditions Index. Recent efforts to introduce Social Cash Transfer as a means for promoting food and nutrition security are yet to have an effect in the study area.

Food security pack: The food security pack is also administered by the Ministry of Community Development and Social Services (MCDSS) whereby small-scale farmers or rural farmers who are vulnerable but viable are given a few bags of fertilizer and seed (about two bags of fertilizer and 10 kilograms of seed) and after harvesting they repay in terms of maize harvested. This is largely available in rural areas or for those urban dwellers having dual settlements in rural areas. In urban slums, especially in Lusaka, these mechanisms to safeguard the poor population from food and nutrition insecurity do not exist.

School feeding: School feeding programmes are usually run by civil society groups, sometimes with support from international aid organizations, including the World Food Programme (WFP) in schools for vulnerable children. Each child is given a bag of grain and cooking oil to take home. At school, high energy gruel is given to the children. These initiatives are not widespread in the urban areas where food and nutritional insecurity remain a challenge. Thus, those most affected by high food prices are the urban poor located in slums and the rural poor.

3.2.5 Food safety

1. **Food and Drugs Act:** The act among other things aims at protecting the public against health hazards and fraud in the sale and use of food, drugs, cosmetics and medical products and devices.
2. Other legislation governing the operations and management of **councils and municipalities also have a bearing on food management.** This may include acts governing markets and bus stations, etc.

It is worthwhile to note that although policy gaps exist, the major drawback is a lack of mechanisms and the willingness to enforce regulation and policies partly due to perceived negative political reaction by the electorate and limited financial capacity.

A case in point is sale of food by the informal sector under insanitary conditions which the political elite continue to allow. In the absence of viable work opportunities for the unemployed street vending is seen as a viable alternative livelihood for many in the urban centres in the city region. For professionals such as planners, enforcing regulations on trading spaces and markets in the city region is a risky operational area: politicians would perceive them negatively. However, food safety is a serious concern as food sold by vendors in particular is not inspected and may harbour infectious pathogens and contaminants.

3.3 Summary of findings: priority issues for Lusaka city region food system

Based on literature and stakeholder consultations, this component of the study established the following gaps:

- i. Data and information on the Lusaka food value chain is limited.
- ii. The relationship between the formal and informal food markets has not been established.
- iii. Joint planning between Lusaka and the surrounding districts are proposed in the Urban and Regional Planning Act Number 3 of 2015, but guidelines and standards are not available yet. Joint planning is essential in the implementation of the CRFS for Lusaka. This would provide a policy and institutional framework to anchor implementation processes.

- iv. The imbalance between urban development and food security in Lusaka is not addressed in literature. The neglect is most vivid in relation to food and nutritional security for low income households in the city.
- v. Impacts of climate change on the food and water systems in Lusaka are not adequately covered.
- vi. Fragmentation of the legal and institutional context involved in the Lusaka city region food system. No policy exists for ensuring food and nutrition security in the Lusaka City Region. Food production in the city region.

4. Food production in the city region

This section includes information on the characteristics of food producers and a review of the level of agricultural activity, types of food produced and types of food production systems. It also looks at access to seeds and other farm inputs, at levels of transition towards lower input production systems and at land and water access. Field data collected in interviews with 440 of food producers in six districts is set out in various tables [see section 2.3.4 for methodology]. This section includes information on the characteristics of food producers and a review of the level of agricultural activity, types of food produced and types of food production systems. It also looks at access to seeds and other farm inputs, at levels of transition towards lower input production systems and at land and water access. Field data collected in interviews with 440 of food producers in six districts is set out in various tables [see section 2.3.4 for methodology].

4.1 Households and agricultural activity

There are 130 065 households in the city region, of which approximately 48 percent are conducting agricultural activities [CSO, 2012]⁶.

While Lusaka and Chongwe are the districts with the highest number of households, Chisamba and Chongwe are the ones with the highest number of households involved in agricultural activity. Lusaka district is the most populated and urban area, with only 10 percent of the households conducting agricultural activities.

Table 1

Number and proportion of households and agricultural households per district in 6 out of the 8 districts comprising the city region (CSO, 2012).

	Number of agricultural households	Number of non-agricultural households	Total number of households	Proportion of households with agricultural activity	Proportion of households in comparison to the total number in the CRFS
Chilanga	9 350	11 910	21 260	44	16
Chisamba	14 316	3 776	18 092	79	14
Chongwe	14 510	12 512	27 022	54	21
Kafue	9 961	13 335	23 296	43	18
Lusaka	2 410	22 074	24 484	10	19
Mumbwa	11 731	4 180	15 911	74	12
Total	62 278	67 787	13 065	48	100

⁶ Excluding Shibuyunji and Chibombo – CSO data not available.

Socio-economic characteristics of sampled food producers in Lusaka city region food system

The descriptive characteristics of the sampled households involved in food production are presented in Table 2. Findings show that the average age of the head of the sampled household is 45.3 years. The mean household size comprised of four members. There are 55 percent of male-headed households and 45 percent of female-headed households. The most common marital status among the sampled households is 'married', at 78.9 percent of the total population. Around 45.2 percent of the households had attained primary education while 40.8 percent had attained secondary education. At tertiary level, 10.4 percent and 2.1 percent of the household heads had attained a college diploma and university degree respectively (see Table 2). The findings imply that most people engaged in the farming activities that were studied are less educated, with only 2.1 percent having a university degree or higher. Further, analysis of findings reveals important elements in the role of gender and agriculture. There are many female-headed households, thus the participation of females in the food system in the city region is critical. In this case, land ownership for agricultural productivity is crucial.

Table 2
General characteristics of respondents – socio-economic status of the population (FAO field data, 2016).

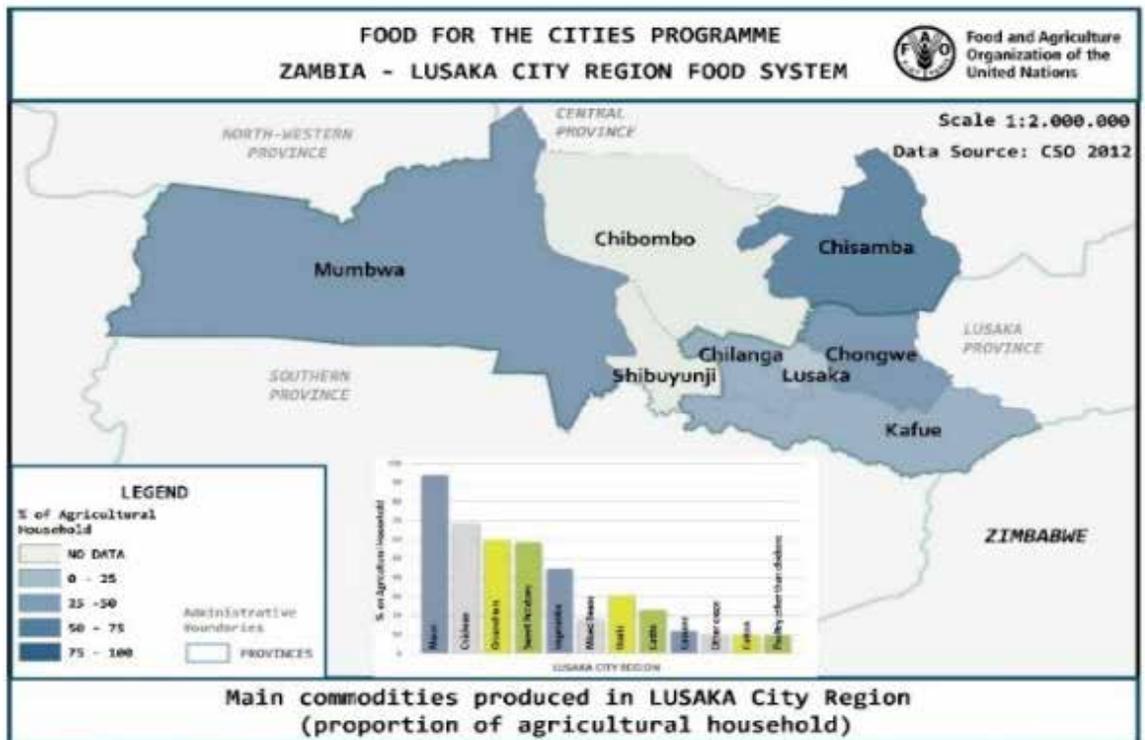
Average age of head of household (years)	45.3
Average household size	4.0
Male-headed household (%)	55.0
Female-headed households (%)	45.0
Married (%)	78.9
Widowed (%)	9.8
Divorced (%)	4.0
Separated (%)	0.5
Education level – None (%)	1.5
Primary (%)	45.2
Secondary (%)	40.8
College Diploma or higher (%)	12.5

4.2 Food types and production systems

4.2.1 Main food types

In the city region, the main food items produced are: maize [94 percent of the farmers], chickens [68 percent], groundnuts [60 percent], sweet potatoes [58 percent], vegetables [45 percent], goats [30 percent], cattle [23 percent], mixed beans [18 percent], cassava [12 percent] and cotton [10 percent]⁷. Commercial farmers also grew wheat, barley and pastures. Figure 3 shows the prevalence of agricultural households and the relative importance of the main commodities produced in the city region. Appendix 2 displays the maps describing the prevalence of agricultural households and the relative importance of the main commodities produced in the specific districts that compose the Lusaka City Region.

⁷ Excluding Shibuyunji and Chibombo – CSO data not available.



Even though maize and chickens seem to be the most important productions in terms of number of households, some districts are more specialized in specific productions. As mentioned above, Chisamba and Chongwe are the most agricultural districts in terms of both number of households and diversity of production. Chisamba district has the highest proportion of households producing groundnuts and sweet potatoes; and also cattle and goats. Chongwe district is fairly diversified, with a number of households producing groundnuts, sweet potatoes and vegetables [in addition to maize and chickens]. Mumbwa seems to be specialized in the production of cotton, mixed beans and cassava, while Chilanga appears to be a more livestock-oriented district, specifically for cattle and goats. Lusaka, with the lowest number of agricultural households, seems to be specialized in vegetable production, with 56 percent of its agricultural households producing these horticultural products.

Figure 3

Main commodities produced in the Lusaka City Region (FAO elaboration on CSO, 2016).

4.2.2 Production systems

In terms of **production systems**, even within the specific selected sample of small-scale farmers engaged in production diversification, there are very few farmers engaged in both crops and livestock production (16 percent in total). Most of the interviewed farmers are producing either fruits and vegetables or livestock. Integrated production is still low, while it could bring more efficiency to the farm, especially in terms of manure and fertilization management, as well as livelihoods resilience. Again, not all districts have the same patterns. While Kafue is very specialized in crop production with very few household mixing fruits and vegetables and livestock, Chibombo and Chongwe seem to acknowledge a higher number of households experiencing integrated production systems.

Table 3

Production systems in each district, among farmers already engaged in diversification (percentage of the total number of respondents). (CSO, 2012)

Production systems	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuuunji	Total
Only fruits and veg	48.3	36.6	53.2	59.3	62.2	73.7	62.5	55.9	57.4
Only livestock	24.1	2.4	2.1	11.1	5.4	12.3	17.5	20.6	11.2
Only beef	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.3
Only poultry	20.7	0.0	2.1	3.7	0.0	10.5	15.0	17.6	8.3
Only pork	3.4	0.0	0.0	0.0	0.0	1.8	2.5	2.9	1.3
Only dairy	0.0	2.4	0.0	3.7	5.4	0.0	0.0	0.0	1.3
Mixed livestock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruit and veg and livestock	13.8	29.3	14.9	22.2	24.3	7.0	10.0	11.8	16.0
Fruit and veg and beef	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.3
Fruit and veg and poultry	13.8	7.3	10.6	7.4	16.2	7.0	10.0	11.8	10.3
Fruit and veg and pork	0.0	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.6
Fruit and veg and dairy products	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.3
Fruit and veg and mixed livestock	0	2.2	2.1	11.1	2.7	0	0	0	4.5
Other	13.8	31.7	29.8	7.4	8.1	7.0	10.0	11.8	15.4

Maize and field crops in general are dominant crops, but **fruits and vegetables** constitute an important diet component in the study area. While fruit production is not very pronounced in the city region, farmers grow an assortment of vegetables such as Chinese cabbage, tomato, onion, pumpkin leaves, rape, okra, green pepper, impwa, cotton, cowpea, green beans, carrots, amaranthus (bondwe), sweet potato leaves and cabbage.

In 2009/10, 1 230 242 [82.9 percent] of smallholder farmers in Zambia grew fresh fruits and vegetables (FFV). Of all the FFV produced, five vegetable crops dominate smallholder production systems accounting for 86 percent of the total value of FFV sales within the smallholder sector: tomato, rape, cabbage, watermelon, eggplant and onion. Figure 4 provides a summary of the proportion of fruits and vegetable production in Lusaka. Figure 4 shows that the relative contribution of FFV is low compared to other regions in Zambia.

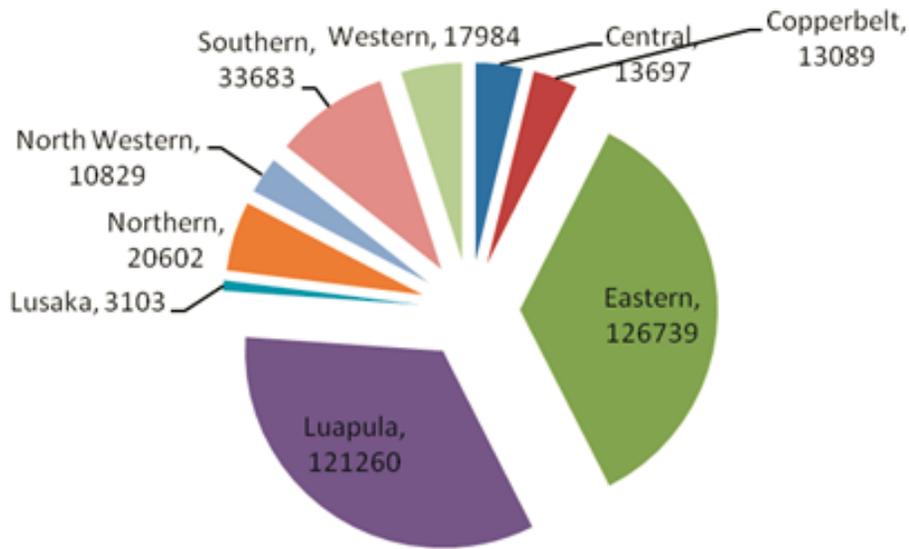


Figure 4
Households growing FFV with household income less than USD 2 per day (IAPRI, 2008).

Figures 5 and 6 show shares [production] of tomato and rape supplied to Soweto market, Lusaka.

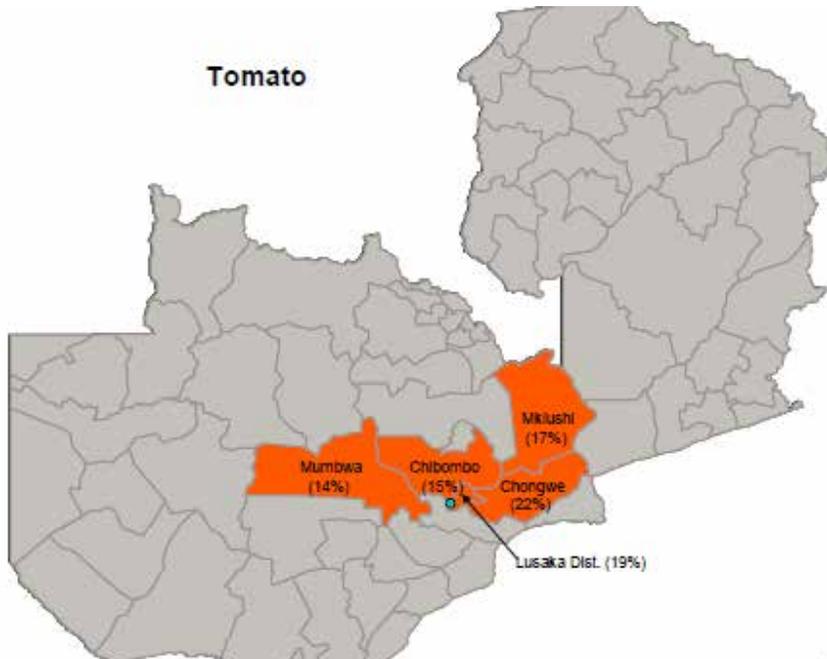
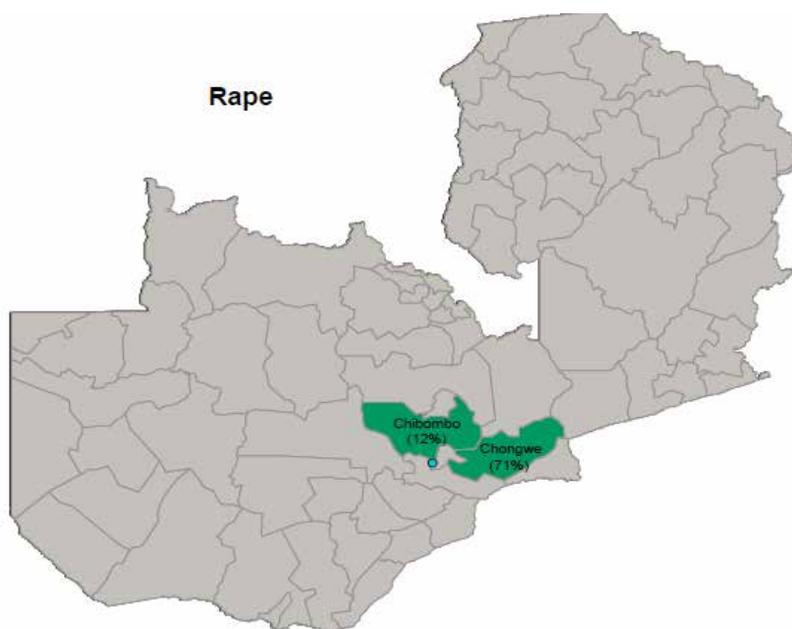


Figure 5
Key tomato production areas for the Lusaka City Region (IAPRI, 2012).

Figure 6
Rape
production
areas for the
Lusaka City
Region (IAPRI,
2012).



In terms of number of households, in the city region⁸, 45 percent of agricultural households are growing vegetables, and six percent have orchards. The proportion of agricultural households growing vegetables stands between 41 and 57 percent, depending on the district. Lusaka district is the district with the most important proportion of farmers growing vegetables, while Chongwe is the least important one for vegetables. Lusaka as well as Chilanga district also seem to be more specialized than the other districts in terms of orchards, with respectively 12 percent and 10.8 percent of farmers growing fruits.

Even if the data is coming from different years, it seems that the city region is a low producer of fruits and vegetables compared to the rest of the country [for vegetables, 45 percent of the farmers in the city region vs. 86 percent in the country].

Table 4
Percentage
of farmers
growing fruits
and vegetables
in 6 districts
out of 8
comprising the
CRFS (CSO,
2012)

	Number of agricultural households	Vegetables (%)	Orchards (%)
CHILANGA	9 350	48.0	10.8
CHISAMBA	14 316	48.5	5.1
CHONGWE	14 510	41.0	4.6
KAFUE	9 961	42.3	4.4
LUSAKA CENTRAL	2 410	56.7	12.0
MUMBWA	11 731	41.7	3.2
Total (%)	62 278	45	6

Meat and dairy are major components of the food basket in the city region. In Zambia, cattle is the main type of **livestock** raised, followed by goats, pigs and sheep. The city region includes districts from both Lusaka and the Central provinces. Even though it is not the district with the highest number of livestock raised, the Central Province ranks

⁸ Excluding Shibuyunji and Chibombo – CSO data not available.

third in terms of livestock, especially for cattle (28.5 percent) and goats (18.4 percent). Lusaka Province is not specialized in livestock production (only 1.8 percent of the cattle of the country are in Lusaka Province and 5.4 percent of goats).

Type of livestock	Contribution of Lusaka Province (%)	Contribution of Central Province (%)	Total number in Zambia
Goats	5.4	18.4	3 267 901
Pigs	3.6	4.8	1 010 301
Cattle	1.8	28.5	3 946 348
Sheep	5.3	11.8	138 068

Table 5

Contribution of the Lusaka and Central provinces to the total number of goats, pigs, cattle and sheep raised in Zambia in 2015 (CSO, 2015).

At the city region level, 30 percent of the total number of households raise goats, 23 percent cattle and only five percent pigs and one percent sheep. Chickens are the most popular with 68 percent⁹ of the agricultural households in the city region raising some. Other types of livestock, such as donkeys, horses and impala, are owned by commercial farmers.

Province		Total number of agricultural households	Cattle (%)	Goats (%)	Pigs (%)	Sheep (%)	Chickens (%)
Lusaka	CHILANGA	9 350	11.2	13.6	4.9	1.5	52.1
Lusaka	CHONGWE	14 510	18.4	25.5	6.7	0.8	69.1
Lusaka	KAFUE	9 961	12.9	24.1	5.2	0.5	55.1
Lusaka	LUSAKA CENTRAL	2 410	5.4	5.8	4.0	1.1	36.6
Central	CHISAMBA	14 316	39.0	48.3	5.2	1.3	84.7
Central	MUMBWA	11 731	30.9	38.7	3.2	2.8	78.8
	TOTAL	62 278	30.5	23	5.1	1	68.5

Table 6

Percentage of farmers raising cattle, goats, pigs, sheep and chickens in 6 districts out of 8 comprising the CRFS. (CSO, 2015).

While the national level statistics indicate that 83 percent of the cattle is in smallholder farming systems, with commercial farmers having only 17 percent, the commercial farmers still supply the most beef (54 percent) to the city region (ZDA, 2011; Chikazunga *et al*, 2008).

4.3 Access to inputs

Data and reports from CSO show that that most farmers (95.5 percent) in the city region classified their type of production as low input and small scale. Others classified their farming method as high-input, small-scale production (0.3 percent), with only 0.8 percent classifying their production method as high-input, mechanized farming.

This is in line with existing national agricultural data which show small-scale farmers as key for ensuring food security in Zambia, but their farming inputs remain basic and most vulnerable to climate shocks. Most farmers lack sophisticated tools and skills to adapt their farming practices to the changing environment and to the demands on food quality by rising middle-income consumers.

⁹ Excluding Shibuyunji and Chibombo districts – CSO data not available

4.3.1 Input sources

Farm inputs by small-scale farmers are sourced locally from agro-dealers and Zambia National Farmers Union Lima Schemes. Commercial farmers acquire their inputs from various places including Lusaka. It should be noted that the Fertilizer and Input Support Programme (FISP) by government serves as a key financing mechanism for small-scale farmers in the region. This is dominant in the rural areas of the city region where most farmers indicated the importance of FISP. For many years, FISP had exclusively supported maize production, by providing fertilizer and inputs to farmers at low prices. With the e-voucher programme since 2015, the government aims at accelerating **diversification** of the smallholder sector by allowing farmers to purchase a wide range of recommended inputs. Instead of giving access to specific inputs for only one crop that is maize, the e-voucher programme gives access to a lump sum that farmers can use to buy the available and relevant inputs.

Specific attention is now given to 10 crops rather than one, including tomatoes, cassava, cashew nuts and groundnuts. However, diversification is still low and the e-voucher programme could be spread more broadly and be accessible for all farmers.

4.3.4 Seeds

Key local seeds companies like Zamseed are prominent suppliers of both maize and vegetable seeds for the farmers. Generally, the use of improved seed is common in the city region. IAPRI report (2015) shows that use of improved seed is relatively high for most of the major crops grown in the country with 67 percent and 62 percent of farmers using improved seed for maize and groundnuts respectively. The study showed that both small- and large-scale farmers use seeds that are mostly sourced from local seed producers.

4.3.3 Use of organic compost

The study revealed that 99 percent of the farmers (both small-scale and commercial) did not use or make any compost from food waste. However, when commercial farmers were considered separately, compost-making was reportedly higher with 75 percent of them indicating that they made compost. When farmers make compost, the main source of materials are rape, spinach, pumpkin leaves and bean leaves. Other materials from which compost was made included manure from chicken faeces, groundnuts and soybean shells mostly obtained within the farm. The source materials for compost-making should be familiar to all farmers given that most of them indicated that they grew field crops. It was therefore unusual that most of them did not make any compost. One of the reasons could be the slow release of nutrients such as nitrogen and phosphorus (Golabi *et al.*, 2004; Muse; 1993, Eghball, 2001) where farmers do not see a quick and immediate effect on the crop from compost as compared to that observed with synthetic fertilizers. The IAPRI (2015) report indicates that use of lime was very low with a national average of less than one percent. This points to the need for continuous sensitization so that farmers can use lime in areas where soils are acidic and there is continuous use of nitrogenous fertilizer.

4.3.4 Use of fertilizer and agrochemicals

Small-scale farmers engaged in diverse productions are in line with existing national agricultural data which show small-scale farmers as key for ensuring food security in Zambia, but their farming inputs remain basic and most vulnerable to climate shocks.

Among the surveyed farmers, the type and amount of inputs related to soil fertility improvement are presented in Table 7.

In the city region there are still 61 percent of smallholder farmers with a diversified production that use synthetic fertilizer, only 32 percent using organic fertilizer and eight percent using compost. There is the need to raise awareness on the benefits of organic fertilizer and composting, especially in Shibuyunji district, where 78 percent of the sampled farmers are using synthetic fertilizer.

Type of fertilizer	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	CRFS
Synthetic fertilizer	54%	57%	59%	57%	56%	64%	59%	78%	61%
Organic fertilizer	39%	36%	35%	35%	36%	29%	25%	22%	32%
Compost	7%	7%	6%	8%	7%	6%	16%	0%	8%

Table 7

Percentage of respondent farmers using fertilizers [small-scale farmers engaged in production diversification] compared with the city region as a whole (FAO field data, 2016)

In the city region, most of the small-scale farmers engaged in production diversification are using agrochemicals to prevent and address pests, weeds and diseases. 70 percent of the respondents are using pesticides, 17 percent herbicides, 34 percent fungicides and only 20 percent are not applying any product. These proportions are particularly high in Chisamba and Mumbwa, where 91 percent and 89 percent of the respondents are using pesticides, and where only four percent and nine percent of the respondents are not using any chemicals. Lusaka, even though it is the least agricultural district, witnesses 52 percent of its farmers not using any chemicals. The quantity and application practices can have a huge impact on the water and soil, as well as the farmers' health.

Type	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	CRFS
Pesticides	48%	80%	91%	74%	76%	76%	89%	78%	78%
Herbicides	10%	32%	32%	15%	16%	6%	13%	11%	17%
Fungicides	24%	17%	49%	44%	32%	29%	44%	33%	34%
Nothing	52%	17%	4%	26%	22%	24%	9%	22%	20%

Table 8

Percentage of respondent farmers using agrochemicals [small-scale farmers engaged in production diversification] compared with the city region as a whole (FAO field data, 2016)

Indeed, access to information on the use of agrochemicals is not always granted. While in Chilanga and Mumbwa agriculture-oriented districts, farmers seem to have a better access to information (89 percent and 76 percent respectively), it appears to still be a challenge for small-scale farmers engaged in production diversification in Lusaka, Kafue and Shibuyunji districts.

Information access	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	CRFS
Yes	55%	56%	62%	89%	69%	57%	76%	57%	64%
NO	45%	44%	34%	11%	28%	43%	22%	43%	35%

Table 9

Percentage of respondent farmers accessing information on agrochemicals [the small-scale farmers engaged in production diversification in the city region] compared with the city region as a whole (FAO field data, 2016)

4.4 Conservation agriculture

In Zambia, there is a real push from government as well as international and local organizations for a transition towards low-input production systems, and especially towards conservation agriculture¹⁰ and organic farming.

Farmers in Zambia understand conservation farming to involve several key practices, namely: dry season land preparation using minimum tillage (examples include rippers or planting basins), crop residue retention, sowing and input application in permanent planting stations and crop rotation (Haggblade and Tembo, 2003). The planting stations are either rip lines or planting basins (made by hand hoe including the especially dedicated chaka hoe) during the dry season.

Organic farming is based on improved farming of crops and livestock that considers natural process. For instance, soil fertility is maintained strictly by using recycled and composted crop waste and manure. Further, pests, diseases and weeds are controlled by biological control, e.g. use of natural predators, or rotations; growth hormones are not used in livestock (Martin, 2009).

Conservation farming and organic farming among the surveyed farmers in the city region is low and does not seem to be a priority. Data further shows that only 28 percent of the farmers practised conservation farming. The type of farming practices included in conservation farming were ripping, pot holing, planting basins, use of chaka hoe, minimum tillage, crop rotation and mulching. The estimates in the percentage of farmers practising conservation farming are somewhat comparable with national estimates reported by Baudron *et al* (2016), which indicated that around 25 percent of farmers practice conservation agriculture in its fullest form. On the other hand, only around 9 percent of hand-hoe, small-scale farmers practise some form of conservation farming.

Table 10
Percentage of respondent farmers adopting conservation agriculture practices (the small-scale farmers engaged in production diversification) in the city region compared with the city region as a whole (FAO field data, 2016).

	Lusaka	Chibombo	Chisamba	Chitanga	Chongwe	Kafue	Mumbwa	Shibuyunji	CRFS
Yes	17%	32%	23%	22%	41%	20%	47%	20%	28%
NO	83%	68%	72%	78%	54%	80%	51%	80%	71%

¹⁰ Conservation Agriculture (CA) is based on three principles, namely: minimum soil disturbance; continuous soil cover; and crop rotation and diversification (Hobbs *et al*, 2008; Bhan and Behera, 2014). The aim of conservation agriculture is to assure high crop yields while addressing problems of soil degradation arising from farming practices that deplete organic matter and soil nutrients.

4.5 Quality of soil

As a consequence, the state of soil degradation was reported as being mostly low by both urban and peri-urban farmers. In urban areas, 93.5 percent of the farmers interviewed indicated that their soils are of poor quality in terms of health,¹¹ 97.5 percent in terms of erosion and 100 percent indicate soil pollution. Whereas in peri-urban areas, 45.8 percent indicated that their soils are of poor quality in terms of health, 78.9 percent in terms of erosion and 93.5 percent indicate soil pollution. This indicated that most soils require continuous amendment and conservation to maintain their productive capacity. Farmers generally use fertilizers in areas where the soil fertility is regarded to be low. Other practices promoted are compost use and conservation farming. Further, the impact of chemical use on food safety remains unclear as no tests nor documentation exists.

Soil quality aspects	Location of farmers	Level of perception	CRFS (%)
Health (organic component)	Urban	Low	93.5
		Medium	4.0
		High	2.5
	Peri-urban	Low	45.8
		Medium	36.2
		High	18.0
Erosion	Urban	Low	97.5
		Medium	2.2
		High	0.3
	Peri-urban	Low	78.9
		Medium	17.6
		High	3.4
Pollution	Urban	Low	100.0
		Medium	0.0
		High	0.0
	Peri-urban	Low	93.5
		Medium	4.0
		High	0.9

Table 11

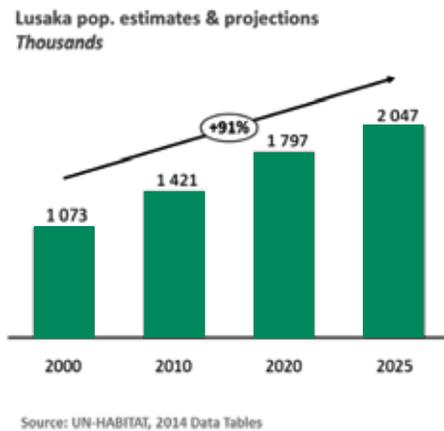
Perception of respondent farmers on soil degradation (FAO field data, 2016).

¹¹ In terms of chemical, physical and biological conditions.

4.6 Access to land

4.6.1 Urbanization vs. agriculture

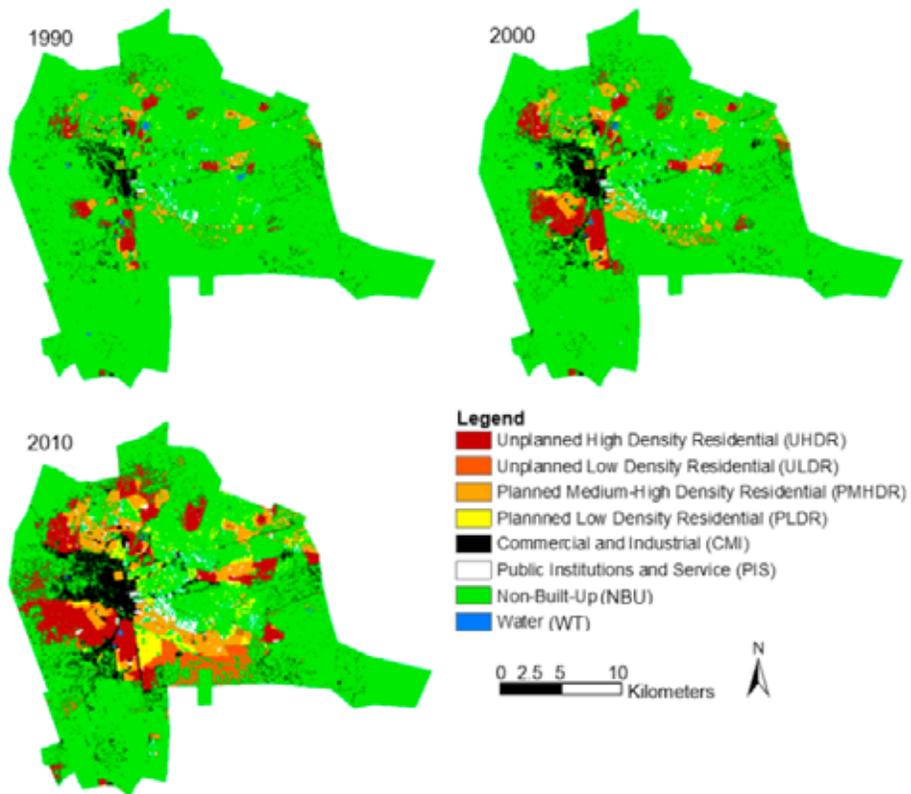
Figure 7
Lusaka population figures.



Lusaka's population density is high, at levels of up to 1 500 persons per hectare and an average population density of approximately 150 persons per hectare. Between 2000 and 2010, the city's population grew 4.9 percent per year and, according to UN-Habitat, Lusaka is among the five cities in Africa that will grow fastest in the next 10–15 years¹².

As a result, urban areas are spreading into agricultural areas and natural resources, threatening the local food supply and livelihoods of local farmers.

Figure 8
Urban land-use maps of Lusaka District in 1990, 2000 and 2010



Source: Integrating geospatial techniques for urban land-use classification in the developing sub-Saharan African city of Lusaka, Zambia. Matamyo Simwamda and Yuji Muruyama, 2017.

¹² <http://www.futureclimateafrica.org/wp-content/uploads/2016/04/FCFA-Lusaka-Baseline-Report.pdf>

4.6.2 Ownership of the land

In Zambia there exists a dual set of land allocation systems: a customary tenure system managed by tribal elders and headmen and a system of leasehold state lands managed by the central government's Ministry of Lands. Over time, population growth in the customary areas is leading to land pressure and land fragmentation. This increases the difficulty in obtaining contiguous land allocations of sufficient scale to support commercial farming. Ultimately, customary land authorities will need to devise systems for consolidating land holdings and transferring use rights in blocks of sufficient scale to permit commercial farming. Increasingly, commercialized smallholders are transferring their customary usufruct rights to leasehold tenure systems as permitted under the 1995 Land Act, even though the procedure can be bureaucratic, long and costly. In the meantime, commercial smallholders rely on inheritance and mobility to ensure access to land. Over time, as farmers move to high-value agriculture – such as horticulture, poultry and dairy production – land requirements fall. Therefore, land constraints affect primarily the low-road farmers trying to scale up cultivated area sufficiently to generate a prosperous existence from low-value crops such as cotton and maize. Even under smallholdings, commercial smallholders will face increasing need to access valuable forms of collateral, such as land. The 1995 Land Act may help to facilitate this transition [IAPRI, 2012].

4.6.3 Access to land in the city region

This distribution of land tenure systems has major implications for protection of farmlands and sustainable food production in the Lusaka City Region. Much of the land in the study area [outside Lusaka city] remains under traditional customary tenure. As such, traditionally owned farmland has been lost to urban development in the region at a high rate. This makes it more complicated, given that land-use planners and state regulations currently lack adequate mechanisms to control land transactions in customary areas.

Some of the identified conflicts in land use in the city region relate to competition in accessing adequate water resources for agricultural production (Interview, Lusaka City Official, 2016). It is common to see new urban development activities displace old farm activities, especially livestock such as poultry and small ruminant animals (Interview, Lusaka Province Planning Office, 2016).

The nature of land ownership is a major factor in high poverty rates and it shapes food production systems and processes in the study area. Since farmers' livelihoods are mainly dependent on land, tenure arrangements may influence food production by influencing access to capital. Most of the land held under customary tenure is normally not recognized as collateral by financial institutions, thus limiting access to credit by small-scale farmers. While it is possible to change from customary tenure to leasehold, the procedures can be very lengthy. This may discourage farmers from acquiring title deeds obtainable once land held under customary tenure is converted to leasehold. The main effect of land tenure on conservation is that the level of land conservation practised by farmers is influenced by security of land tenure as was reported by several studies (Idoma and Ismail, 2014; Place *et al.*; Tenaw *et al.*, 2009).

Specifically, in the city region, small-scale farmers already engaged in some diversified production activities seem to mostly own traditional land [62 percent], threatening the security of their land and livelihoods (as explained above). This phenomenon seems to be even more important in Mumbwa and Chisamba districts [87 percent and 78 percent of the smallholder diversified farms], while in Chilanga, most of these farmers have purchased and own state land [63 percent].

Table 12

Percentage of access to land for small-scale farmers engaged in diversified production (FAO field data, 2016).

Type of tenure	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	Total
Purchased	45	7	9	63	11	6	4	2	15
Inherited	24	26	10	11	21	31	7	6	17
Leased	14	5	4	18	3	2	2	15	7
Traditional	17	62	78	11	66	61	87	77	62

4.7 Access to water

Farmers have very different perceptions on their access to water in the city region. 64 percent of the smallholder farmers engaged in diversified production that were interviewed indicate their access to water to be easy, while access seems more difficult for 36 percent. The two most urban districts, Lusaka and Chilanga, seem to provide easy access to water for farmers (93 percent and 85 percent are satisfied respectively). On the contrary, farmers in Chisamba, Mumbwa and Shibuyunji districts are not satisfied with their access to water, indicated as difficult by 58 percent, 50 percent and 41 percent respectively. In Mumbwa, 27 percent of the respondents did not have any access to water at less than 200 metres from the farm. These three districts being the most agricultural ones, which poses a problem for small-scale farmers to increase their yields and improve livelihoods.

Table 13

Main sources (in %) of water for small-scale farmers engaged in production diversification (FAO field data, 2016).

	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	Total
Wells	20	97	84	22	13	18	58	37	47
Dams	0	0	0	17	4	38	0	11	10
Streams	5	0	11	17	43	3	29	7	13
Rivers	0	0	5	0	22	40	3	15	12
Groundwater	60	3	0	39	17	3	10	15	15
Rainwater	0	0	0	0	0	0	0	4	0
Other	15	0	0	4	0	0	0	11	3

Table 14

Perception of small-scale farmers (in %) engaged in production diversification on their access to water (FAO field data, 2016).

	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	Total
Easy	93	80	58	85	57	63	50	41	64
Difficult	7	20	42	15	43	37	50	59	36

	Lusaka	Chibombo	Chisamba	Chilanga	Chongwe	Kafue	Mumbwa	Shibuyunji	Total
<50	76	66	69	81	60	78	61	65	69
50–200	21	25	15	19	23	8	11	17	17
200–600	0	9	12	0	6	12	16	15	10
>600	3	0	4	0	11	2	11	2	4

Table 15

Distance to a water source for small-scale farmers (in %) engaged in production diversification (FAO field data, 2016).

4.8 Summary of findings on food production

Key messages:

- Nearly half of the population is engaged in some form of agricultural production in the city-region.
- Fresh produce (vegetables) is mostly sourced from within the city region – Chibombo, Chisamba and Chongwe are key sources of fresh produce.
- There is minimal diversification in farming activities and practices
- Lusaka makes proportionally small contribution to the national food basket
- Most farmers are small scale and depend on small holder farms
- The practice of conversation and organic farming is very low in the city region.

Key area of interest:

Types of food production: Meat and dairy are major components of the food basket in the city region and it is a low producer of fruits and vegetables compared to the rest of the country (for vegetables, 45 percent of the farmers in the city region vs. 86 percent in the country). Maize and chickens seem to be most common food products in terms of number of agricultural households, though there is some specialization between the districts. Although Lusaka District has the lowest number of agricultural households, it seems to be specialized in vegetable production, with 56 percent of its agricultural households producing these horticultural products. Maize and field crops in general are the most dominant but fruits and vegetables constitute an important diet component in the study area. Most of the interviewed farmers produce either fruits and vegetables or livestock. Integrated production and levels of production diversification remain low.

City growth and expansion: Between 2000 and 2010, the city's population grew 4.9 percent per year and, according to UN-Habitat, Lusaka is among the five cities in Africa that will grow fastest in the next 10–15 years. This pattern will continue to threaten food production around the city and weaken land tenure security for smallholder farmers.

Diversity in food production: Despite the good agro-ecological conditions of the region, production diversification is still low in the city region, with for instance a lower production of fruits and vegetables than the national average. Maize is the main food item that is supported and incentivized by the government and it still remains produced by small-scale farmers.

Production practices: Agricultural practices in the city region could be improved, for better soil and water management and higher yields. For instance, integrated production systems could be more important, stressing the importance of both livestock and crop production on the farm, especially in terms of soil management and livelihoods diversification. Most farmers use synthetic fertilizers and agrochemicals, and access to information on their safe use or on alternatives can be difficult. Heavy

use of agrochemicals has an impact on farmworkers' health and on the soil quality, as indicated by interviewees' perception of their soils as poor and polluted. Even if it still remains secondary, conservation agriculture practices seem to be growing, and awareness towards more sustainable practices is rising. The government, through the upscale of the FISP programme and its expansion to 10 new crops other than maize, is also pushing towards the direction of crops diversification.

Land tenure and access: Access to land for smallholder farmers and tenure security remains a challenge. With most of the land owned being customary, farmers have poor access to credit, and often have access only to fragmented pieces of land preventing the development of commercial farming systems and increasing costs of production. Even if the government is pushing for farmers to convert traditional land to titled land, the process can be long, bureaucratic and costly. The development of the new land policy is anticipated to provide support to traditional land owners and facilitate the conversion.

5. Food processing, distribution and retailing in the city region

The food supply to urban areas in Zambia is based on a diverse range of producers, traders, intermediaries and consumers, all of whom operate within a broader context of local, national and international formal and informal institutional constraints and influences. Food commodity supply systems in the Lusaka City Region differ from commodity to commodity and change shape seasonally. Value addition in the food sector is key to ensure a sustainable food production and supply system and creation of quality, agricultural-based jobs. This section aims to analyse the food value chain, more especially the food processing and food distribution systems.

5.1 Food processing and manufacturing

5.1.1 Processing and manufacturing industries in Lusaka city region

Processing means changing a product's original form, presentation and substance. Processing may occur several times before a given foodstuff is consumed, in advance [after harvesting] or just before the product reaches the consumer [in a food processing unit, a restaurant or as street food]. In general, processing costs vary according to the efficiency of the organization doing the processing, the processing facility's throughput and the frequency of its operation. It also varies according to the organization's costs, which depend on factors such as fuel costs, depreciation costs, import duties, taxes and wages.

In the Lusaka CRFS, most products come from small-scale farmers and are sold raw with very little value addition, either at the Soweto wholesale market or at one of the many markets scattered around the city. No basic preparation (e.g. washing, cleaning or sorting) or secondary preparation (e.g. dicing) is done either on farm or at the market.

There are few local small-scale vegetable assemblers adding value to produce by bulking and transporting vegetables within the districts under study as well as Lusaka city and a few exporting to markets such as Congo DR. Some supermarkets ensure that local processors adhere to safety and quality standards such as Hazard Analysis Critical Control Point [HACCP] for processors. Some supermarkets such as Pick n Pay, conduct trainings for processing firms and schedule appointments for inspection with processors [personal communication with processing firm]. Other supermarkets (such as Shoprite) focus more on the quality and packaging of the products.

However, most processing and manufacturing operations are done by a few large-scale food processing companies such as Neelkanth [formerly Freshpikt] (vegetable processing) and ZAMBEEF [meat processing] in Lusaka. In the following paragraphs, the report provides brief information on processing of two key food products: vegetables and meat.

5.1.2 Processing of horticultural products

Neelkanth is the only large-scale processor of horticultural produce in Zambia. They can process up to 80 tonnes of tomatoes per day and 800 tonnes of beans per year (see product samples in Figure 9). In addition, Rivonia processing plant requires between 3 to 5 tonnes per week of the same commodities. However, the plant is equally insufficiently supplied [2015/2016 season – time of interview]. With tomato ketchup and sauces imports standing at USD 9.217 million at 2014 and a growth trajectory, there is a good market for processed vegetables in Zambia and the outside world.

Most produce comes from Neelkanth's own farm, but the company seems to buy more and more from farmers, including smallholder farmers. Neelkanth could process more quantities if supplies of raw materials are stable all year round. However, Neelkanth demands a high level of quality and have not fully bought into working with smallholder farmers. For example, with tomatoes, Neelkanth requires four percent solids content in most of what they buy and smallholder tomatoes/tomatoes bought in Soweto reportedly have about two percent solids, which is too low for canning. Research in 2006 suggested that if smallholder farmers' groups can improve the quality, quantity and timeliness of their produce then there are very real possibilities for partnerships with Neelkanth (Hichaambwa and Tschirley, 2006). This is still true today.

Figure 9
Neelkanth's
horticultural
processed
products



[Source: Facebook]

From 2011 to 2016, Neelkanth was engaged in a Global Development Alliance project funded by USAID, the Commercial Agribusiness for Sustainable Horticulture (CASH) project. This project aimed to work with “over 5 000 smallholder horticulture producers and processors in Eastern and Lusaka provinces to increase productivity, income, and employment, while strengthening their ability to meet market standards and access market opportunities”.¹³ Its actual impacts still need to be identified.

5.1.3 Processing of meat products

There are many actors processing meat. Most of them are private urban abattoirs, basically slaughterhouses that either buy cattle directly from farmers or offer a slaughtering service to traders and local butcheries at a fee (cattle, goats and sheep). Thus, slaughterhouses are important actors in the meat value addition subsector. Most producers sell directly to abattoirs (Lubungu, Sitko, and Hichaambwa, 2015).

Although some abattoirs are registered at the Municipal Council, many are just an open space without any infrastructure. Most urban abattoirs have therefore typically poor

¹³ <https://www.globalwaters.org/HowWeWork/Activities/commercial-agribusiness-sustainable-horticulture>

conditions, and the lack of a cold chain makes it imperative that animals are killed close to the point of consumption. In addition, many animals are not inspected and even when problems are found veterinarians find it difficult to ensure condemned meat is discarded. If an animal is condemned by veterinarians as unfit for human consumption, middlemen lose their entire days' earnings, so they strongly resist attempts to condemn meat. Therefore, abattoirs can be a source of serious health concerns to the consumers, mostly the poor. [See also section 5.3]

Large feedlots own their own abattoirs and have vertically integrated up to wholesale or retail level. These slaughter facilities are inspected by the Department of Veterinary Services. Among the key meat processors, Zambeef Group is the largest in Zambia and is involved at all levels of the food value chain, processing beef, chicken, pork, milk, dairy products, eggs, stock feed and flour. Zambeef's size allows it to enjoy substantial economies of scale, while its vertically integrated structure enables it to control every step in the supply chain.

Zambeef Group has six abattoirs and three feedlots located throughout the country. It has storage facilities and modern processing equipment to guarantee the quality of their products.

Zambeef claims that 80 percent of the cattle and pigs that they process are bought from small-scale farmers. Only specific breeds, and not local ones, can supply the feedlots. This implies that farmers need to change breeds, meet certain criteria in their management of livestock and ensure that their steers are free from diseases and parasites. They ought to have been vaccinated from all diseases and outbreaks prevalent in the area [Interview respondent, October 2016]. The vast majority of Zambeef products are retailed directly to end consumers, in a value-added form, through the group's extensive retail distribution network.



Figure 10

Zambeef food production (FAO field data, 2016).

5.2 Food distribution and marketing

5.2.1 Wholesale, retail markets and street vendors

Market opportunities: Farmers indicated that they sell their produce in both urban and rural areas [field surveys]. 37.2 percent of the farmers reported that they sell their produce in urban areas [Lusaka], while 32.7 percent of the farmers sell their produce in both rural [peri-urban areas] and urban areas including Lusaka and other towns outside the city region. The remaining 30.2 percent sell within the rural or peri-urban areas either at the farmgate or at local markets. Most farmers in Mumbwa favour the rural or peri-urban markets to supplying the Lusaka City Region maybe due to proximity to urban markets.

According to the survey conducted to better understand the farmers specifically engaged in production diversifying for horticulture and/or livestock production, 37 percent of the farmers sell their produce in urban areas [Lusaka], while 33 percent in both rural [peri-urban areas] and urban areas including Mongu, Kitwe and Ndola, and a further 30 percent in rural or peri-urban [Chongwe, Chibombo, Mumbwa, Shibuyunji, Kafue, Chisamba, Chilanga] areas [Figure 11 and Table 16]. Some of the products were sold at the farm-gate and at local markets in each of the districts included in this study.

Table 16
Markets for
produce (FAO
field data,
2016).

District	Urban Area	Urban and Peri-Urban Areas	Peri-Urban
Chibombo	15	23	12
Mumbwa	4	15	30
Chilanga	26	9	14
Chongwe	13	21	17
Kafue	23	15	13
Lusaka	47	2	1
Shibuyunji	12	22	15
Chisamba	8	23	18
Total	148	130	120

At least 50 percent of farmers claimed to be located within a 15-kilometre radius to markets, while nearly 20 percent have their markets located in the range of 15 to 30 kilometres away from their farms. Nearly 15 percent of the farmers claimed to be within the 30 to 50-kilometre distance range to markets. The remaining 15 percent of the farmers had their markets more than 50 kilometres away from their farms.

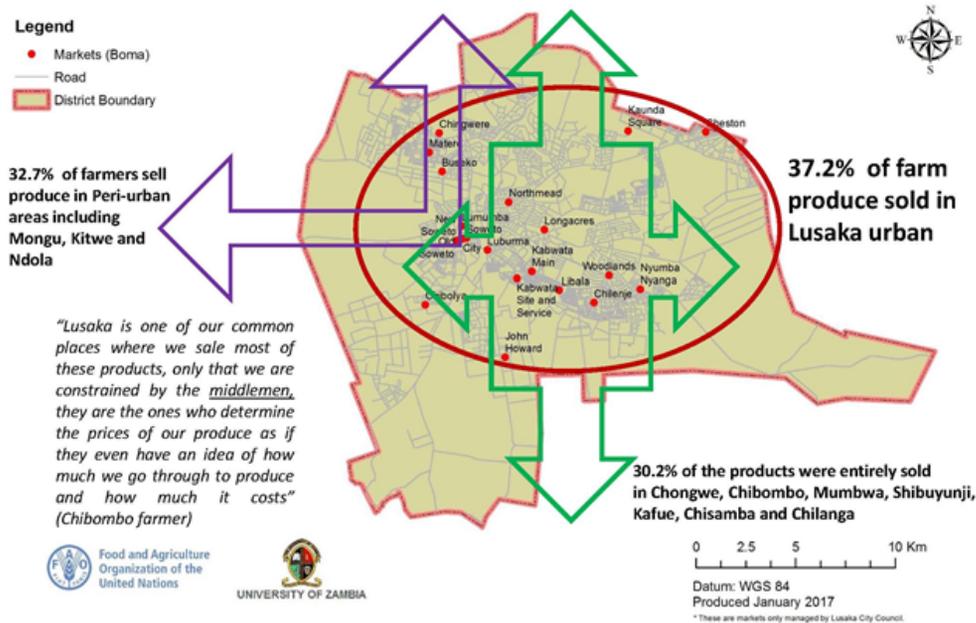


Figure 11

Food marketing and distance to markets in the city region [FAO field data, 2016].

Market outlets for general food distribution is ensured through two main channels:

- Local markets: around 100 in Lusaka, many in the other districts (Figures 11, 12 and 13). They feed most of the inhabitants in the CRFS. Markets are registered at the Municipality Council; most of them are cooperative markets and a handful are administered by the Council. They are popular to all classes of people (low, middle and upper classes).
- Supermarkets: have been developing very rapidly over the past years, especially in Lusaka.

Market outlets for fruits and vegetable producers: For more than 50 percent of the surveyed farmers the most common marketing channel for the farmers are the retailers, while wholesale is the main channel for only five percent of farmers and processing for only 2.5 percent of the farmers. This shows that most of the fruits and vegetables from local farmers have little value addition other than minor cleaning and packaging.

Market outlets for livestock producers: For the meat that is marketed through small traders, it is usually sold in informal markets to market traders who later sell to household consumers or supply the butcheries located in low-income areas. The meat slaughtered from independent abattoirs is sold to wholesale butcheries within Lusaka city who later sell to butcheries or outlets within the city and supermarkets; this channel of retail usually targets the middle- and high-income earners. Thus, the small-scale livestock farmers who engage little in meat processing have no defined formal channel for the meat market and distribution system. In addition, feedlot/independent abattoir operators have integrated further down the value chain and sell beef directly to consumers through their own retail outlets and also supply major supermarkets as is the case with Zambeef, which exclusively supplies all Shoprite stores in Lusaka. The channels of marketing therefore differ for standard beef, commercial beef and choice beef. Choice beef always ends up in supermarkets and independent outlets that target the middle- and high-income consumers while the standard and commercial beef is sold in informal markets and butcheries targeting low-income earners.

Figure 12 Formal and Informal Food Markets in Lusaka City Region

Location of markets for main food products (FAO field data, 2016).

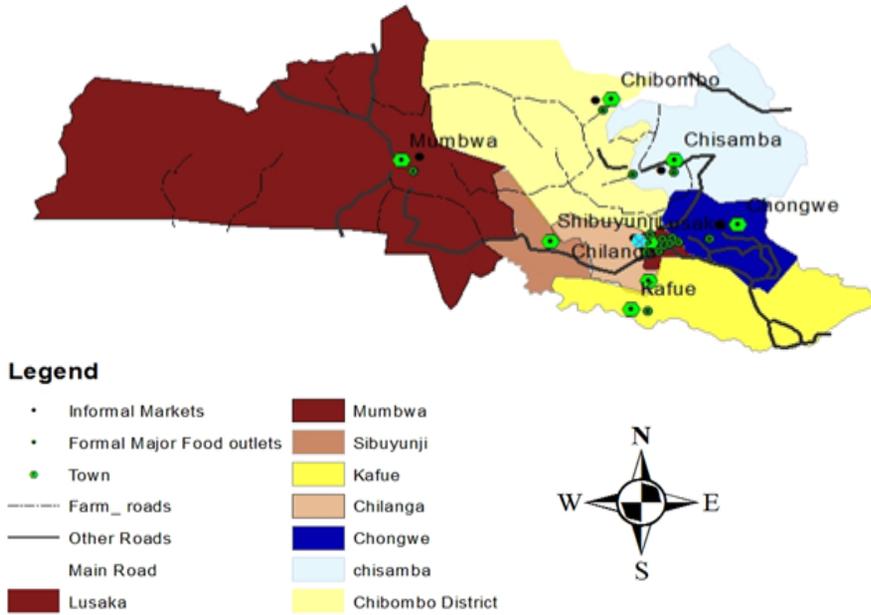


Figure 13 Distribution of food markets in Lusaka (FAO field data, 2016).

Distribution of food markets in Lusaka (FAO field data, 2016).

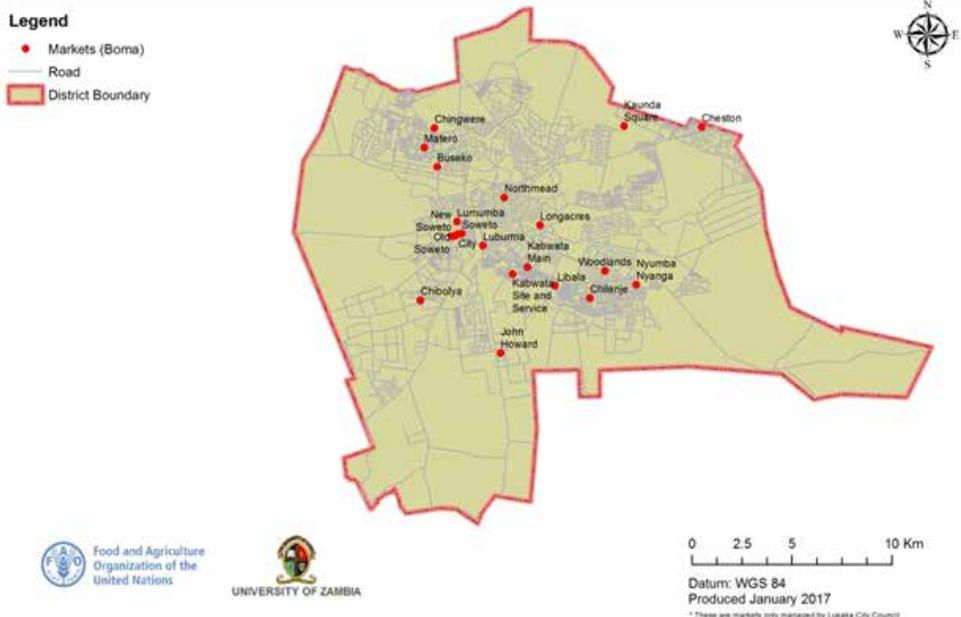


Figure 12 and 13 picture the channels for distribution of fresh produce in Lusaka town and city region.

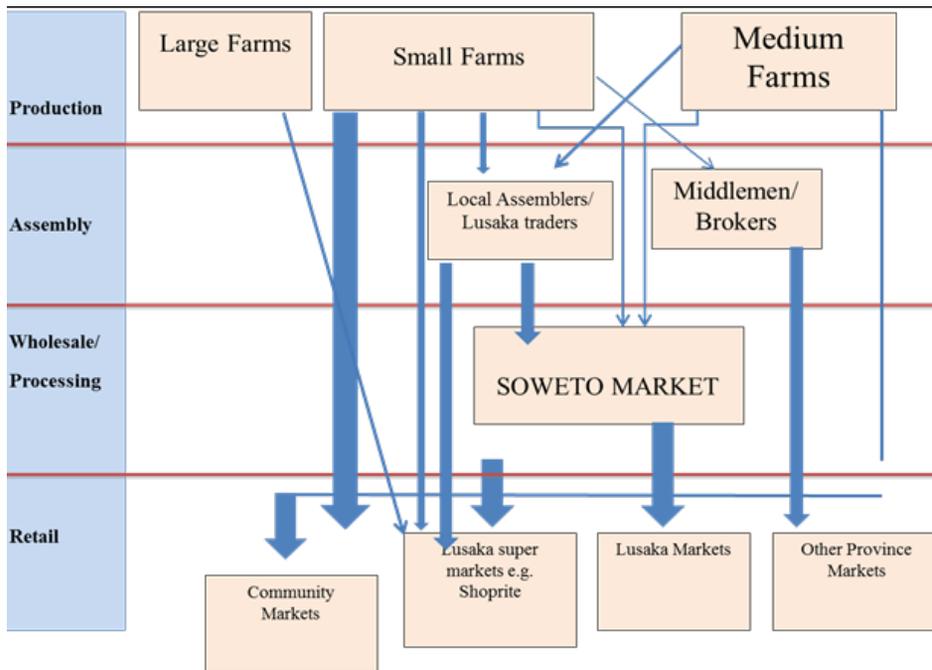


Figure 14
Distribution of fresh produce
(Adapted from IAPRI, 2012).

Figure 14 describes the main distribution channels for fresh products in Lusaka city region, while figure 15 shows the main food flows in the region through the wholesale, which, in this case, is related to the Soweto market that works as main wholesaler and retail market for Lusaka. It is evident that most of the fresh food supply and distribution channels pass through Soweto market.

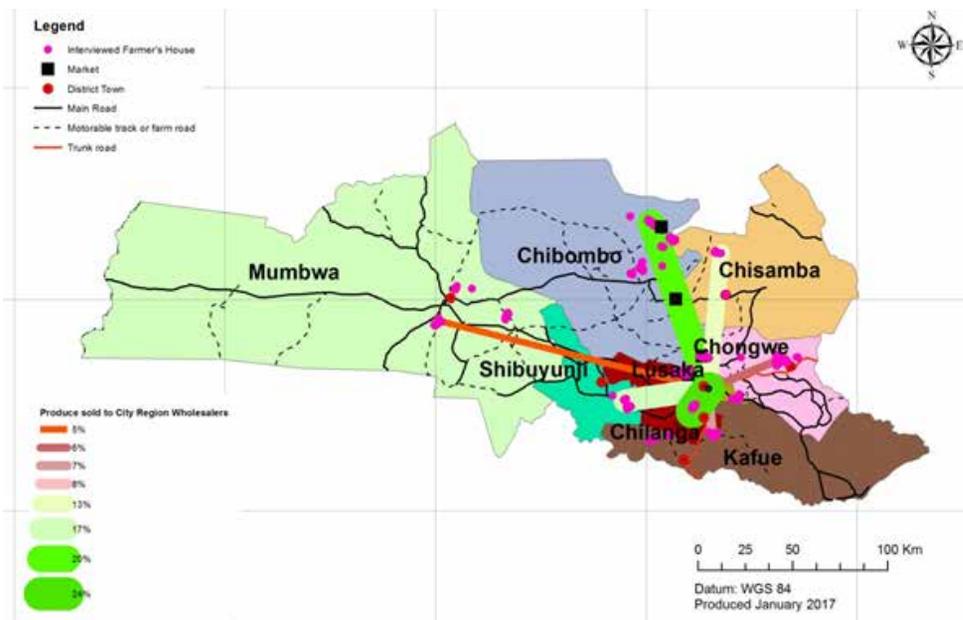


Figure 15
Monthly food proportions sold through wholesaling
(FAO field data, 2016).

For many years, urban and peri-urban market centres (found in almost all residential compounds and in the Central Business District of Lusaka) have provided a major market outlet for both large, medium and smallholder farmers. Built-up market centres such as Soweto and Lumumba in Lusaka are commonly referred to as the 'Stock Exchange', because of their significant effect on the prices and volumes traded.

The role of Lusaka's Soweto market: This market is the largest sale point for fresh produce where households, public market vendors and street vendors purchase produce. The market receives food commodities of all types from within the city region, beyond the city region but within Zambia and is the point of sale for various food imports such as apples and bananas among others. It is critical to spreading fresh produce within the city. It is run by middlemen/marketeers and with very specific rules, including the impossibility for farmers to sell directly to consumers, but without any formal system to monitor prices, safety or quality. Just like the other markets in the city, it lacks infrastructure, from cold chain to sanitation facilities. This type of (dys) functioning makes it difficult for farmers as they struggle to get a good price for their products. Indeed, according to Blekking *et al* (2017, p.2191), "the producer-marketeer interaction provides the greatest price increases within the city's overall food system". Much effort is needed to improve the governance of these markets for them to meet the needs of the population, especially the low-income households.

Issues to address: Common features of these urban food markets are that they lack basic infrastructure and may pose serious health concerns: food escapes effective health and safety regulations; many retailers do not pay tax and some are not licensed; traditional processing, products and retail practices predominate; infrastructure, including water, electricity, sanitation and refrigeration, is lacking; and little support is provided from the public or the non-governmental sector. The market environment can get extremely dangerous and a hub for bacteria and diseases, especially in the rainy season. Figure 16 presents a sample of food products found at most open-air markets in Lusaka city region.

Figure 16
Marketing of
meat, fish and
horticultural
products at
Soweto market
(FAO field data,
2016).



Informal markets: In areas lacking formal governance, vendors can operate and fill needed roles within the food system. They sell fruit and vegetables but also meat products. Many livestock products end up as street food. Street food is a source of inexpensive and convenient food and is especially important for the poor who lack resources to buy food from formal markets. Lower-cost livestock products are popular types of street

food. Vendors sell sausages, pork joints, chicken feet and heads. Sometimes these products are sold ready-cooked. The majority of street food processors and vendors are women while most customers are men.

5.2.2 Role of marketeers

Marketeers are agents who arrange sales without taking ownership of the commodity, earning their money on a commission. In theory, they can improve the efficiency of the market by gathering information on sellers and buyers in a transparent manner when bilateral search between buyers and sellers happen at too high a cost. However, these efficiency gains depend very much on the behaviour of marketeers, and whether they have enough power to hide information and influence prices. As a result, in Lusaka's market, their presence remains controversial as farmers have mixed opinions of brokers: some see them as solely profiting from their intermediary position by manipulating prices; others believe that they provide some level of services, such as greater security and sales opportunities for their product.

Marketeers behaviour is very much influenced by the governance mechanisms within Lusaka's food system. Two main types of market exist: city council markets, like Soweto, and cooperative markets. Soweto is the main entry point for fresh food. The arrangements governing the market stipulate that producers must use the service of marketeers and not sell directly to buyers. Producers and marketeers then agree on a commission which could be as high as 10 percent. This is where the greater price increases occur within the food system [Blekking *et al*, 2017]. As a consequence, the role of marketeers and the services they actually provide, and more broadly how markets are governed and regulated within the city, remain a major weakness of the food system.

5.2.3 Supermarket chains as key food distributors in the city region

There has been an expansion of supermarket chains in Zambia and these make up the majority of retailers for the horticulture-processed foods. Key supermarkets include Pick and Pay, Shoprite, Spar, Melisa, as well local wholesales and kiosks. The supermarkets all have a meat section, fresh fruit and vegetable section as well as shelves for processed fruit and vegetable products. They are spread within the city (Figure 17). These may be sourced locally and the supermarkets ensure that the suppliers meet the set standards. However, supermarkets explain that they also stock a high percentage of imported fresh fruits and vegetables from countries like South Africa and Zimbabwe.

Figure 17
Distribution of
supermarkets
in the Lusaka
CRFS (FAO field
data, 2016).



Shoprite

Shoprite Holdings is one of the largest fast-moving consumer goods retail operations on the African continent. Its chain of outlets under the Shoprite Checkers brand, which is Zambia's number one retailer with around 3 000 employees, is this year celebrating its 22nd anniversary from the time it entered the Zambian marketing by opening its first outlet on Cairo Road in Lusaka on 26th October 1995. It has grown from a single outlet to a network that covers Manda Hill, Chilenje, Matero, Mtendere Mtendere, Avondale and the mega save outlet on Kafue Road in Lusaka alone; Chingola; Chipata; Kitwe; Kabwe; Kasama; Mongu; Livingstone; Luanshya; Mansa; Mazabuka; Mufulira; Ndola and Solwezi across all the ten provinces of the country.

Shoprite is a key distributor of food in the city region. For instance, from 2015, potato growers have been able to supply Shoprite with seven million kilograms of potatoes per year. Shoprite is also facilitating the export of mangoes to Botswana as its commitment to promote local produce. Interview data shows that the growth of the linkages between farmers and Shoprite is based on Shoprite's increased training of farmers on quality measures. Shoprite requires good quality vegetables in terms of freshness, colour uniformity and disease-free. These vegetables have to be delivered in time and in correctly agreed quantities. Thus, the need for capacity building in the farmers is crucial. To assist emerging farmers, Shoprite has invested heavily in food safety training. The supermarket chain also has planning and growing programmes in place to assist farmers to produce fruits and vegetable supplies all year round.

Freshmark

Freshmark is the fruit and vegetable procurement and distribution arm of Shoprite, a regional grocery store chain. Freshmark has been wary of working with smallholders because experience has shown little success. However, they are currently working with a very small number of smallholders close to Lusaka, and there is potential for partnerships if a smallholder group could establish the quality, quantity and timeliness required to gain the trust of a larger wholesaler like Freshmark. Freshmark sometimes

supplies farmers with free vegetable seedlings – but no other inputs – and are then obliged to sell the produce to the supermarket chain, thus creating some sort of an out-grower arrangement. Supplying farmers with free seedlings is a way of encouraging them to ensure that they stick to good agricultural practices. It also assures farmers of a market.

Once the crop was ready for harvest, farmers have made prior enquiries if Freshmark was able to buy. Freshmark was then informed about the availability of vegetables. Farmers provided a sample for quality assessment after which an order would be made. Supermarkets had no fixed days on which to buy vegetables and farmers could supply any day. The quantity of vegetables procured by supermarkets depended on demand from the public. It was common to supply every two days but if shops had enough vegetables, the farmer would be advised not to supply. Farmers arrange to transport vegetables to the supermarket.

Spar

SPAR Zambia Ltd is a joint venture established between Innscor International of Zimbabwe and Platinum Gold Zambia Ltd. The company was registered in 2003 and commenced trading in December of that year with the first store at Arcades Shopping Centre in Lusaka. From cabbages to washing power, and from honey to biscuits – some 70 percent of the products sold by SPAR in Zambia are sourced locally, the company has revealed. And using reputable local companies grows the Zambian economy, supports local employment and creates sustainable business relationships, according to the Private Enterprise Programme-Zambia (PEPZ). SPAR Zambia has been working to support suppliers in the improvement on their packaging and distribution. Zambian products sold by SPAR range from flour and vegetables to cereals, eggs, milk and rice.

Melissa

Melisa is a local supermarket that has been in Zambia for over 23 years to date. As a local company, it puts a lot of emphasis on raising awareness about local produce and production.

Food Lovers' market

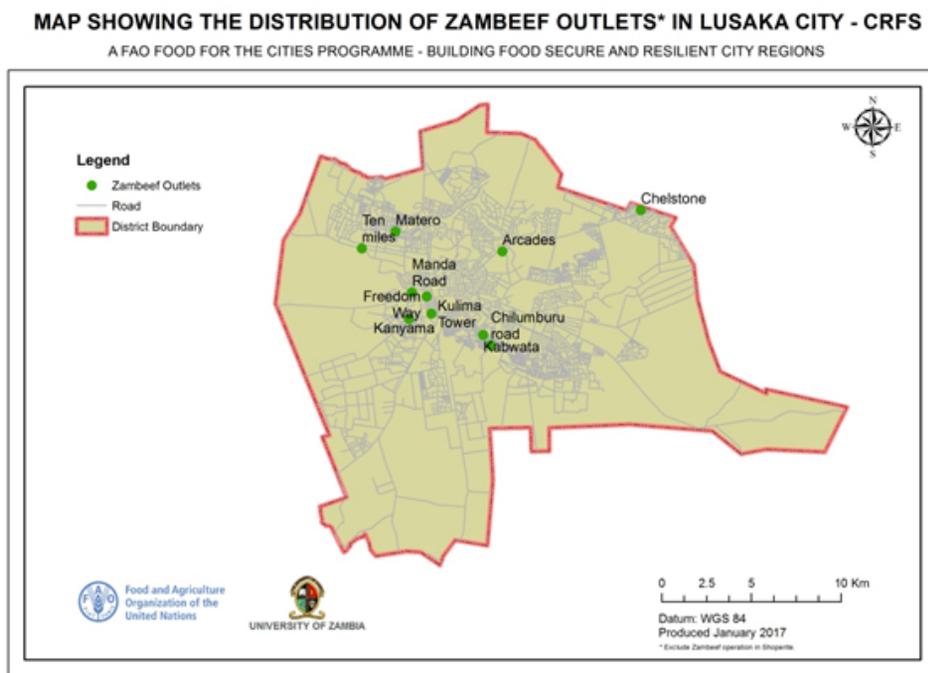
Local Food Lovers management indicated that 'they did not deal directly with farmers in the procurement of any farm produce that is sold in the supermarket, but through a sister company, Freshmark that mediates between the two parties. This intermediation is driven by quality control needs. According to Food Lovers' market, smallholder vegetable farmers supply 10 percent of their total vegetable requirement.

Zambeef

Zambeef distribute its products through its one outlet network and has contracts to supply the supermarket chain Shoprite. In total, it has 140 retail outlets in Zambia: 83 retail outlets, ten macro stores, four fast-food outlets, ten Novatek outlets, two Zamshu outlets and 31 Shoprite butcheries. The Zambeef Products Annual report for 2017¹⁴ shows that 44.9 percent of Zambeef's turnover is through its extensive retail network. Figure 18 shows the distribution of Zambeef outlets in Lusaka. The majority of the Zambeef outlets are located in high- to medium-income areas. The figure shows that, despite having a large population proportion for Lusaka, informal settlements such Misis, Mahopo and Kalikiliki do not have Zambeef outlets. Thus, the majority of the city's population does not have direct access (geographical distance) to Zambeef products. Location of food distribution outlets has an impact on what people buy and consume in the city region.

¹⁴ <http://www.sbz.com.zm/sites/default/files/Zambeef%20Products%202017%20Annual%20Report.pdf>, 29/03/2018

Figure 18
Zambeef food
outlets (FAO
field data,
2016).



5.2.4 Innovative retailers: example of Sylva Food Solutions

Sylva Food Solutions is a retailer and exporter of dried vegetables and a promoter of consumption of nutritious local vegetables such as rape, amaranth and sweet potato leaves. For a small training fee they would work in a community to train farmers on post-harvest vegetable processing, including drying, grading, packaging and cooking vegetables. The training costs included one export-quality, metal solar dryer and once the training had ended, Sylva signs a memorandum of understanding (MoU) where the company agrees to buy produce from the farmers if it is of the required quality. This could be the best opportunity for farmers as Sylva has no minimum weight or bag requirements for purchase. If project farmers can get their produce to the Sylva processing facility and it is of acceptable quality, they will be able to sell regardless of quantity. Products include: dried vegetables, pumpkin leaves, cowpea leaves, black jack, okra, bean leaves, sweet potato leaves, dry cassava leaves, mushrooms, mopani worms (caterpillars), dry sweet potatoes, shelled groundnuts, dry beans, millet powder, pumpkin seeds and cassava powder.

5.3 Constraints and opportunities in specific value chains

5.3.1 Livestock

Checks and inspections: Before a smallholder producer can sell an animal to the abattoirs, traders and commercial buyers, the farmer first needs to get clearance from the village headman, who ascertains that the farmer is the rightful owner. Once that is done, the police will issue the anti-stock theft clearance at a fee. The Department of Veterinary Services carries out a physical inspection as well as a pregnancy diagnostic

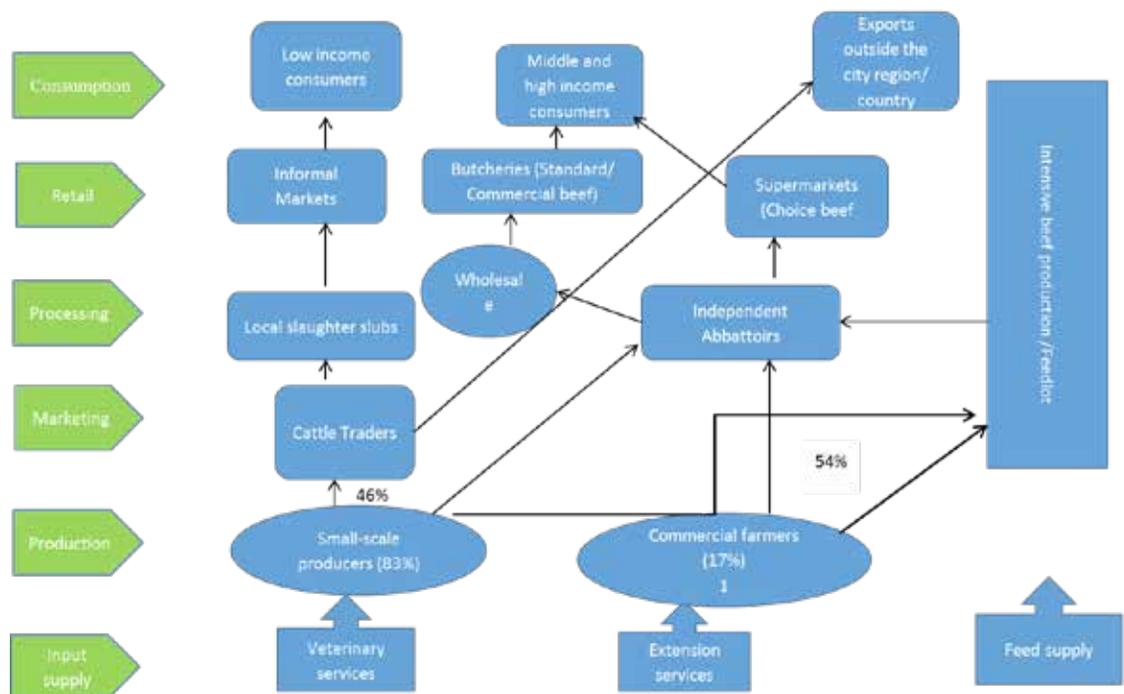
inspection for cows. Only healthy and non-pregnant animals are cleared for sale or slaughter. Once the cow is slaughtered, the carcass and offal are inspected by health inspectors and all the condemned carcasses are discarded. Over 80 percent of the offal is condemned, thus reducing the overall value of the animals.

Lab testing: In the case of large firms like Zambeef and butcheries in the same category, samples are taken from the carcass for testing at the lab and the firms have to meet the cost of these examinations. Currently there is only one testing laboratory situated in Makeni [Lusaka] that caters for the whole country.

Preference for larger-scale producers: From the foregoing description of the livestock value chain, it is clear that the chain governance mostly lies with the traders and retailers – the supermarkets and independent butcheries and outlets. The retailers deal with already processed meat which they further repackage and slice into small cuts to suit household consumers. As such they require meat products that adhere to strict quality and food safety standards. This is because in an event that they are found wanting by the institutions that regulate such food markets, they may end up losing their license. Therefore, they have to purchase from reputable wholesale sources as opposed to the beef that is marketed through small-scale traders. Procuring from large-scale producers helps such retailers and processors to avoid transaction costs associated with doing business with small-scale producers.

Barriers to smaller-scale producers: The points above clearly illustrate some of the barriers to entry into this high-end market for small-scale producers. In addition, the indigenous breed of cattle reared by most farmers in the traditional sector are not suitable for intensive beef production in feedlot systems, and as such most small-scale producers do not therefore have access to this market. Secondly, because of the associated challenges in beef production [such as feed and water challenges in the dry season and the high prevalence of livestock diseases] the quality of beef that smallholder farmers produce may be compromised.

Figure 19
Livestock value chain (FAO field data, 2016).



Thirdly, while health inspectors and veterinary officials do carry out tests of the meat that comes directly from small-scale producers through the traders, there are still quality and safety issues associated with this channel of beef marketing. This therefore exposes the low-income urban consumers to health risks associated with consuming such meat.

Disease control and livestock movement: Among the challenges highlighted by livestock producers is the lack of dipping facilities in some areas which makes it difficult for the farmers to control ticks. Farmers also highlighted that they were affected by banning stock movement across zones or regions as this affected their access to markets. Most importantly livestock producers lamented the low-input support to livestock farmers by the government.

Potential for improved quality: Given the foregoing and the general structure of the beef value chain, producers need to focus on producing quality beef in order to increase on their returns. The buyers have more control on setting the price; therefore, all that the producers need to do is to improve the weight of the carcass and quality of the meat. There is also a challenge with infrastructure when it comes to traditional abattoirs, which raises both safety and quality issues and will require intervention from the authorities.

Potential for additional processing: There is an opportunity for firms within the livestock chain to take advantage of the by-products such as processing animal hides and upgrades into leather products. Zambeef has already begun processing their leather into shoes under their Zamshu line but much of the skin hides from traditional abattoirs remains unutilized. Successful upgrading examples in livestock and leather products within Sub-Saharan Africa is the case of Ethiopia (USAID, 2013). Another observation is that much of the processing within the livestock sector is tailored for direct consumption, such as pre-cooked meat processed as sausages or polony. The supermarkets have a good number of such imported products on their shelves. This presents another opportunity that can be exploited by processing firms.

5.3.2 Fruits and vegetables

Control in the supply chain: The fruit and vegetables value chain is strongly buyer-driven, where the broker and the supermarkets dictate the terms of trade in terms of price (brokers), quality and volume (supermarkets). This results in the change of distribution of: i) income and power; and ii) the quality of fruit and vegetables accessible to different consumer groups. The formal retailers and brokers have limited their responsibility to selling. For retailers they have created their brand and target the middle- and high-income segment of the population while the brokers have simply created a position for themselves to control the flow of commodities via the informal marketing channels. The processors, on the other hand, have to take control of all activities in the value chain from sourcing of raw materials and provision of inputs to farmers, training the farmers, to branding, packaging (barcodes) and distribution. The farmers, who do not benefit from input provisions from processors have to source their own inputs, produce, carry out simple processing like cleaning and packaging and distribute to the market. These are the high-risk but lower-valued activities.

Access to finance: This was highlighted as a major challenge for actors at different nodes of the value chain, starting with the small-scale farmers who disclosed that there was no credit facility available to them compared to the commercial farmers. Processing firms also argued that it was difficult to access finance from the banks due to high interest rates and huge demands in the form of collateral.

Quality: In addition to the constraints of seasonality and inconsistency in supply there are also constraints in supply for firms sourcing raw inputs locally, and challenges with supplying quality fruit and vegetables. A firm reported that it had difficulties working

with small-scale firms as others would pack the 'bad' vegetables in the middle of the sack. As such they have had to invest in training these farmers.

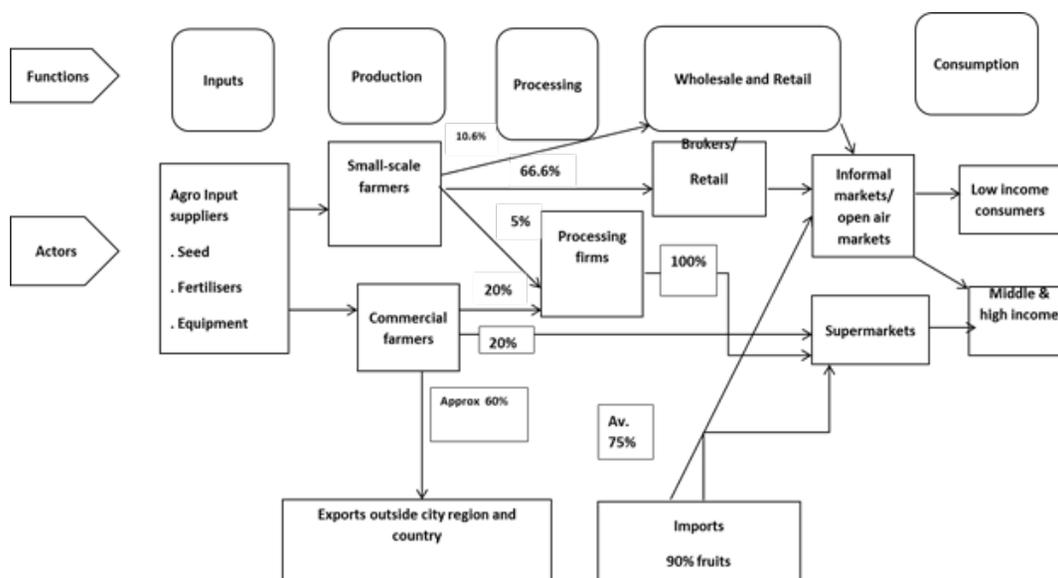


Figure 20
Fruits and vegetables value chain [Source: project survey].

Supermarket opportunity: While the subsector is still small, the emergence of supermarket chains presents a great opportunity for processors to market their products and also upgrade their production processes in a bid to meet the quality demands imposed by supermarkets. On the other hand, firms that are unable to meet these demands may not be able to participate in such value chains.

Limited support for horticulture: While there is a national policy on agriculture with clear objectives to increase farmers' productivity, government efforts seem to be focused more on the production of the national staple - maize - so horticulture producers do not get any direct input support from the government. Farmers also reported that there was insufficient extension for horticultural products as most of the crop extension services were directed towards maize farming. In addition, farmers complained of the high cost of inputs and no direct support for horticultural producers. This is also coupled with numerous crop levies and checkpoints on the route to markets as farmers transport their produce. These levies were mostly a requirement of the district councils. In addition, they had no access to credit or capital to reinvest into their farming business so as to tackle challenges of water and agro-inputs. All these contributed to lower production on their part.

Prices: Another key issue that discouraged farmers to produce was the strong presence of middlemen at established markets who determine the price at which farmers can sell their produce. This also hindered some farmers from taking their produce to these established markets and instead opt for other smaller markets such as Tambalala market in George compound and the farmers market in Bauleni.

Upgrading opportunities for producers: The majority of producers are small-scale but are able to access more rewarding markets by improving the quality of their produce, thus ensuring that they are not just restricted to the traditional markets but have access to modern markets as well. There is a need to invest in irrigation and water-harvesting technologies that can ensure that fresh fruits and vegetables are produced all year round. A consistent supply of quality produce will enable small-scale producers to enter into supply contracts with processing firms, institutions and supermarkets. This would not only improve household incomes for 86 percent of the farming households that

produce fruits and vegetables in the districts surrounding Lusaka, but it is also a sure way of reducing poverty, ensuring food security and improving nutrition. By increasing the quantity produced, producers are able to benefit from the economies of scale that arise from large quantities and a growing urban demand. Once the production constraints are addressed and farmers produce more, higher-quality fresh fruit and vegetables, the surplus fruit and vegetables from the fresh market can feed into processing firms who are currently hard-pressed to source raw fruit and vegetable inputs. In that respect, there is a strong potential for investing or facilitating access to financial services for technologies and opportunities to enable upgrading of smallholder horticultural producers.

Upgrading opportunities for processors: The processing firms also encounter a number of challenges in their quest to stay competitive and move into more rewarding, value-adding activities. The fruit and vegetables subsector by nature has high safety standards requirements and require skilled workers with relatively sophisticated production processes and high demand on quality assurance [Dolan & Humphrey, 2000]. The technology and packaging required for some products pose a challenge. One firm had problems with the bottles they were using for packaging, which could not take temperatures above 55°C but the cooking was done at 95°C. This posed a threat for contamination during the cooling process. The solution to this problem was to find an alternative glass bottle which is far more expensive (personal communication, Lumuno organics). In order for the local processing firms to make a turnaround in this value chain, there is need for them to not only upgrade in products but to upgrade functionally. This involves investing in appropriate technology – one that is suitable in the local context (energy deficit, raw input supply constraints, etc) so as to maximize efficiency in production. This could cut down on firms' costs in the long run and ensure that locally processed products remain competitive.

5.4 Summary of findings on food processing, distribution and retailing

There are very few meat processors and the demand for the services outstrips the capacity of the processors. There is need to support emerging meat processing firms operating in the city region.

- The meat processors that do exist are involved at production, processing and distribution stages of the meat industry. In contrast very few horticultural producers are involved in value addition.
- Value addition in fruits and vegetables is very low. The fruit and vegetable sector is characterized by a few players who face challenges ranging from unstable supply of raw materials to low capitalization.
- Due to high demand for food processing services, farmers (producers) are subjected to very rigorous requirements. These requirements exclude many small-scale farmers from participating in food processing and food manufacturing.
- For both horticultural and meat products, food flows from the farm to the consumer in three key ways:
 - - From the farm to consumer via processing firms
 - - From the farm to the consumer via private abattoirs for meat products
 - - From the farm to the market, without any processing for horticultural products.

6. Food losses and waste

6.1 Sources of waste

According to the survey, nearly 65 percent of farmers generate organic waste. The sources of organic waste include crop residues mainly from vegetables, damaged tomatoes and manure from various livestock (chicken, cattle, goats, pigs). The main food waste includes leftover food, spoiled agricultural products and containers of used agrochemicals.

6.2 Waste management and disposal

There are various methods reportedly used for waste management and disposal. Waste management in urban centres at district level is spearheaded by the district councils. Some of the councils have contracted companies for refuse collection and waste disposal and a disposal site they manage. The waste disposal methods on farms include open dumping, land fill, feeding the crop residues to livestock, and use as manure in fields and gardens. It was reported through key informants that disposal of containers for agrochemicals is done in accordance with the guidelines provided by the agro-dealers who educate the farmers on safe disposal methods. Other farmers indicated that they dispose of containers in pit latrines or burying.

6.3 Food losses

Post-harvest losses account for decreased resilience for the city to food insecurity. In all the food types produced, especially the fresh vegetable and fruits, as well as meat products, there are many losses due to damage in storage and poor food handling.

The estimated food losses in the surveyed districts according to Zambia National Farmers Union, was between 25–30 percent. The results are consistent with Tschirley *et al.* (2009) and Tschirley and Hichaambwa (2006) who estimated the food losses of between 20 and 30 percent.

Further, the study has established that food waste is high, especially in perishable foods like tomatoes. At farm level, rotten tomatoes are sometimes thrown back in the field as organic waste to replenish soil nutrients in the fields. Disposal of containers for agrochemicals is done in accordance with the guidelines provided by the agro-dealers who educate the farmers on safe disposal methods.

Due to inadequate processing and storage facilities in the region, there is a lot of food waste, particularly of perishable products such as tomatoes. The commercial farmers have processing facilities on farm. The local councils regularly inspect meat products at local butcherries before selling begins and any condemned parts are disposed of in an approved manner. Despite the food waste, there are minimal efforts towards compost-making with food residues as materials for compost. Thus, the waste from various sources (household, farm, market) is disposed of at the dump site managed by the local council. In the case of disposal of containers for agrochemicals, it was reported that farmers are aware of the need for safe disposal but practice requires continuous

education. Similarly, food hygiene requires continuous education, a subsector that has not received much attention. Despite relatively high levels of food losses and waste, the level of food deprivation is high in the city region. Food losses at all stages (production, processing and consumption) have a direct negative bearing on food security.

To have a more resilient and sustainable food production system, there is a need for a more streamlined approach to waste management generated in food production. This may entail evaluation of the waste produced by each subsector or product (poultry, swine, vegetables) and identifying both the standard methods of waste management as well as more innovative ways of waste management at various levels (Russ and Pittroff, 2004) of production within the city region.

7. Food consumption and food security issues in Lusaka

The following section provides summary information on food consumption and nutrition status in the Lusaka City Region.

The ability of urban households to meet their food consumption needs is a function of the cost and availability of food as well as the overall financial budget across households with different income levels. Food may be available but at a price that presents a hardship for middle-income households and out of reach for lower-income households. A large portion of households in Lusaka depend in part on informal wage labour. These households have less predictable incomes compared to households in the formal labour sector. Thus, it is important to track household food consumption in the context of food prices as well as the regularity of income for households and the non-food expenditures typical for urban residents. There is a complex set of factors contributing to price dynamics for urban areas as large as Lusaka. Prices differ across residential areas depending on where vendors purchase food for resale and how vendors decide to set prices.

7.1 Basic needs basket

The Jesuit Centre for Theological Reflection (JCTR) collects data to represent the monthly cost of a suite of expenditures for a typical household in several cities across Zambia called a Basic Needs Basket (BNB). Of course, the actual expenditures for a household will vary by many factors including household specific contexts such as whether a household rents or owns property, whether a household pays school fees for children, as well as food-related purchasing behaviours. Thus the Basic Needs Basket is perhaps particularly valuable as a comparison of costs across cities and over time rather than considering the BNB an actual expenditure amount.

Based on these Basic Needs Basket (BNB) data, Lusaka and Ndola are the most expensive cities in Zambia with an estimated BNB value of approximately K¹⁵ 4 900–5 000. This compares to 3 800 K/month in Kitwe, 3 750 K/month in Livingstone and 2 500 K/month in Chipata. Because the BNB index includes rent/housing, a comparison across cities/towns is sensitive to non-food expenditures. Still, it provides a sense of the hardship experienced by low-income households in Lusaka relative to other cities. From May 2016 to January 2018, the BNB metric has risen from 4 800 K/month to 5 200 K/month. Low-income households where incomes have not increased over this time period are particularly affected by the impacts of these price increases.

7.2 Access to food retail

The overall retail food market in Lusaka is changing as is the case in many rapidly urbanizing cities. As the urban boundary expands new open-air markets are developed and these markets remain a critical component of the food supply in most residential

¹⁵ Hereafter K referred as ZMW.

areas. New retailers are also entering the economic market both as new shopping districts are built and as pre-existing shopping districts are updated. Taken as a long-term trend, the retail food market in Lusaka appears to be undergoing relatively rapid change and it is important to consider how these changes affect the structure of the Lusaka regional food system and the implications for household patterns of food purchasing and consumption.

7.2.1 Food purchasing

In March/April 2017, a household survey was conducted in 18 low- and middle-income residential areas of Lusaka. Of the households surveyed, 95 percent reported purchasing food at an open-air market within their residential area in the previous two weeks with 78 percent reporting more than four visits. The density of street vendors varies across residential areas, but approximately two-thirds of all households reported purchasing food from street vendors in the previous two weeks. As an indication of the increasing role formal retailers play in the Lusaka food system, approximately half of all households reported purchasing food at a supermarket in the previous two weeks. In contrast, a 2007–2008 Urban Consumption Survey conducted by Michigan State University [Mason, 2009] found that only 12 percent of households had purchased staples from supermarkets. The 2017 survey did not restrict this question to only purchases of staples, but interviews with respondents indicates that the primary food product purchased at retailers other than open-air markets was staples. The 2017 survey was restricted to low- and middle-income residential areas but the customer base for supermarket retailers tend to have higher incomes than households that predominately rely on open-air markets.

Table 17: Proportion of households purchasing food at different types of retailer, by visits in a two-week period (Univ. of Arizona, 2017).

Visits per 2 weeks	Open-Air Markets	Shops	Street Vendors	Supermarkets
0 Times	5%	70%	32%	48%
1 Time	3%	10%	7%	23%
2 Times	8%	8%	11%	12%
3 Times	6%	3%	6%	5%
4+ Times	78%	9%	44%	12%

7.2.2 The role of urban agriculture

Urban agriculture has been proposed as a mechanism to both address food security in urban areas as well as improve diets. Given the role of cereals (especially nshima) in diets, household production of vegetables can have both caloric and nutritional advantages under some conditions. Despite the potential benefits of urban gardens, only 17 percent of households in the 2017 survey reported having a garden within their plot (Figure 21). The survey also asked households whether they had a garden nearby but outside their household plot – possibly in an open space such as a low-lying zone unsuitable for structures. Only two percent of households reported having this kind of proximal urban garden. Small backyard gardens do not entail major labour expenditure or costs given the small size available within urban plots. However, the land available for urban gardens varies by residential area. Middle- and high-income residential areas are composed of larger plots with more open space, and households are more likely to be owners than renters. Interviews with households suggests the potential for urban agriculture to benefit households in some situations. One respondent noted that a two-by-two-metre area planted in rape greens allowed her to pick enough for

two meals each week during the dry season for her family of five individuals. However, low-income residential areas are composed of relatively small plots that are often subdivided into several dwellings for multiple households where there is not room for even a small garden. Low-income households are more likely to be renters and may not have permission from owners to plant a garden.

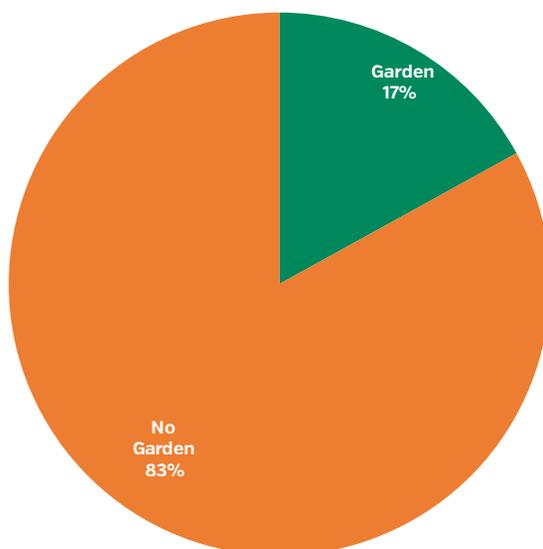


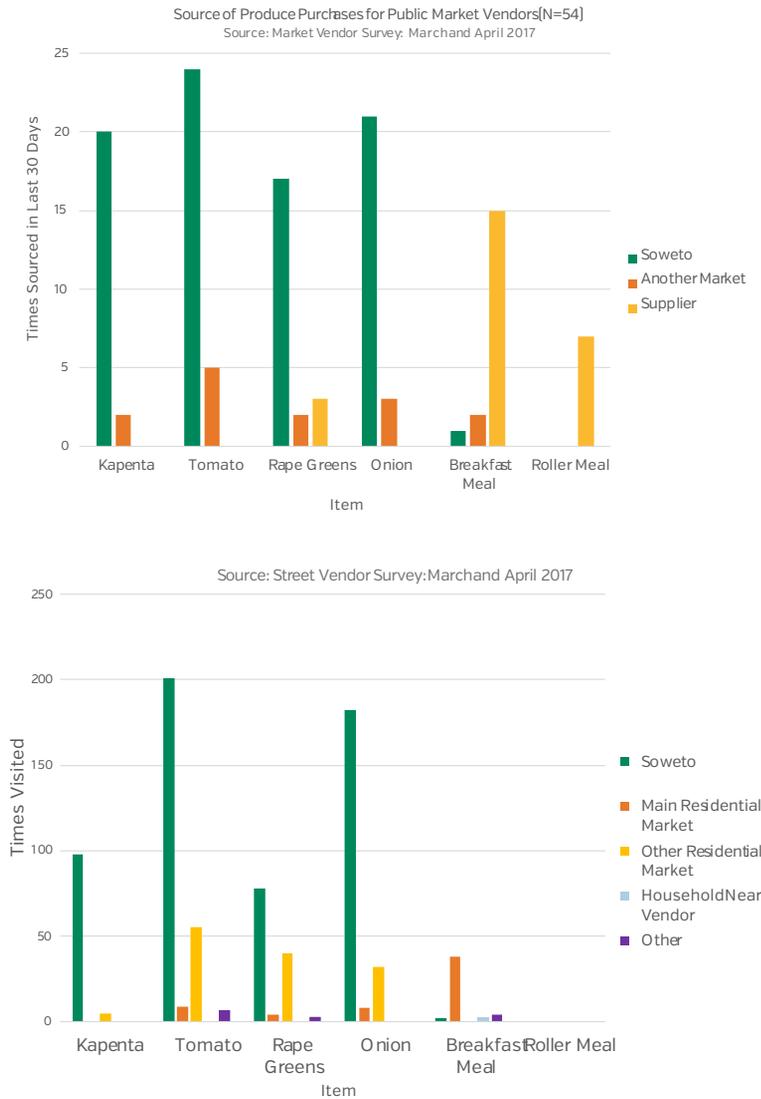
Figure 21

Prevalence of urban gardens (March/April 2017 survey of households in low/middle income residential areas, Univ. of Arizona).

7.3 Food prices

The food system in Lusaka is heavily dependent on the Soweto wholesale market. Surveys of market vendors and street vendors demonstrate the outsized role of the Soweto market. Figure 22 shows that, for a suite of food types, a large majority of vendors acquire their supply from the Soweto market. This is the case for perishable food products that are delivered daily. Vendors may travel individually to the Soweto market or contract a buyer to make purchases for them. In the former case, vendors incur the transportation costs to/from the market which in some cases can be 45 minutes or more on public transportation. If enlisting a third party to acquire supply on their behalf they incur the cost of those services and also have less control over the quality of produce acquired. Street vendors primarily also acquire supply from the Soweto market although some do purchase from residential markets for resale. Breakfast meal and roller meal are acquired from shops rather than the Soweto market.

Figure 22
Market vendor and street vendor supply sources (Univ. of Arizona, 2017).



The costs incurred by vendors are passed on to consumers, although analysis shows that prices at markets and street vendors are also related to the relative income across different residential areas. Figure 23 shows the relative prices of two common food sources (tomatoes and onions) purchased in open-air markets and street vendors across a number of residential areas. Market vendors are required to pay a per-day cost to be permitted to sell in an open-air market while street vendors generally do not incur this cost. This contributes to a price differential between market vendors and street vendors, although it is important to recognize that the quality of goods may vary across different seller types. Tomatoes exhibit more price variability across seller types and residential areas, potentially because they are less durable than onions and stock will vary more in quality.

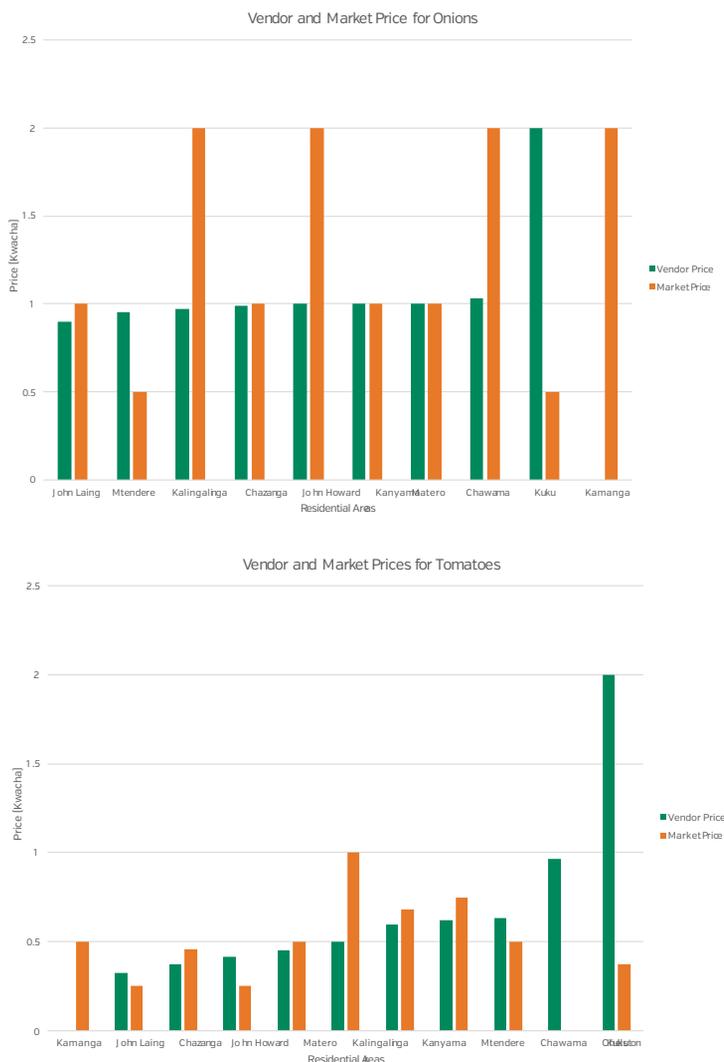


Figure 23
Market vendor and street vendor prices for two common commodities – onions and tomatoes (Univ. of Arizona, 2017).

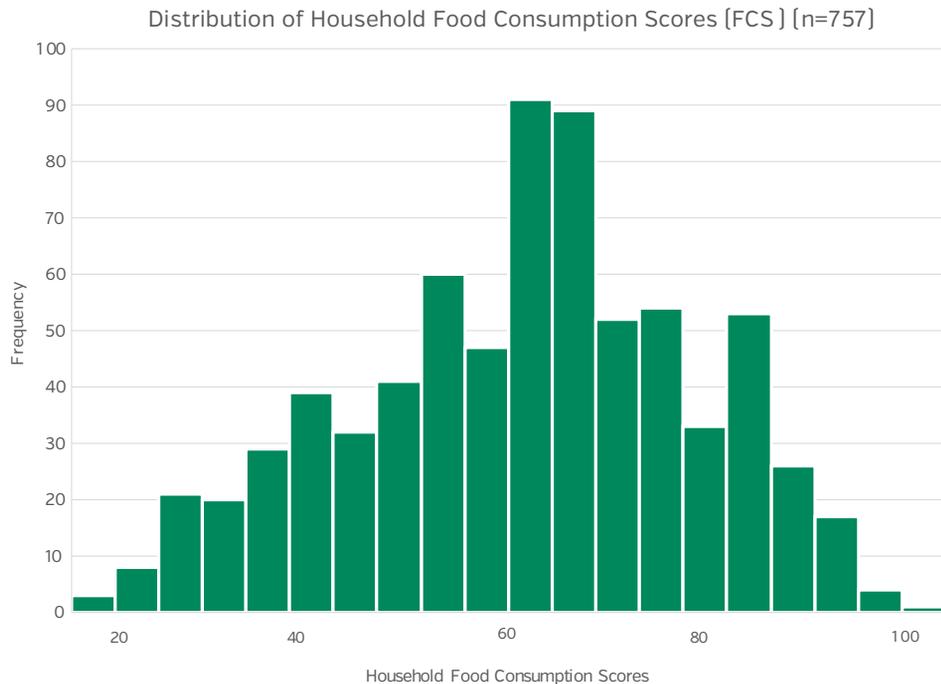
7.4 Food consumption

A survey in 2013 by the African Food Security Urban Network (AFSUN) established that over 90 percent of households spent income on food, easily the highest expenditure category. Over 70 percent incurred expenses on basic services (shelter, electricity and fuel). Half of the households had spent money on children’s education. One in five households incurred medical expenses and sent remittances (probably to relatives in the rural areas). The incomes of most of the households are so low that over 90 percent could not save anything. Food was the single biggest household expenditure item (averaging K 273 241 or USD 78 per month) followed by housing, fuel, utilities and education. Expenditures on food made up 47 percent of the total spend of all households, far greater than any other category. Housing was next (at 16 percent) followed by fuel (eight percent), utilities (eight percent) and education (five percent).

Based on household data collected in March/April 2017, a relatively small portion of households surveyed from low- and middle-income residential areas are considered

food insecure based on commonly used food security metrics. Based on calculation of the Food Consumption Score¹⁶ approximately one out of seven households are considered of borderline or lower food security. However, there are several important considerations to keep in mind. This assessment was conducted in March/April and food security can fluctuate considerably through the year (and from year to year). The Food Consumption Score is a stronger measure of basic caloric intake and not designed to assess nutritional quality (although it does have dimensions of dietary diversity). Considering the spatial distribution of food consumption scores, it is notable that both low and high food security households are found across all residential areas sampled. Rather than low food security households being clustered in a few lower-income residential areas, households struggling with food security are found throughout all low- and middle-income residential areas sampled. Mean food consumption scores are highest in middle-income residential areas (compared to low-income residential areas, high-income residential areas were not surveyed), but the variability of food consumption scores was relatively consistent across residential areas. There are isolated exceptions (e.g. Mtendere and Matero) where there was both relatively high mean food consumption score and low variability.

Figure 24
Histogram of household-level Food Consumption Scores in Lusaka (March/April 2017 Household Survey, Univ. of Arizona).



¹⁶ World Food Programme. Food consumption analysis: Calculation and use of the food consumption score in food security analysis.

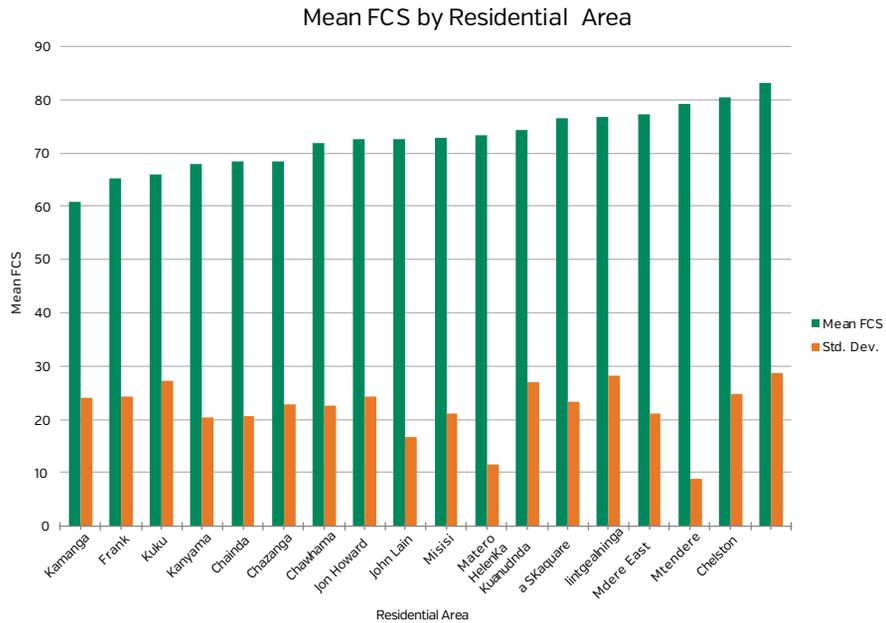


Figure 25
Food Consumption Scores across 18 low- and middle-income residential areas of Lusaka (March/April 2017 Household Survey, Univ. of Arizona).

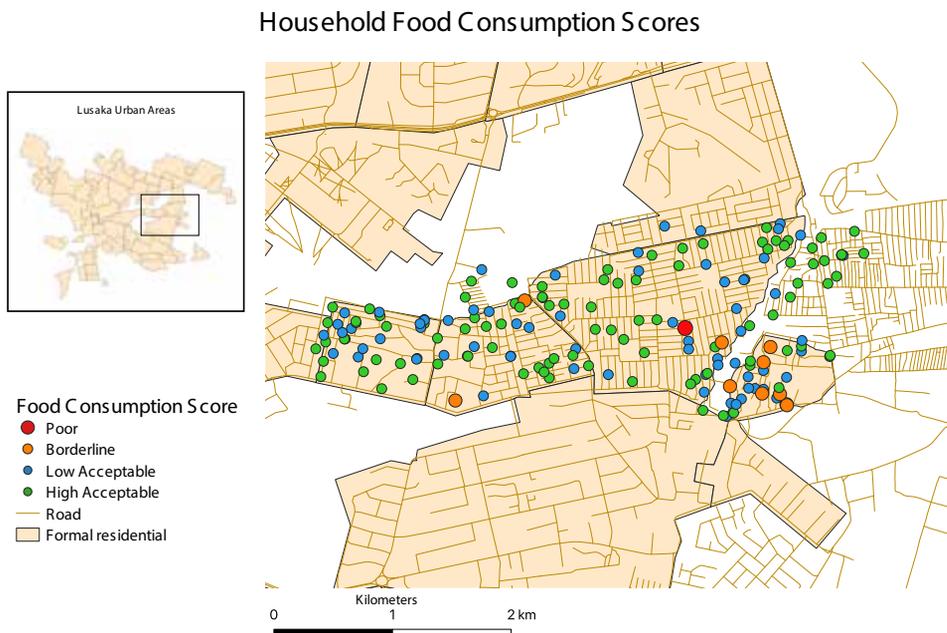


Figure 26
Household Food Consumption Scores across residential areas of Lusaka (March/April 2017 Household Survey, Univ. of Arizona).

Cereals are the most frequently consumed food type, with more than 90 percent of households consuming cereals every day based on seven-day dietary recall questions. Greens are also frequently consumed although with less frequency than cereals. This contrasts with alternative food types that are of particular nutritional value, such as orange maize/orange-enriched sweet potatoes and pulses. Likewise Figure 27

shows that protein consumption (meat, eggs, fish) is relatively infrequent, although households may alternate protein source through the week. Still, it is apparent that cereal consumption plays an outside role in diets in Lusaka. This will not be surprising to those familiar with dietary patterns in Lusaka, but it is important to consider the role of cereals in Lusaka diets over time and compared to other African urban areas. The predominance of cereals based on the March/April 2017 data collection closely matches that found from analysis of dietary diversity from data collected in 2008 [Mulenga, 2013]. Policy makers may wish to consider why dietary diversity does not appear to be exhibiting more change given the pace of change and transformation in the Lusaka economy.

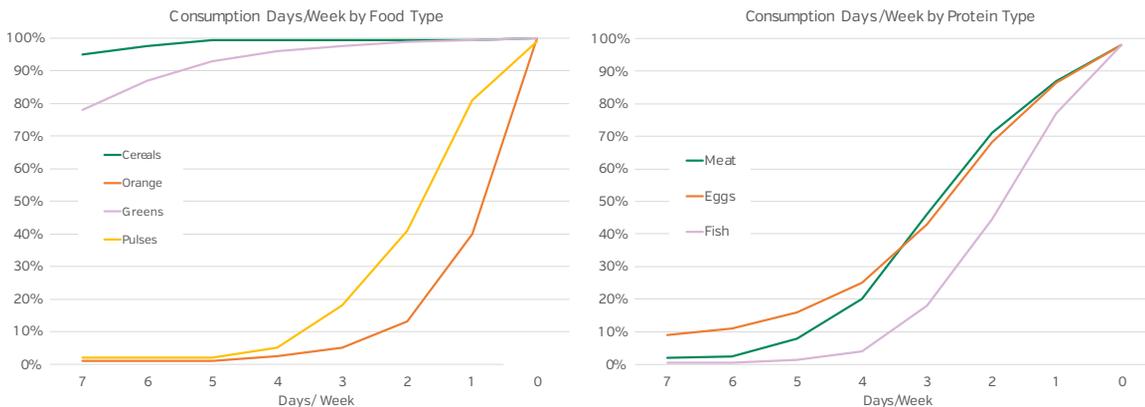


Figure 27
Consumption patterns in Lusaka (March/April 2017 Household Survey, Univ. of Arizona).

The Lusaka food system is complex with many factors interacting simultaneously that in aggregate affect food consumption patterns in the city. The nearly singular role that the Soweto market plays in the food supply chain for open-air markets and street vendors is notable. But unforeseen and unpredictable events can result in shifts in household behaviour.

7.4.1 Impact of a cholera outbreak

As just one example, Lusaka was dramatically affected by a cholera outbreak in 2017–2018. Government sources indicate there were 5 905 suspected cases with a peak of 2 000 cases reported in January 2018 [Sinyange *et al*, 2018]. This outbreak led to two interesting changes in the Lusaka food system. First, in most residential areas, street vendors were prohibited from selling. This affected availability of food products, the distance households had to travel to purchase food and the price they had to pay, given the price differential between food products at street vendors compared to open-air markets and supermarkets.

The goal of the municipal government was to try to mitigate the scale of the outbreak by prohibiting purchase of food from what were considered lower safety sources. However, this prohibition on street vendors had an indirect and adverse effect on incomes because street vending is a source of income for many households. At the same time, health workers were conducting outreach to households and encouraging food purchases from supermarkets. Households that are less price sensitive are the most likely to follow this advice but this affects the income of sellers in open-air markets. An important question is whether households will revert to purchasing food from open-air markets and street vendors once the outbreak is a more distant memory, or whether this disturbance to the food system will result in a longer-term change in food purchasing.

7.4.2 Eating habits

Zambian culinary patterns are conservative and people eat a narrow range of foods. These are nshima accompanied by vegetables, beef, fish, chicken or pork. The local production of the accompanying meat commodities is also limited; these are often imported from other districts in the country, causing a high price at the market. While there is a rising trend in goat meat consumption and pork, these two sources are not yet part of the typical dietary component of the residents in Lusaka.

Mutton consumption is very low and is mostly consumed by foreigners and Muslims. Fish is a common dish for many people in Lusaka. However, the supply remains unsteady as fish farming is not fully developed while fish stocks in the natural water bodies across the country are fast depleting. Aquaculture is being popularized but it is still low and as result appreciable amounts are still imported.

In general terms, maize remains a dominant component of Zambian diets, especially the lower-income classes. The low-income groups spent up to 50 percent of food budget on starchy staples. However, the high-income groups are increasingly substituting maize for wheat, rice and Irish potatoes and have more diversified diets [Chisanga *et al*, 2017].

7.5 Food insecurity and malnutrition

This subsection discusses food insecurity and malnutrition levels, drivers of malnutrition and food safety. The subsection argues that malnutrition is directed related to food security and that key drivers of food insecurity apply to nutritional insecurity for low-income households. The striking difference between food and nutritional insecurity is that too much food for high-income households does not automatically imply nutritional security.

7.5.1 National overview

The Zambia National Nutritional and Demographic survey of 2009 had noted the malnutrition rate is about 48 percent, which is more than twice the accepted rate. The survey revealed that 40 percent of children under the age of five were stunted, five percent wasted, 15 percent underweight and nine percent of children were estimated to be overweight. At 40 percent stunting rates, Zambia's malnutrition levels are among the highest in the world [IAPRI, 2016].

This is an indication of chronic malnutrition as a result non-availability of nutritious food for many households. For 2014, the rate of stunting is still at 40 percent. According to the Living Conditions Monitoring Survey of 2010, 60 percent of Zambians are classified as poor. In the Zambian context, poverty is defined as lack of access to income, employment opportunities and entitlements, including freely determined consumption of goods and services, shelter and other basic needs. As of 2010, poverty continued to be more prevalent among rural than urban residents [78 percent and 28 percent, respectively] [CSO, 2011].

As noted earlier, nutritional security is affected by income poverty and, spatially, rural areas and informal areas of the urban proportions of Lusaka face greater challenges with regards to nutrition. Women and children are most negatively affected by malnutrition, see Table 19.

Malnutrition is a big challenge for many households. Malnutrition has major effects on children and this has been documented as a national challenge [Table 19]. According to the Zambia Demographic Survey of 2013–2014, 23 percent of women of child-bearing age were obese or overweight. No data was available for men and other age categories.

The common food-related illnesses included:

- i. Cardiovascular diseases
- ii. Type II diabetes
- iii. Cancers and non-communicable variants of respiratory diseases
- iv. Water-borne diseases, such as cholera, due to poor food handling and storage [most open-air markets.

7.5.2 Food insecurity and malnutrition in Lusaka city region

Generally, the food basket is determined by prices of food items and also stocks of reserves, especially mealie meal and vegetables [JCTR Food Basket]. In late January, agricultural crops begin to mature so supply increases. After harvest in February to August the prices fall only to increase after November when food stocks run out. As a consequence, food insecurity is most pronounced in the period ranging from October to February every year. The October to February period could be described as hunger months for the city region. Interview data show that during this period, low-income groups, which are typically informal areas, face increased challenges in accessing adequate and nutritious food. Further, the proportion of households in Lusaka which do not have adequate access to food throughout the year is relatively high.

Table 18 provides an overview of the household expenditure in Lusaka¹⁷. Over 90 percent of households spend income on food that remains the highest expenditure category.

Table 18:
Food share
of household
expenditures
in Lusaka
(Mulenga,
2013).

	No.	% of households	Average monthly expenses	% of expenditures by all households
Food and groceries	362	90.5	K273,241	47.0
Fuel	312	78.0	K56,995	8.4
Utilities	311	77.8	K52,754	7.8
Housing	280	70.0	K122,312	16.3
Education	219	54.8	K50,165	5.2
Medical expenses	92	23.0	K11,321	0.5
Remittances	87	21.8	K40,911	1.7
Transportation	80	20.0	K112,850	4.3
Debt service/repayment	43	10.8	K34,452	0.7
Goods purchased to sell	33	8.3	K261,888	4.1
Funeral costs	18	4.5	K33,681	0.3
Savings	15	3.8	K457,000	3.3
Home-based care	4	1.0	K40,625	<0.1

Note: Multiple response question

¹⁷ The table refers to the local currency [Kwacha] before revaluation. Currently 1 Kwacha corresponds to 1,000 Kwachas before revaluation.

According to the study conducted by the University of Arizona [see section 2.3.4], in Lusaka it was noted by respondents that it is difficult to separate or classify disease as being food-related only; this is because of the existence of multiple factors in people with related illnesses, including infectious diseases and lack of access to clean and safe water for domestic use for most residents in the city, especially in informal settlements. Secondly, malnutrition, both under and over nutrition, cut across socio-economic status because of many factors. For instance, the high economic classes consume high proportions of fast foods which could be non-nutritious [low protein, high carbohydrate] foods despite money not being a limitation.

Table 11.9 Nutritional status of women

Among women age 15-49, the percentage with height under 145 cm, mean body mass index (BMI), and the percentage with specific BMI levels, by background characteristics, Zambia 2013-14

Background characteristic	Height		Body mass index ¹									
	Percent-age below 145 cm	Number of women	Mean body mass index (BMI)	Normal			Thin		Overweight/obese			Number of women
				18.5-24.9 (total normal)	<18.5 (total thin)	17.0-18.4 (mildly thin)	<17 (moderately and severely thin)	≥25.0 (total over-weight or obese)	25.0-29.9 (over-weight)	≥30.0 (obese)		
Age												
15-19	3.3	3,591	21.1	75.0	16.4	11.8	4.6	8.6	7.5	1.1	3,298	
20-29	1.9	5,757	22.6	71.5	8.5	7.1	1.5	20.0	15.2	4.8	4,922	
30-39	1.2	4,444	23.7	61.9	8.0	6.0	2.0	30.0	19.9	10.2	3,917	
40-49	1.4	2,440	24.1	54.7	9.0	6.2	2.8	36.3	24.0	12.4	2,365	
Residence												
Urban	1.4	7,509	23.8	59.8	8.3	6.2	2.1	31.9	21.1	10.8	6,881	
Rural	2.4	8,722	21.9	73.4	12.0	9.1	2.9	14.6	11.7	2.9	7,621	
Province												
Central	0.8	1,442	22.4	70.6	10.5	8.5	2.0	18.9	13.9	5.0	1,289	
Copperbelt	1.3	2,785	23.5	60.7	9.0	6.0	3.0	30.3	20.4	9.9	2,529	
Eastern	2.9	1,907	22.6	72.5	7.8	6.0	1.9	19.6	15.6	4.0	1,700	
Luapula	4.1	1,132	21.9	76.3	11.1	8.9	2.1	12.7	10.6	2.1	965	
Lusaka	1.4	3,244	24.2	56.8	8.2	6.3	1.9	35.0	22.3	12.7	2,966	
Muchinga	3.6	858	21.6	72.7	14.0	10.6	3.3	13.4	10.4	3.0	755	
Northern	3.9	1,191	21.5	74.2	13.5	9.9	3.6	12.3	10.3	2.0	1,028	
North Western	1.5	708	22.1	75.5	9.2	7.0	2.2	15.3	10.9	4.4	626	
Southern	1.0	1,992	22.6	68.6	9.4	7.5	1.9	21.9	16.2	5.7	1,777	
Western	1.3	971	21.0	69.9	19.9	14.1	5.7	10.2	8.8	1.4	868	
Education												
No education	2.9	1,346	22.3	69.7	11.9	9.7	2.3	18.4	15.1	3.2	1,163	
Primary	2.4	7,605	22.3	68.8	11.8	8.8	3.0	19.4	14.1	5.2	6,719	
Secondary	1.4	6,465	23.1	66.7	8.8	6.5	2.2	24.5	17.1	7.4	5,872	
More than secondary	0.6	815	25.4	47.8	5.2	4.0	1.2	47.0	28.2	18.8	748	
Wealth quintile												
Lowest	3.5	2,815	21.1	75.6	15.7	11.8	3.9	8.7	7.8	0.8	2,432	
Second	2.3	2,822	21.6	74.8	13.0	9.8	3.2	12.2	10.2	1.9	2,435	
Middle	1.9	3,055	22.3	72.6	9.9	7.4	2.5	17.5	13.9	3.7	2,725	
Fourth	1.4	3,484	23.5	63.2	7.3	6.2	1.1	29.5	20.3	9.2	3,139	
Highest	1.1	4,056	24.4	55.3	7.7	5.2	2.5	36.9	23.5	13.5	3,772	
Total	1.9	16,231	22.8	67.0	10.3	7.7	2.5	22.8	16.1	6.7	14,502	

Note: The body mass index (BMI) is expressed as the ratio of weight in kilograms to the square of height in metres (kg/m²).
¹ Excludes pregnant women and women with a birth in the preceding 2 months

Table 19
Nutritional status of women in Lusaka, 2013–2014 [CSO, 2014].

This study has established that malnutrition is a dominant challenge for women and children. The key drivers and impacts of malnutrition include by and large the following:

- Limited food choices for low-income households. This is driven by low-income poverty.
- Limited food quantities for many households.
- Increasing trend of fast-food consumption for high-income households
- Lack of consistence in food consumption.

7.6 Awareness of the population about sustainable diets and wellbeing

Generally, according to a study of the University of Arizona, the awareness of sustainable diets among the interviewed and surveyed population is low.

- The interviewed participants seem to strongly link food waste to environmental degradation through street-waste accumulation. The implication of accumulated food waste is well-linked to public health concerns among residents.
- Other responses include a perception that diets contribute to loss of biodiversity, land clearing for agriculture contributes to climate change and food production and disposal affects the environment.

However, a wide-ranging level of ignorance about poor diets (diets lacking essential food elements) and the impacts of this on physical health and wellbeing was observed among research participants from all socio-economic groups. This signals the need for sustained public campaigns on the need to move towards sustainable diets in the city.

When interviewed about options for improving food diets, most frequent suggestions included fighting urban poverty, promoting food production by households and protection of farm land near the city. The study has established that households are more interested in fighting food and nutrition insecurity by implementing strategies that seek to reduce poverty and to promote linkages between farmers, food retailers and consumers. Other suggestions were promoting sustainable production, reducing food prices, improving hygiene and food handling, and promoting food preservation and better storage mechanisms.

7.7 Summary of findings on food security and nutrition

Key messages

- The 'Basic Needs Basket' calculations provide a sense of the hardship experienced by low-income households in Lusaka relative to other cities. Based on recent 'Basic Needs Basket' data, Lusaka is one of the most expensive cities in Zambia.
- The field survey conducted by the University of Arizona found both low and high food security households across all sampled residential areas. Rather than low food security households being clustered in a few lower-income residential areas, households struggling with food security were found throughout all low- and middle-income residential areas sampled.
- Data shows that there is limited food diversification for low-income households. This is driven by low-income poverty. In addition, food insecurity is more prevalent from October to January when food stocks run out

- The food system in Lusaka is heavily dependent on the Soweto wholesale market, which also supplies the majority of other open-air markets and street vendors.
- There are vulnerabilities just below the surface that need to be strengthened, illustrated when the municipal government tried to mitigate the scale of a recent cholera outbreak by prohibiting purchase of food from what were considered lower safety sources. However, this prohibition on street vendors had an indirect and adverse effect on incomes because street vending is a source of income for many households.
- As the urban boundary expands, new open-air markets are developed and these markets remain a critical component of the food supply in most residential areas, even though purchases at supermarkets are increasing as they become more prevalent.
- Open-air market vendors are required to pay a per-day cost to be permitted to sell in an open-air market while street vendors generally do not incur this cost. This contributes to a price differential between market vendors and street vendors, although it is important to recognize that the quality of goods may vary across different seller types.
- Despite the potential benefits of urban gardens, only 17 percent of households in the 2017 survey reported having a garden within their plot.
- Policy makers may wish to consider why dietary diversity does not appear to be exhibiting more change, given the pace of change and transformation in the Lusaka economy.

Key areas of interest

- **Hunger months:** The low-income groups are most vulnerable and safety nets are inadequate to protect the urban and rural poor from food price shocks, especially the hunger months from October to February. The months from March through to August are relatively food secure for most households.
- **Other factors:** Furthermore, the chapter has argued that food security and nutrition in Lusaka are dependent on both geographical and financial factors, as food in the city region is basically accessed at the market. Consumption of fruits and vegetables by low-income households is low; hence, important food elements are deficient for many households. Key Zambian dietary needs (nshima and relish) are consumed in relatively high quantities for all income levels. However, the source of these foods differs dependent on income group.
- **Role of informal markets in providing food security:** The role of informal markets as places where low-income groups can negotiate prices, cut transport costs and buy on a need basis due to lack of sufficient storage facilities and energy security – these are important aspects of food and nutritional security in the city and the city region.
- **Poor nutrition and disease:** For the middle- to upper-income households, the chapter argues that while food security (under consumption) seems to be a non-issue, consumption of fast foods and a higher record of non-communicable diseases is observed.
- **Food safety:** The existing policies and regulations on food safety and waste remain poorly enforced and this is a leading contributor to poor hygiene and communicable diseases attributed to the food sector. In the following section, the report provides information on food governance and management.

8. Priorities for strengthening the city region food system

There are many opportunities for strengthening the CRFS for Lusaka. These have been formulated by thematic teams [detailed in the methodology section].

8.1 Policy and planning interventions for the city region food system

The assessment and analysis on food systems in the Lusaka City Region has identified a number of challenges and gaps. Generally, the assessments indicate that the Lusaka City Region does not have what could be considered a resilient, dynamic, inclusive and sustainable food system and the region falls short of the ability to feed itself. The assessment and analysis also revealed that the Lusaka CRFS has more challenges in the horticulture subsector, as compared to other agricultural subsectors. Challenges are identified at production, processing and distribution as well as at consumption stages of the value chain.

Among the several challenges and/or gaps identified in the Lusaka CRFS, the following are considered by stakeholders as the priorities:

1. Inadequate nutrition education, especially in urban areas;
2. Food safety – quality and traceability;
3. Insecurity of land tenure under customary land;
4. Poor storage and processing capacity of horticultural products;
5. Poor market information systems;
6. Poor sanitation and hygiene (in marketplaces);
7. Determination or control of food/product selling price by middlemen (brokers/agents) at the markets;
8. Inadequate resources by youths and women (land, water, financial, farming inputs, etc.);
9. Absence of power by youths and women to control market systems.

Identification and prioritization of the above key challenges was done by various stakeholders¹⁸ under three thematic areas, namely: (i) Sustainable agricultural production (including issues of land tenure, land-use planning and agricultural extension [with emphasis on horticulture]); (ii) Food supply, processing and distribution (including issues of market regulation, middlemen and value addition); and (iii) Food security and nutrition, including nutritional policy and education (with emphasis on horticulture).

¹⁸ Lusaka City Region stakeholders involved in prioritizing the identified key challenges included about 50 representatives from public [agricultural-related sector ministries], semi-government, local and international NGOs, private, research and community institutions.

Table 20 below associates the prioritized challenges to the respective four thematic areas.

S/N	Thematic Area	Prioritized Challenges
1	Sustainable agricultural production	<ul style="list-style-type: none"> • Land zoning: Insecurity of land tenure under customary land • Poor storage and processing capacity of horticultural products
2	Food supply system	<ul style="list-style-type: none"> • Poor market information systems • Poor sanitation and hygiene (in marketplaces) • Determination (control) of food/product selling price by middlemen (brokers/agents) at the markets
3	Food security and nutrition	<ul style="list-style-type: none"> • Inadequate nutrition patterns among urban dwellers • Food safety – quality and traceability

Table 20
Prioritized challenges by thematic area [FAO field data, 2016].

8.2 Strategic interventions, implementation and resource requirements

Most of the identified proposed strategies are to be implemented within the various related and existing national and local policies, programmes/plans and pieces of legislation. However, in order for some of the proposed strategies to be implemented effectively and efficiently, some of the related or corresponding existing policies, programmes/plans and pieces of legislation will need to be revised or enhanced (as the current ones are – or appear to be – not working or not effective). On the other hand, some of the proposed strategies may or will need formulation of new policies, programmes/plans and pieces of legislation, as the case may be, in order to be executed effectively and efficiently.

Financial resources for implementation of all the above proposed strategies could be mobilized from various public and private sector institutions, including donors [Cooperating Partners] and relevant NGOs/CSOs.

8.2.1 Supporting food production

The Lusaka CRFS area covers 4.3 million hectares from both the Lusaka and Central provinces. However, land-use changes due to population growth, infrastructure needs and development, industrial and service expansion, lead to **agricultural land fragmentation and reduction**. This challenge goes beyond the agricultural or food sector. Policy integration among ministries such as the Ministry of Agriculture, Local Government and Housing, and Lands and market access and marketing information are equally important issues to consider in order to improve City Region Food Systems for Lusaka.

The stakeholder working groups have identified strategies around two main priorities:

1. Securing land tenure as a response to competition for land

CRFS stakeholders point out the insecurity of land tenure under the traditional system as the priority to address, since most farmers in the CRFS are small-scale holders. In the past, land acquired under customary or traditional land tenure system in Zambia,

i.e. through traditional leaders (chiefs and headmen), had no provision to get legal title or ownership [Title Deed] for it. However, this has changed as any piece of land acquired through chiefs or headmen or other people owning traditional land can now be converted to statutory tenure. But the process is lengthy and bureaucratic, and the system is centralized. Therefore, most customary landowners, especially smallholders, find it very challenging to obtain title deeds for their land, resulting in insecurity of tenure. The fact that the country's larger portion of land is under customary tenure exacerbates the problem of land insecurity.

Key strategies focus on i) ensuring the finalization of the 2017 Draft Land Policy; ii) encouraging the adoption of the Traditional Land Holding Certificates under the customary land tenure system.

2. Building storage and processing capacity of horticultural products for small scale farmers

Securing land tenure will only limit land-use change and improve the sustainability of the CRFS level of production if farmers are able to raise their income level. According to the CRFS stakeholders, increased income levels mean diversifying their agricultural production. The CRFS assessment shows that the potential for further diversification is high: today, farmland is mostly dedicated to field crops, while in areas where diversification does exist it is still very limited; less **than nine percent of the land** is dedicated to production of **fruits and vegetables, poultry, dairy, beef and piggery** production.

Horticultural production is a critical source of diversification with the triple benefit of increasing **value** of production, **reducing vulnerability** to shocks and **improving nutrition** when accessible to consumers. It offers a great potential for the Lusaka CRFS since fresh produce (vegetables) is mostly sourced from within the city region – Chibombo, Chisamba and Chongwe are key sources of fresh produce – and widely consumed by households.

However, this also implies appropriate facilities, such as machinery and equipment, **proper storage and processing** of most horticultural products, including transportation means. The most affected categories of processors and transporters by this challenge are the small- and medium-scale entrepreneurs (SMEs). This challenge consequently leads to most horticultural products (fruits and vegetables) going to waste, especially during the seasons of plenty.

Key strategies identified are: i) revision of relevant legislation and inclusion of specification of actual facilities needed for transportation and storage of specific horticultural produce, especially review and revision of the Food and Drugs Act-Cap 303, of the laws of Zambia; ii) Ensuring and enhancing the reinforcement of existing but revised legislation [i.e. the “new version” Food and Drugs Act [Cap 303]] as well as building the capacity of regulatory bodies/organizations (e.g. local authorities/councils, Ministry of Health).

8.2.1 Food supply, processing and distribution

Market potential: Addressing wide-ranging food production challenges outlined in this report would only be inclusive of small-scale farmers and entrepreneurs if more market opportunities could be developed. There is no doubt that strong market potential exists since the **CRFS produces just 60 percent of the local demand and that this demand** is rapidly increasing pulled by population growth and a growing middle class.

Economic impact: The operation of, and participation in, food systems has an impact on the local economy and income levels in three ways: i) potential income available to agricultural producers; ii) potential food costs for urban consumers; and iii) potential income opportunities for traders in enabling access to nutritious foods. The right balance must be struck between the different players – which is not the case today.

The Lusaka CRFS stakeholders have identified three main challenges related to food supply and distribution to be addressed as a matter of priority to facilitate access to markets to small-scale farmers and businesses: expanding market information systems, regulating the activities of the middlemen, improving hygiene and food safety.

The stakeholder working groups have identified strategies around three main priorities:

1. Improving market information systems

The CRFS stakeholders highlighted that the most important challenge is accessing market information for or by food traders (both sellers and buyers), especially rural traders. Inadequate facilities for communicating market information and/or facilitating communication of market information, e.g. poor or absent telephone, radio, television, electricity, road network, internet services and facilities, etc. is the main hurdle. Therefore, information such as food prices, and high food demand and availability areas, needs to be made accessible.

Key strategies identified the need to focus on awareness-raising of existing and new market information systems, and to enhance dissemination of market information through different activities such as TV documentaries and radio shows; discussion forums/symposiums; social media posts and SMS campaigns; market analyses and projections.

2. Regulating the role of middlemen at the markets

Middlemen (“food brokers/market controllers”) in most markets, particularly in Lusaka city and in most busy markets, e.g. Soweto market, are often seen to be a hindrance to smooth trading; and particularly so, on the part of the food sellers (mostly to small-scale rural farmers who bring their agricultural products to sell at large city markets). Farmers cannot sell their merchandise on their own at such markets, as they do not own stands and do not understand the market dynamics (do not have the right network, do not know who is responsible of what, etc.). In this way, the middlemen often benefit or are believed to benefit more than the food owners, while they could offer appreciated market and trading services through well-formalized markets, including a wholesale market.

Key strategies identified the need to focus on ensuring and enhancing transparency, fair trade practices and accountability in marketplace operations (i.e. to enhance the enforcement of the Markets and Bus Stations Act of 2007).

3. Improving sanitation and hygiene in marketplaces

Sanitation and hygiene facilities and services are poor or not even available in many trading places which remain an informal set-up. In addition, there is no strict measure put in place to ensure safety and quality of the food that enters the market. This results in trading of unwholesome foods and the trading areas being health hazards to both sellers and buyers: disease outbreaks, e.g. cholera, are not uncommon in such marketplaces, especially in high-density trading areas.

Key strategies identified the need to focus on: i) awareness-raising on the importance of hygiene, sanitation and food safety through awareness activities such as advertisements, TV documentaries, stakeholder discussion forums or platforms, training, etc.; ii) Enhanced supervision of market sanitation service provision by the local authorities; iii) Enforcement of sanitation laws (e.g. Public Health Act).

8.2.2 Food security and nutrition

Lusaka’s citizens are generally considered to be food secure. However, some seasonal food insecurity is recorded, with the period of October to February being the most

difficult – the hunger months – when the supply is low and prices high. However, this does not hide nutrition challenges. Low-income groups face increased challenges in accessing adequate and nutritious food, with tremendous food safety concerns. The CRFS assessment, in line with past studies, highlighted the limited access of poor households to diversified and nutritious food. Buying vegetables and fruits or processed food is more difficult for low-income households, who source their food from mostly informal markets where prices can be negotiated, but where food safety is a challenge. At the same time, there is an increasing rate of fast-food consumption in the city, especially among higher-income households, and obesity and overweight is clearly on the rise.

1. Improving nutrition education and awareness

There are increasing cases of malnutrition in the Lusaka metropolitan areas, not only among children but also among adults. The CRFS assessment shows a wide-ranging level of ignorance about inadequate diets (diets lacking essential food elements) and the impacts of this on human wellbeing was observed among research participants from all socio-economic groups. This signals the need for sustained public campaigns to move towards sustainable diets in the city. In addition, the National Food and Nutrition Consumption Act 1967, and the National Food and Nutrition strategic plan 2017–2021, do not consider any dietary guidelines which could become the basis for improved nutrition.

Key strategies identified the need to focus on: i) formulating National Food-based Dietary Guidelines (NFBGDs) and building the capacity of community service-providers and food retailers (in nutrition guidelines); ii) reviewing and strengthening nutrition in primary school curricula to include additional topics in nutrition education; iii) creating nutrition awareness.

2. Strengthening Food Safety (quality and traceability)

The assessment shows that the Lusaka City Region does not have adequate facilities, systems, personnel and institutions to test for **quality** and **trace** the sources of most foodstuffs, especially and particularly, which are traded in common, high-density areas and markets. Therefore, there is no assurance of safety for foods bought or sold in most common marketplaces found in the CRFS, especially in undesignated trading places, such as residential areas.

Strategies:

Key strategies identified the need to focus on promoting sustainable organic agriculture through financial mechanisms (e.g. through lower interest rates, favourable repayment conditions, etc.) and training of small-scale farmers.

Appendix 2 shows the details of the proposed strategies and activities to be implemented, including the estimated required financial¹⁹ resources, in addressing the prioritized challenges.

8.3 Policy implications

8.3.1 Key interventions

The CRFS assessment and stakeholder engagement led to the identification of seven key interventions, belonging to three thematic areas, among a much longer list of potential interventions in the Lusaka CRFS to make it more resilient and sustainable.

¹⁹ Assumed exchange rate is USD1= ZMK10

These interventions include changes in or revision to **policies and regulations** (on land, nutrition, etc.), **awareness-raising** campaigns (on nutrition, market information systems, hygiene), **enforcement** of regulations and laws (concerning food safety, sanitation, etc.), **institutional changes** (local and wholesale markets' management), education, training and **capacity building** (on organic farming, food trading hygiene, food retailing, dietary guidelines, etc.), and concrete **investment** undertakings (e.g. in market facilities).

8.3.2 Implementation: processes and partners

Joint planning is essential in the implementation of the CRFS for Lusaka. **Joint planning between Lusaka and the surrounding districts** is proposed in the Urban and Regional Planning Act Number 3 of 2015, but guidelines and standards are not available yet. This would provide a policy and institutional framework to anchor implementation processes.

The proposed implementation partners are selected from the current or known existing, local and international institutions within the city region. However, leadership and/or involvement in the implementation process may not be restricted to the named partners: other institutions not presently in existence or not known may therefore also be involved when implementation actually commences or during the implementation period.

Various institutional stakeholders are anticipated to be involved in the implementation of all the proposed strategies and activities, as partners, across all institutional categories, i.e. public, private and NGO/CSO institutions, both local and international. The actual number and degree of involvement of these partners could vary, depending on the respective institutional mandates and competencies.

In order to facilitate coordinated, effective and efficient implementation, the Lusaka CRFS stakeholders involved in the planning process decided to identify one institution or two to lead and the others to be involved in the implementation process of each of the proposed strategies and/or activities to address the prioritized challenges. The identified implementation partners were selected from the current or known existing local and international institutions within the city region. However, leadership and/or involvement in the implementation process is not restricted to the named partners, implying that other institutions not identified, for various reasons, during the project's planning phase, such as not in existence or not known at the planning time/period, may also be involved when implementation actually commences or is in process; similarly the institutional roles (e.g. leadership/collaborative/supportive) may also change at commencement of or during the implementation process.

In order to smoothly coordinate the various implementation actors, in stirring the execution of the proposed strategies and activities, it is recommended that a project task force or council be established. The project task force would develop the implementation plan and prescribe clear and specific roles of each of the implementing partners.

8.3.3 A focus on women and youth

Finally, even though there was no targeted empirical evidence collected from the research study or survey conducted under the Food for the Cities Project in the Lusaka City Region, stakeholders felt strongly that the issue of "**women and youth engagement in agriculture**, as a business" should receive support from policy makers.

9. Conclusions and recommendations

9.1 Key messages

The study has established that the region depends on multiple sources of food (production) and value addition in the food sector is limited. Thus, the sector lacks developed linkages between the various actors.

9.1.1 Food security and production

On production, food security is determined by small-scale farmers while linkages between small-scale and commercial farmers are weak, the linkages between all categories of farmers and formal and informal traders is very vivid and cherished by all players. The report has further presented evidence that shows that low-income groups are most valuable and safety nets or social protection programmes are not enough to protect the urban and rural poor from food price shocks, especially the hunger months from October to February. The months from March through to August are relatively food secure.

9.1.2 Food security and consumption

Further, the report has argued that food and nutritional security are dependent on both geographical and financial factors, as food in the city region is basically accessed at the market. Consumption of fruits and vegetables by low-income households is low and so important food elements are deficient for many households. Key Zambian dietary needs (nshima and relish) are consumed in relatively high quantities for all income levels. However, the source of these foods differs dependent on income group.

9.1.3 Food security and income levels

The region is recording rapid urbanization and food and nutrition security is increasingly dependent on a myriad of factors with income security being a dominant driver. Informal markets play a crucial role, where low-income groups can negotiate prices, avoid long distance transport costs and can buy on a daily needs basis – a necessity due to lack of sufficient storage facilities and energy security – are important aspects of food and nutritional security in the city region. For the middle- to upper-income households, the report argues that while food security (under consumption) seems to be a non-issue, consumption of fast foods and a higher record of non-communicable diseases is observed. Targeted strategies need to focus on low-income groups and on how to reduce food waste and minimize unhealthy diets among the high-income households. All socio-economic groups in the study area are affected by nutritional deficiencies. High consumption of various foods and increased choices for high-income households does not always imply nutrition deficiencies are eliminated in high-income households. This report shows that while low-income households are most affected, children and women in low-income households face the most acute nutritional challenges in the Lusaka City Region.

9.1.4 Food security and food safety

The existing policies and regulations on food safety and waste remain poorly enforced and this is a leading contributor to poor hygiene and communicable diseases attributed to the food sector.

9.1.3 Food security, processing and distribution

It is clear that the region cannot entirely feed itself. The findings and analysis on food production and processing shows a complex web of interactions between local, national and international food systems along the food value chain. For example, high-income households depend largely on food that is sold in the supermarkets (mostly imported) while low-income households depend on informal markets and small shops. Both systems source the food stocks from local, regional and international producers. These two food sources do not operate exclusive of each other. However, improving local food production, processing and distribution would drastically increase food security for low-income groups which struggle to raise funds to buy expensive food and travel long distances. There was also a preference for local produce, indicating that CRFS could be a solution to the increasing demand for locally produced food and local diets. This could reduce consumption of unhealthy food such as fast foods that has been established to be increasingly consumed by high-income households. Any effort to tackle food and nutritional security in the city region will need to focus on the production, processing, marketing and distribution, as well as on food prices.

9.2 Recommendations

1. There is need to transform and adapt farm production to become climate resilient and tolerant. This requires training and improved input supply systems, especially for small-scale farmers.
2. Horticultural production, processing, storage and transportation needs more strategic support as a critical source of diversification with the triple benefit of increasing value of production, reducing vulnerability to shocks and improving nutrition when accessible to consumers.
3. There is a need to invest in food processing in both the urban and rural parts of the city region. This is key for creating sustainable markets and jobs for farmers and farm workers.
4. There is need to sensitize farmers to diversify their farm production activities.
5. Improve the participation of youth and women in agriculture. This requires investments in the appropriate form of technology that would transform farming into a viable and less laborious enterprise.
6. There is a need to incorporate middlemen as legal actors in the food supply and marketing system. This would involve re-structuring food markets. Semi-formal markets like Soweto need full decentralization and traceable decision-making systems that are accountable to the farmers and consumers.
7. Efforts to ensure food and nutrition security should, in the city region, need to take a multi-sectoral approach. A coordinating body that involves consumers, farmers, food retailers, wholesalers, regulators, civil society groups and consumer watchdogs needs to be established. This should advance policies that are targeted on food issues for low-, medium- and high-income households and farmers.
8. More studies are needed to build concepts about the city region food systems. This would anchor policy making and processes for sustainable urban food systems.

9. Sensitization of households to turn to local methods for food preservation to ensure sustainable diets is essential. This is most necessary for low-income households.
10. Financial resources for implementation of the various proposed strategies could be mobilized from various public and private sector institutions, including donors (Cooperating Partners) and relevant NGOs/CSOs
11. Policy integration is needed, beyond just the agricultural or food sector, among ministries such as the Ministry of Agriculture, Local Government and Housing, and Lands and market access and marketing information in order to improve city region food systems for Lusaka.

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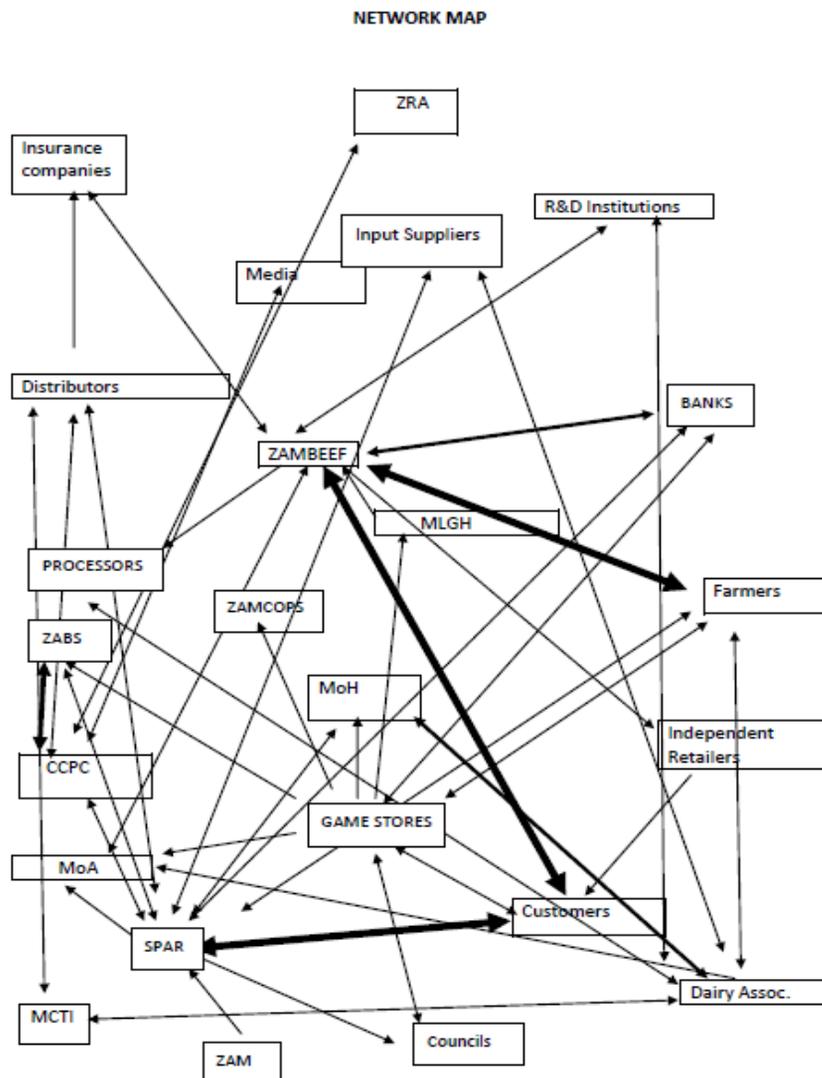
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Appendix 1

Stakeholder mapping and analysis

Activities under this task were participatory in nature and sought to give space to workshop participants to present their relations with other players in the food value chain. Facilitators provided clear guidelines and performed a demonstration on what the participants were required to do and why. The purpose of this activity was meant to achieve two key things: firstly, to create a relationship among the workshop participants; and secondly, to broaden the views of all stakeholders on the complexity of the food chain in the city. As presented in the following tables, the resultant links also helped the participants to begin to think creatively about the key determinants of the present food situation in Lusaka.

Network map
for Lusaka
region



Actor	Total links	In	Out	Influence
Insurance	3	3	3	Low
Zambia Revenue Authority	1	1	1	Medium
Customers	3	1	3	High
Media	1	1	1	Low
Zambeef	7	6	7	High
Banks	3	3	3	Medium
Farmers	5	5	5	High
Zamcops	1	1	1	Low
Competition and Consumer Protection Commission	5	5	5	High
Independent retailers	2	2	1	Medium
Zambia Bureau of Standards	3	3	1	High
Ministry of Local Government and Housing	1	1	1	Low
Ministry of Health	3	3	3	Medium
Spar	8	7	1	High
Game stores	7	4	3	High
Research and Development	2	2	2	Low
Dairy Association of Zambia	5	5	5	Medium
Zambia Association of Manufacturers	1	0	1	Low
Ministry of Commerce, Trade and Industry	1	1	1	Low
Ministry of Agriculture	3	3	3	Medium
Input suppliers	2	2	2	Low

Comparisons of links, support and influence

1. Key stakeholders in the food value chain included: Zambeef, Spar and Game Stores;
2. Next in importance are the farmers, the Competition and Consumer Protection Commission [CCPC] and Dairy Association of Zambia;
3. Those categorized as high are mainly the retailers, except for Zambeef which covers the entire food value chain. This means that the market is a key determinant of the current food situation in the city. It should also be noted that workshop participants consider Zambia Bureau of Standards [ZABS] – a regulator – as a key institution.

More information on the key stakeholders is provided in the following table.

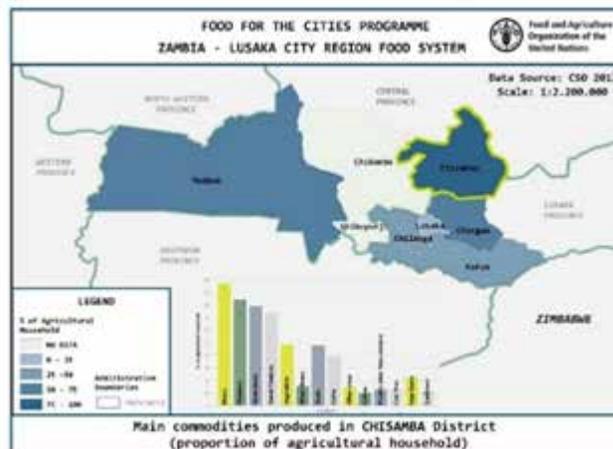
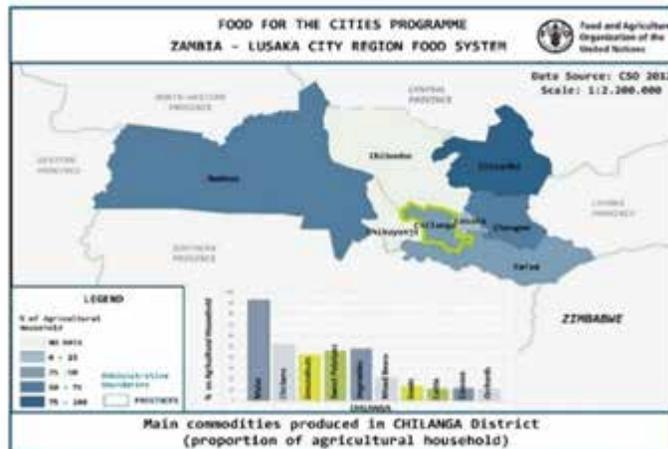
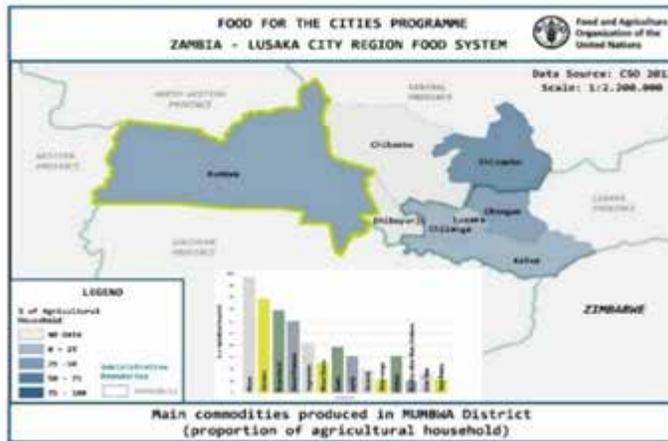
Summary of the stakeholders' presentations at the City Region Food System Project Workshop held in Chongwe, November 2015

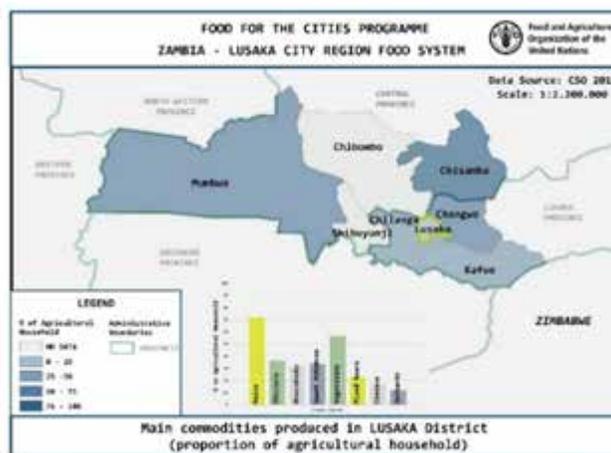
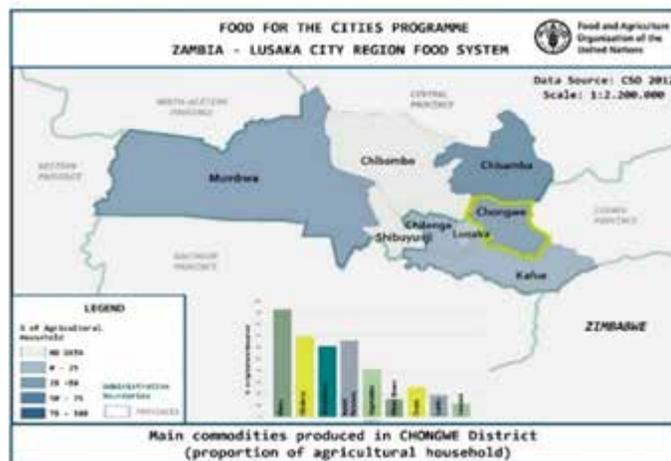
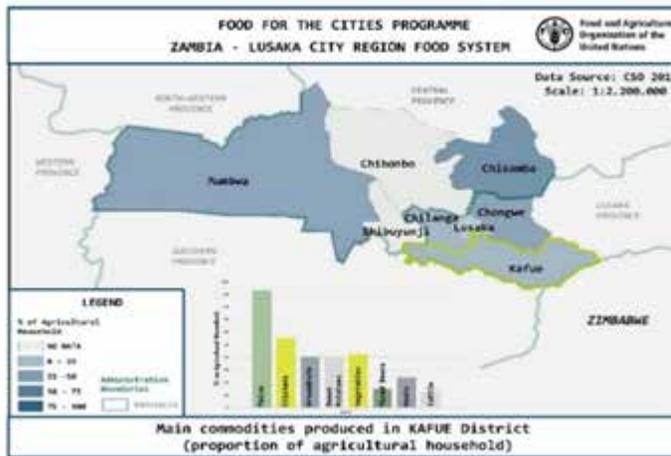
Name	Location	Description and position in the value chain	Core activities	Observations and recommendations for operationalizing the CRFS
Game stores	Lusaka and Kitwe	A multinational retail chain	<ul style="list-style-type: none"> ✓ Deals in high-end goods and with the wealthier sector of the population. ✓ Provides customers with fresh agro-produce and processed foods. 	<ul style="list-style-type: none"> ✓ There is a need to encourage local suppliers to enter supply chain. ✓ This has to be done systematically to deal with quality concerns. ✓ Emerging growers and suppliers have to be sensitized on quality control.
Spar	Lusaka and Kitwe	An international retail brand	<ul style="list-style-type: none"> ✓ Operates a number of local franchises. ✓ Provides high-quality fresh and processed foods. 	<ul style="list-style-type: none"> ✓ As a local franchise the chain seeks and promotes local suppliers. ✓ Has high adherence to food safety while dealing local producers.
Competition and Consumer Protection Commission (CCPC)	Lusaka	A statutory body involved in consumer protection, policy development, sensitization and advocacy	<ul style="list-style-type: none"> ✓ Protects consumers against unfair trading practices. ✓ Promotes fair competition in trade and commerce-related sector. ✓ Works with other regulators such as Zambia Bureau of Standards. 	<ul style="list-style-type: none"> ✓ Outlined the need to ensure adherence to food safety standards and developing policies promoting increased food safety.
Jesuit Centre for Theological Reflection (JCTR)	Lusaka and selected provincial centres	Faith based non-governmental organization involved in advocacy and research	<ul style="list-style-type: none"> ✓ Promotes social justice and protection of the poor. ✓ Produces monthly estimates of minimum cost of living – the basic food basket. 	<ul style="list-style-type: none"> ✓ Outlined the need to ensure the basic food requirements of the poor are met.
Caritas Zambia	Lusaka and selected Catholic archdioceses	Faith based non-governmental organization involved in advocacy and training	<ul style="list-style-type: none"> ✓ Trains and supports farmers. 	<ul style="list-style-type: none"> ✓ Implement programmes that help farmers increase production. ✓ Mechanisms have to be developed to promote policies on increased agricultural production.

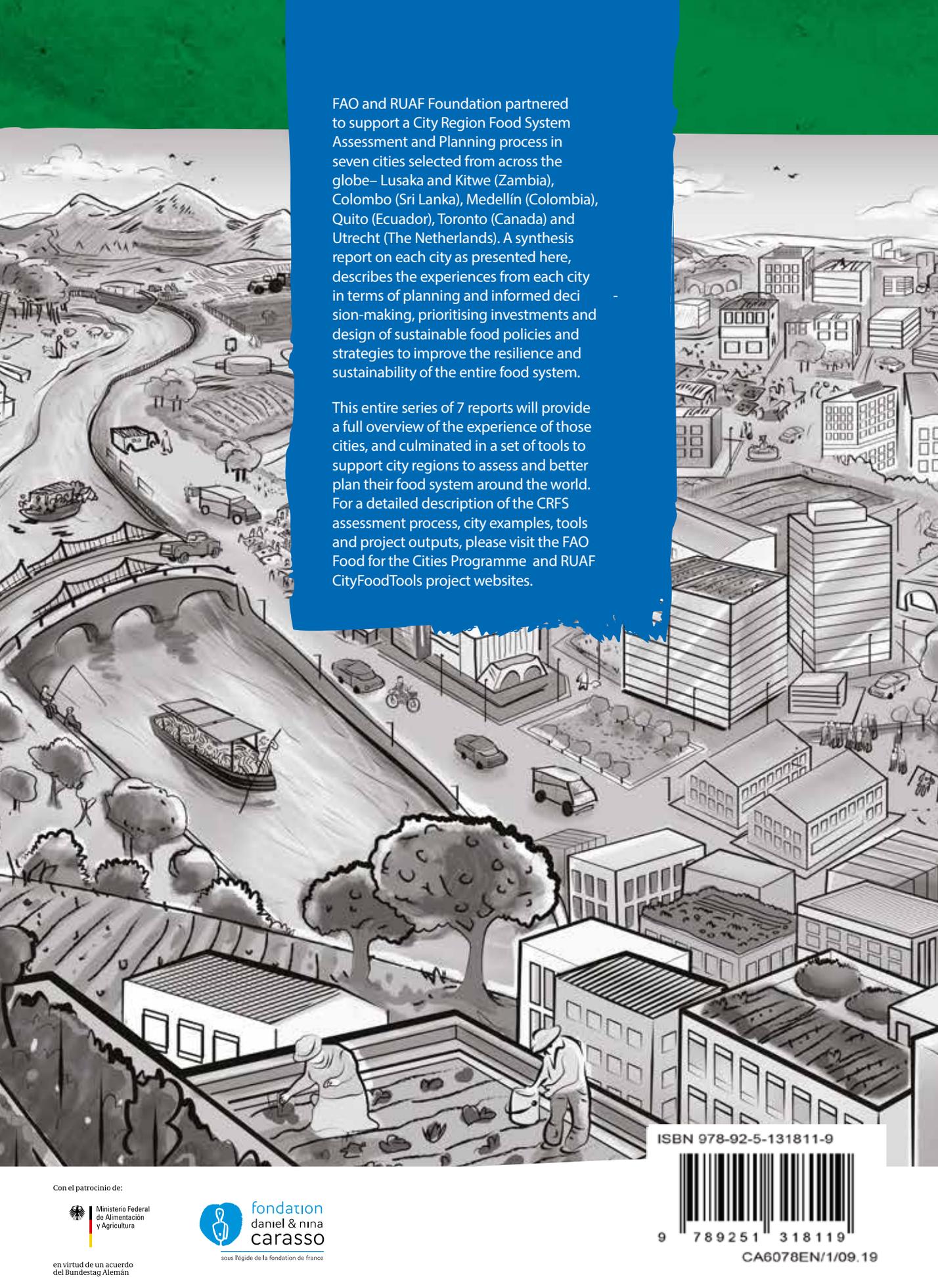
Name	Location	Description and position in the value chain	Core activities	Observations and recommendations for operationalizing the CRFS
ZAMBEEF	Lusaka	Zambia-based international agribusiness concern involved in the whole food value chain	<ul style="list-style-type: none"> ✓ Production, processing, distribution, wholesaling and retailing. Largest meat provider and processor. ✓ Most of the food it sells is outsourced from smallholder producers. 	<ul style="list-style-type: none"> ✓ Outlined the need to adhere to standards while promoting local food production. ✓ As the main source of their raw material is outsourced, the importance of capacity building and support to farmers were highlighted. ✓ The need for affordable finance and stable macro- and micro-economic environment were emphasized.
District Councils	Lusaka, Chilanga and Chibombo	Local government administration	<ul style="list-style-type: none"> ✓ Development Planning & Policy implementation. ✓ Key to CRFS is agricultural zoning, agricultural extension, land use planning and administration of food safety legislation. ✓ Monitoring and managing markets and marketers. 	<ul style="list-style-type: none"> ✓ Noted excessive conversion of agricultural land to non- agricultural land will have negative impact on food production and food security. ✓ Other concerns were low adherence to food safety regulation, thus endangering lives of consumers.
University of Zambia	Lusaka	Public educational establishment, involved capacity building	<ul style="list-style-type: none"> ☐ Education/ training; research and development; community outreach. 	<ul style="list-style-type: none"> ☐ Involved in operationalization of the CRFS concept by providing consultants.

Appendix 2

These maps show the prevalence of agricultural households and the relative importance of the main commodities produced in the specific districts that compose the Lusaka City Region.







FAO and RUF Foundation partnered to support a City Region Food System Assessment and Planning process in seven cities selected from across the globe— Lusaka and Kitwe (Zambia), Colombo (Sri Lanka), Medellín (Colombia), Quito (Ecuador), Toronto (Canada) and Utrecht (The Netherlands). A synthesis report on each city as presented here, describes the experiences from each city in terms of planning and informed decision-making, prioritising investments and design of sustainable food policies and strategies to improve the resilience and sustainability of the entire food system.

This entire series of 7 reports will provide a full overview of the experience of those cities, and culminated in a set of tools to support city regions to assess and better plan their food system around the world. For a detailed description of the CRFS assessment process, city examples, tools and project outputs, please visit the FAO Food for the Cities Programme and RUF CityFoodTools project websites.

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