Food and Agriculture Organization of the United Nations

RUAF Foundation

CITY REGION FOOD SYSTEM SITUATIONAL ANALYSIS

Lusaka, Zambia

FAO - Food for the Cities Programme

- WORKING DOCUMENT -

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ABOUT THIS REPORT

City region food systems (CRFS) encompass the complex network of actors, processes and relationships involved in food production, processing, marketing and consumption in a given geographical region. The CRFS approach advocates for strengthened connectivity between urban centres and surrounding areas –whether peri-urban or rural– for a fair rural development and well-managed urbanisation. At the same time, it fosters the development of resilient and sustainable food systems, smallholder agriculture, sustainable rural and urban production, employment, improved livelihoods, and food and nutrition security for all.

The Food for the Cities Programme aims at building more resilient and sustainable food systems within city regions by strengthening rural-urban linkages. The programme builds on the demand to better understand and operationalize the concept of city region food systems. It analyzes and assesses CRFS. The results will serve as a basis for further planning and informed decision-making, prioritizing investments and designing food policies and strategies, which aim at improving the resilience and sustainability of the entire food system, through a continuous participatory multi-stakeholder dialogue.

In collaboration with the RUAF Foundation, projects are carried out in eight city regions: Colombo (Sri Lanka), Dakar (Senegal), Kitwe and Lusaka (Zambia), Medellin (Colombia), Quito (Ecuador), Toronto (Canada) and Utrecht (the Netherlands).

This report describes the first phase of the city region food system (CRFS) assessment. This phase consists of a descriptive assessment and appraisal of the local context and CRFS, primarily based on the analysis of secondary data, stakeholder interviews and consultations. It provides an overview and description of the local context (including the political and institutional environment) and its CRFS. It includes a definition of the geographical boundaries of the CRFS, an overview of its overall structure and characteristics, an analysis of how it functions, stock of baseline information and identified gaps, and, to the extent possible, an indication of general trends and critical issues relevant to increase the sustainability and resilience of the specific CRFS. These key issues will be further examined in the next project phases: in-depth assessment and policy planning phases.
The situation analysis builds on secondary data. Secondary data includes information from spatial datasets, statistics, studies, institutional, policy and legal frameworks, and information obtained from local expert knowledge through stakeholder consultations, focus-group discussions and interviews.

The report was prepared by Godfrey Hampwaye (University of Zambia (UNZ)), Mebelo Mataa (UNZ), Gilbert Siame (UNZ) and Olipa Lungu (UNZ), with assistance and guidance from Guido Santini, Yota Nicolarea, Louison Lançon and Diana Gutiérrez from FAO's Plant Production and Protection Division (AGP).

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1. INTRODUCTION

Until recently, Food System Planning has been absent in urban planning and city policy making. This is despite that more than 50 % of the world's population living in urban areas (FAO, 2015). The proportion of urban dwellers is expected to reach 70 % 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. In order to ensure food and nutrition security under a high population and rapidly urbanizing environment, the Food and Agricultural Organization of the United Nations (FAO) is promoting the City-Region Food System approach to assure reliable and resilient food systems for cities. The city region food system offers a point of convergence for achieving the eradication of hunger and poverty, the sustainability of food systems and the development of rural-urban linkages.

In Zambia, the project is being piloted in Lusaka and Kitwe. This report covers research and project activities that have been implemented in the inception phase for the City of Lusaka. The CRFS approach assumes that ensuring availability, accessibility to and affordability of sufficient, quality, appropriate, safe and healthy food for a growing urban population requires better understanding and planning for the food system (FAO, 2015). For this to be achieved, planning has to rely on up to date and reliable data and an appreciation of the local contexts such as governance structures and local natural resource endowments.

Objective of report

This report largely deals with collection of secondary baseline data to be used in understanding the local context of the food system in the city region of Lusaka. The objective of this report is to outline what activities have been undertaken, managed and implemented so far. This report further covers by and large work done on conceptual and methodological frameworks; and a brief review of literature on the food situation in the City of Lusaka.

2. DELIMITATION OF THE LUSAKA CITY REGION FOOD SYSTEM

The main stakeholders involved in the food system were gathered at the occasion of a workshop held in Lusaka in July 2015. The key objectives of the stakeholders' workshop and indeed this report were/are:

- Identify a multi-stakeholder taskforce to oversee the implementation of the project.
- Highlight the main issues occurring in the CRFS;
- Map the stakeholders involved in the food system;
- Geographically begin to define the Lusaka City Region.

In regards to this last objective, the type of region in question is a uniform one rather than a functional one, especially in ecological terms, food types and sources were used for this purpose as indicated in Table 1. This table was used to collect the necessary information (based on experiences and institutional records) that would later on be used to collaboratively develop a criteria for defining a city region of Lusaka. The facilitators provided the guidelines, as listed below, and performed a hypothetical demonstration.

2.1. PROCEDURE

During the workshop, the following procedure was carried on in order to delimitate the city region food system boundaries:

1. The participants were requested to indicate the sources of the different types of food in the Table 1 based on their experiential knowledge;
2. For the sources beyond the neighboring districts to Lusaka District, the participants were guided to indicate the exact sources;
3. For each food source, the frequencies were added together for the crop types to generate the total scores;
4. To generate the proportions for each source, the total scores were divided into the overall total score of 607;
5. To generate the Lusaka city region, a minimum threshold of 10% was considered to be critical. Therefore only those sources that scored 10% and above were included in the definition of the city region.

Table 1. Delineation of Lusaka City Region- Food sources and types in Lusaka

Food type	Chongwe	Chilanga	Shibuyunji	Chibombo	Mumbwa	Kafue	Chisamba	Lusaka City	Beyond Neighbouring Districts
Fish	1	5	1	5	1	9	1	1	9
Fresh Vegetables	9	9	8	7	5	6	7	7	3
Fruits	5	4	2	6	3	4	5	4	5
Processed Beef	4	1	0	5	0	3	5	10	2
Beef	9	7	7	9	8	6	9	10	8
Milk	8	7	5	10	5	7	10	9	6
Poultry	11	9	5	7	6	6	6	8	3
Maize	8	9	7	8	8	8	8	8	7
Wheat	2	6	1	5	2	1	9	7	3
Pork	7	7	3	7	3	8	7	9	1
Goats	6	2	4	6	7	3	6	2	3
Potatoes	5	3	2	4	1	4	6	4	4
Beans	1	0	0	0	1	0	0	1	3
G/nuts	1	1	1	1	1	0	1	1	1
Total Scores	**77**	**70**	**46**	**80**	**51**	**65**	**79**	**81**	**58**
%	**12.7**	**11.5**	**7.6**	**13.2**	**8.4**	**10.7**	**13.0**	**13.3**	**9.6**

2.2. RESULTS

The main results of the procedure are:

a. The highlights show that Chongwe, Chibombo, and Chisamba are perceived to be critical sources of food for the City of Lusaka followed by Kafue and Chilanga;
b. 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;
c. The Food types that are imported into the City from other provinces are fish, fruits, beef, milk and maize.

These proportions in Table 1 resonate with the observed dominant phenomena in the food sector in Lusaka. Preliminary fieldwork findings indicate that most informal food markets rely on food sources beyond the Lusaka District boundary. Based on this data, GIS was used to generate a preliminary Lusaka City Region Food System (Figure 1).

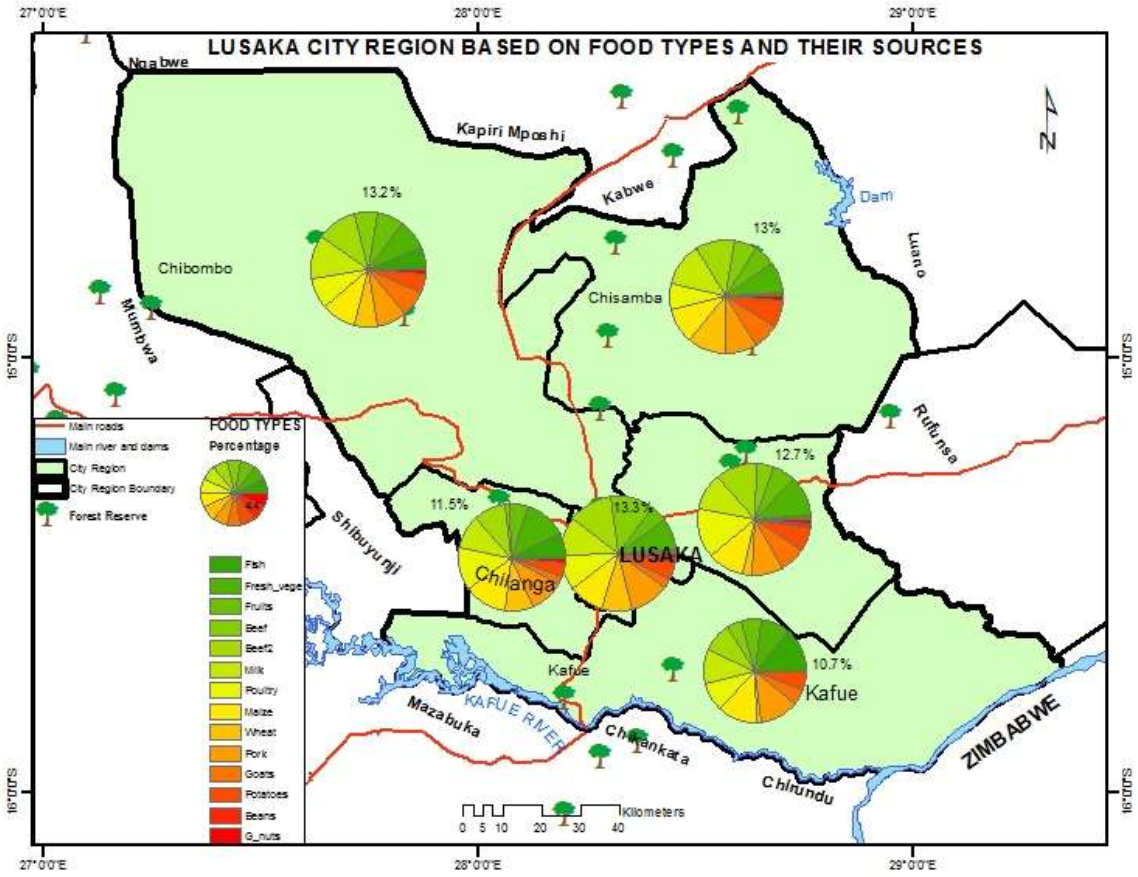


*Figure 1. Preliminary Extent of the Lusaka City Region Food System (**Source: Lusaka CRFS Workshop 2015**)*

2.3. OBSERVATIONS ON CITY REGION MAPPING EXERCISE

The Lusaka city region map indicates that the pattern of the city region for now is not circular but follows the boundaries of the districts which have been identified. As at present, there are no identified compelling factors that would delimit the Lusaka City region food System based on exact data on quantum and types of food produced vis-à-vis geographical space in the region. Data capture about food entering and leaving the City of Lusaka remains a challenge and unavailable; hence, the map is based on experiential knowledge. As such, the map represents some degree of generalization and is preliminary. A more precise definition of the region can only be generated after further data collection, ground truthing and analysis to pinpoint exactly where in each district food comes from. At this stage, this map is a pointer and will be used as a basis upon which a more accurate city region mapping will be done.

In addition, the map does not include most of the physical features such as rivers, lakes, hills and forests because more ground work is needed to develop geo-spatial data for these features. The key hydrological features in the mapped area include the Kafue River, the Chongwe River and Ngwerere Stream. Other areas with hydrological significance that has a bearing on food systems have been captured under the situation analysis of this report. Lusaka is generally a flat area and is prone to flooding. However, geo-spatial data on disaster prone areas is unavailable. The Chilanga Botanical Gardens and the Lusaka National Park form another set of key features but still remain unmapped and data unavailable. Thus, when revising this preliminary map, measures will be taken to improve the contexts by adding more features on the map.

3. STAKEHOLDER MAPPING

The mapping of the stakeholders was done during a workshop gathering all of the main actors involved in the city region food system, held in Lusaka in July 2015.

3.1. COMPARISON OF LINKS, SUPPORT AND INFLUENCE

At the beginning of the workshop all the stakeholders were requested to give brief presentations about their organizations and how they fit in the project (Table 2). In terms of the linkages, the participants were requested to indicate on the flip chart how they are linked or related with other stakeholders including those that were not represented at the workshop. The direction of the arrow shows the direction of the influence of the relationship while the size of the arrow indicates the degree or strength of the linkage. The analysis of linkages, support and influence emanates from the net map (Figure 2) and analysed in Table 3. Table 3 shows that there are variations in terms of linkages among the stakeholders. In terms of the strength, these vary from low to medium and high.

Table 2. Key actors and their roles

Acronym	Full name	Position in the food value chain
ZRA	Zambia Revenue Authority	National Tax Collector/ Regulator
ZAMBEEF	Zambia Beef Company	Private agribusiness involved from production to distribution
MLGH	Ministry of Local Government and Housing	Government ministry administering local govt and housing
MOA	Ministry of Agriculture	Government ministry administering agricultural (crop) sector
Ind PRODUCERS	Independent producers	Medium to small scale producers
MOH	Ministry of Health	Ministry administering the health sector
CCPC	Competition and Consumer Protection Commission	State institution ensuring fair competition and protection of consumer
ZamCops	Zambia Copyright Society	Private society promoting copy right and intellectual protection
Gamestores	International mega retail chain	Retail chain serving mostly high income population
ZABS	Zambia Bureau of Standards	Statutory body developing and enforcing standards
ZAM	Zambia Association of Manufacturers	Platform promoting interests of Zambian Manufacturers
MCTI	Ministry of Commerce Trade and Industry	Ministry regulating and promoting commercial and industrial sector

[z]Although invitations included the whole agro value chain not all invitees attended, thereby precluding inclusion of issues such as environment.

3.2. STAKEHOLDER MAPPING AND ANALYSIS – ESTABLISHING RELATIONSHIPS

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 and why the participants were required to do. 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 Tables 2 and 3, the links resultant also helped the participants to begin to think creatively about the key determinants of the present food situation in Lusaka.

3.2.1. Methodology

The Netmap method was used for stakeholder analysis. The primary method used for the stakeholder analysis was the Net-Map method (Schiffer, 2007). 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 (Figure 2, Table 3). 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 'personalised' approach and participation in the workshop and the entire project.

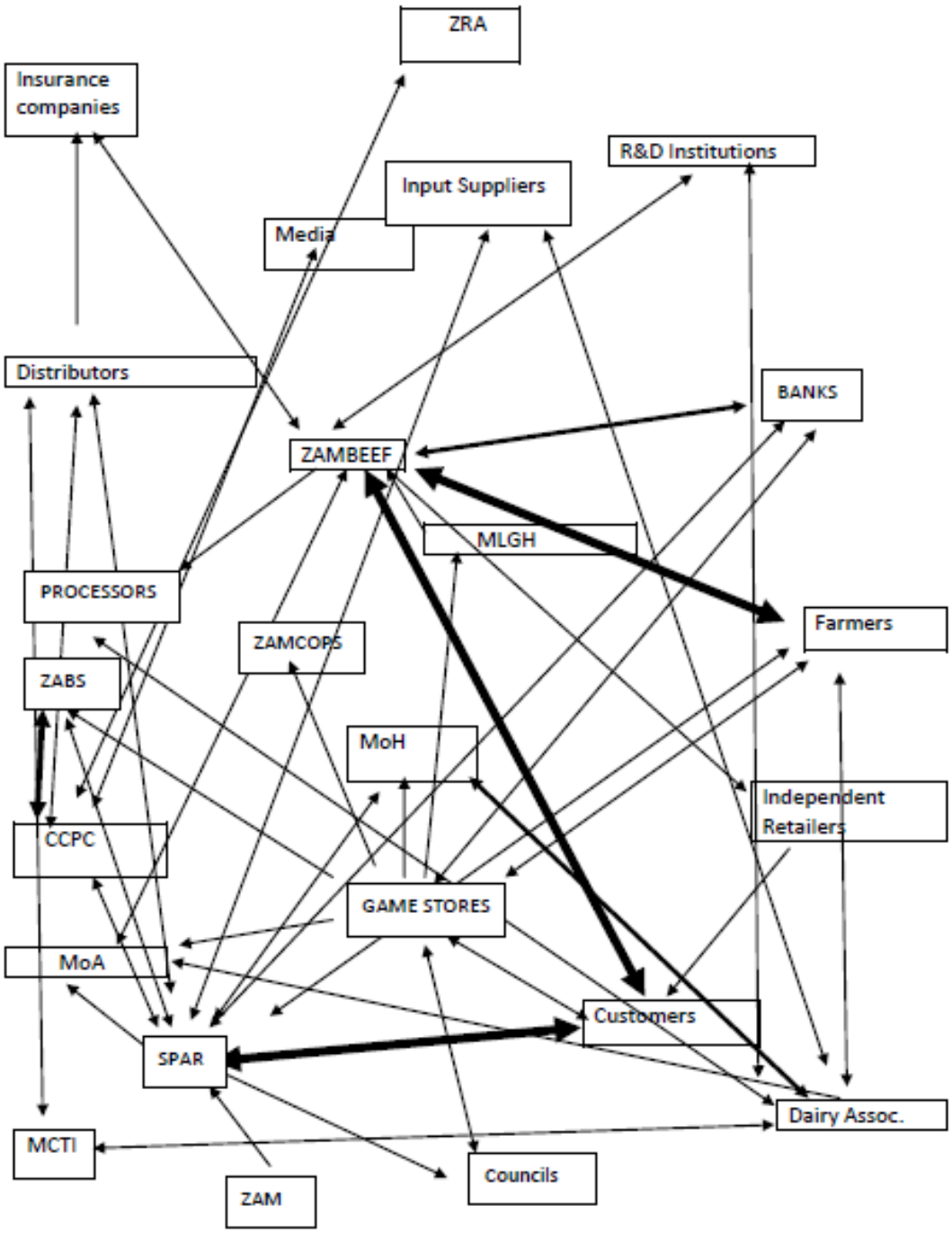


Figure 2. Network Map for Lusaka region

Table 3. Comparisons of links, support and influence

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

3.2.2. Observations and implications - Reviewing relationships

a. Key stakeholders in the food value chain included: Zambeef, Spar, and Game Stores;
b. Next in importance are the farmers, Competition and consumer protection commission and Dairy Association of Zambia;
c. Those categorised as high are mainly the retailers, except for the Zambeef which covers the entire food value chain. This means 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 Table 4.

Table 4. 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
Games Stores	Lusaka and Kitwe	A multinational **retail** chain.	✓ Dealing in the high end goods and wealthier sector of the population. ✓ Provides customers with fresh agro produce and processed foods.	✓ There is 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.	✓ Operates a number of local franchises. ✓ Provide high quality fresh and processed foods.	✓ Being 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**.	✓ Protection of consumer against unfair trading practices. ✓ Promotes fair competition in trade and commerce related sector. Works with other regulators such as Zambia Bureau of Standards	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 centers	Faith based non-governmental organization involved in **advocacy and research**.	✓ Promoting social justice and protection of the poor. ✓ Produces monthly estimates of minimum cost of living- the basic food basket.	✓ Outlined the need to ensure that the basic food requirements of the poor are met.
Caritas Zambia	Lusaka and selected Catholic archdiocese.	Faith based non-governmental organization involved in **advocacy and training**.	✓ Training and farmer support	✓ Implement programmes helping farmers increase production. ✓ Mechanisms have to be developed to promote policies on increased agricultural production

ZAMBEEF	Lusaka	Zambia based international **agribusiness** concern involved in the whole food value chain.	✓ Production, processing, distribution, wholesaling and retailing. Largest meat provider and processor. ✓ Most of the food it sells is outsourced from small holder producers.	✓ 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**.	✓ 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.	✓ Noted excessive conversion of agricultural land to non- agricultural land will negative impact food production and food security. ✓ Other concerns were low adherence to food safety regulation and thus endangering lives of consumers.
University of Zambia	Lusaka	Public educational establishment, involved **capacity building**	✓ Education/ training; research and development; community outreach.	✓ Involved in operationalisation of the CRFS concept by providing consultants.

4. NATIONAL POLICY AND LEGAL FRAMEWORK

4.1. INSTITUTIONAL AND POLICY CONTEXT – A SCOPING NARRATIVE

As an agricultural institution, the Zambia National farmers Union (ZNFU) brings agribusiness, small-scale farmers, agricultural cooperatives, and commodity associations together to enable it to, in political economy terms, 'capture the apparatus of the state and make it serve their own political and economic interests' (Gilpin, 1991). The ZNFU is concerned with the competitiveness of the agricultural sector, and, to bring this about, it takes on a strong capacity-building/developmental role. While the Ministry of Agriculture presides over issues of agricultural land, farm input supply and import/export restrictions, the ZNFU, is concerned with competitiveness, and the growth and development demands of the agricultural sector (Abrahams, 2010). ZNFU is comprised of a number of commodity associations, and one such is the Poultry Association of Zambia (PAZ) that was established in 2000 (Abrahams, 2010). PAZ is seen as the mouthpiece of the entire poultry industry in Zambia (Poultry Bulletin, 2001) and aims at tackling 'head-on, the difficulties faced by the poultry industry by liaising with government through the ZNFU to drive demand and enable growth and diversity' in the sector. PAZ is 'driven to enhance the capacity of members through measured production, improved marketing and access to technical information, lower input costs and lobbying government' (PAZ, 2007). It focuses specifically on the poultry industry and its objectives are: to maintain disease-free status in Zambia; to 'support, promote, develop and protect' the interests of members and the industry; and to foster a 'sustainable internal trading mechanism' in Zambia (Poultry Bulletin, 2002:40). Truly, PAZ is a dynamic and essential institution for the growth of the poultry industry in Zambia in general and Lusaka in particular.

4.2. INSTITUTIONAL AND LEGISLATIVE FRAMEWORK RELEVANT TO THE LOCAL FOOD SYSTEM

Currently, there are few regulations/ laws relating directly to City Region Food Systems. However, there are many statutes, by laws and regulations governing the production, distribution, processing, retail and consumption of the different 'foods' and therefore important to food production and supply within the 'city region'. For the purposes of this review and going forward in institutionalizing the CRFS, the following pieces of legislation will be critical and have been identified for review:

- **Production**

i. Farmer Input Supply Program.

- **Distribution and Storage**

ii. Competition and Consumer Protection Commission Act;
iii. Food Reserve Agency Act.

❖ Processing

i. Public Health Act;
ii. Competition and Consumer Protection Commission Act;
iii. Food and Drug Act.

❖ Retail

i. Public Health Act;
ii. Competition and Consumer Protection Commission Act;
iii. Food and Drug Act.

❖ Land use and zoning

i. Urban and regional planning Act;
ii. Local Government and Decentralization Act.

4.3. GENERAL DESCRIPTIONS OF INDIVIDUAL LEGISLATION

4.3.1. Local Government Act, Chapter 281 of The Laws of Zambia (With amendments of 1995)[1]

Agricultural Related Functions of the Council:

- To establish and maintain farms and allotment gardens;
- To take and require the taking of measures for the;
- Storage, market and preservation of agricultural produce;
- Conservation of natural resources;
- Prevention of soil erosion, including the prohibition and control of cultivation;
- To take and require the taking of measures for control of grass weeds and wild vegetation and for the suppression and control of plant and insect pests and diseases;
- To maintain, protect and control local forests and woodlands;
- To control the keeping and movement of livestock;
- To establish and maintain ponds;
- To establish and maintain grazing grounds;
- To take measures for the destruction and control of bees and of dangerous animals and reptiles;
- To control the slaughtering of animals the meat of which is intended for human consumption; to control the sale of such meat; and to require the disposal of diseased animals and carcasses and of meat which is unfit for human consumption;
- To establish and maintain abattoirs, cold storage facilities and plans for the processing of by-products from abattoirs;
- To control the movement of the carcasses of animals;
- to establish and maintain roads;

[1] *Source: http://www.parliament.gov.zm/sites/default/files/documents/acts/Local* Government 20Act.pdf

- to exercise general control, care and maintenance of all public roads, streets, avenues, lanes, sanitary lanes and foot walks forming part thereof, bridges, squares, ferries and water courses and to remove all obstacles there from;
- to close or divert ferries and water courses;
- To control persons and premises engaged in or used for the manufacture, preparation, storage, handling, sale;
- Distribution of items of food or drink;
- To establish and maintain premises for the sale, of and to sell there from, items of food and drink (including beer and other intoxicating liquor) for consumption on or off the premises;
- To establish and maintain catering services.

4.3.2. The Farmer Input Support Programme[2]

The farmer input support programme has been under implementation since the 2002/2003 season. This programme was originally designed to address the then declining crop production, especially maize, following succession of droughts and flood seasons that the country had experienced. These calamities had resulted in a diminished asset base for many small-scale farmers, as they attempted to use whatever resources they had to finance crop production, and ensure their own domestic food security.

4.3.3. The Competition and Consumer Protection Act, of 2010[3]

The functions of the Commission are to:
- Review the operation of markets in Zambia and the conditions of competition in those markets;
- Review the trading practices pursued by enterprises doing business in Zambia;
- Investigate and assess restrictive agreements, abuse of dominant positions and mergers;
- Investigate unfair trading practices and unfair contract terms and impose such sanctions as may be necessary;
- Undertake and publish general studies on the effectiveness of competition in individual sectors of the economy in Zambia and on matters of concern to consumers;
- Act as a primary advocate for competition and effective consumer protection in Zambia;
- Advise Government on laws affecting competition and consumer protection;
- Provide information for the guidance of consumers regarding their rights under this Act;
- Liaise and exchange information, knowledge and expertise with competition and consumer protection authorities in other countries;
- Advise the Minister on agreements relevant to competition and consumer protection and on any other matter relating to competition and consumer protection;

[2]*Source: http://www.agriculture.gov.zm/index.php?option=com_content&view=article&id=195:the-farmer-input-support-programme-and-the-food-reserve-agency&catid=100&Item*

[3]*Source : http://www.zambialaws.com/Principal-Legislation/chapter-417competition-and-consumer-protection-act.html*

- Cooperate with and assist any association or body of persons to develop and promote the observance of standards of conduct for the purpose of ensuring compliance with the provisions of this Act; and
- Do all such acts and things as are necessary, incidental or conducive to the better carrying out of its functions under this Act.

4.3.4. Food Reserve Agency Act[4]

To establish the Food Reserve Agency and define its powers and functions; to establish a national food reserve; to transfer to the Government certain assets, rights, liabilities and obligations of Nitrogen Chemicals of Zambia Limited and Zambia Co-operative Federation Limited; to repeal the National Agricultural Marketing Act 1989; and to provide for matters connected with or incidental to the foregoing.

Functions of Agency

National Strategic Food Reserve

- Designation of a commodities;
- Purchase and importation of designated agricultural commodities;
- Sale of designated agricultural commodities;
- Receipt of designated agricultural commodity and non-designated agricultural commodity.

Crop marketing

- Market and trading of designated agricultural commodities;
- Function of Agency related to designated agricultural commodities;
- Power to inspect records;
- Penalties for disregarding charge or lien.

Weighing and grading standards for designated commodities

- Standard of designated agricultural commodity
- Offence and penalty for misrepresenting a grade

Registration of Traders and Processors

- Functions related to storage facilities and equipment;
- Agri-business activities;
- Standards of conduct of traders and processors;
- Reports by traders and processors;
- Penalty for failing to register or comply with standards of conduct;
- Power to inspect records;
- Penalties for disregarding registered charges or lien.

National Food Emergency

- Declaration of national food emergency;

[4] *Source: http://www.zambialii.org/zm/legislation/consolidated-act/225*

- Vesting of Agency functions.

4.3.5. The Food and Drugs Act Chapter 303

This Act protects the public against health hazards and fraud in the sale and use of food, drugs, cosmetics and medical devices; and to provide for matters incidental thereto or connected therewith.

Description of food

"Food" includes any article manufactured, sold or represented for use as food or drink for human consumption, chewing gum, and any ingredient of such food, drink or chewing gum; Where a standard has been prescribed for any food, any person who labels, packages, sells or advertises any food which does not comply with that standard, in such a manner that it is likely to be mistaken for food of the prescribed standard, shall be guilty of an offence.

Standards of foods

Any person who sells to the prejudice of the purchaser any food which is not of the nature, or is not of the substance, or is not of the quality, of the article demanded by the purchaser, shall be guilty of an offence. Any person who sells, prepares, packages or stores for sale any food under insanitary conditions shall be guilty of an offence.

4.3.6. The Public Health Act, Chapter 295 of the Laws of Zambia

Functions of the Public Health Act

Protection of foodstuffs

- Construction and regulation of buildings used for the storage of foodstuffs
- No person shall reside or sleep in any room in which foodstuffs are stored, etc.

Water and food supplies

- Duty of Local Authority as to pollution of water supplies
- Sale of unwholesome food prohibited
- Seizure of unwholesome food
- Penalty.

4.3.7. The Markets Act, the Laws of Zambia Chapter 290[5]

Functions of the market Act:

- Regulating the use of markets and market buildings, and keeping order, preventing obstructions, and maintaining cleanliness therein or in the approaches thereto;
- Prescribing the goods which may be sold in any market;
- Prohibiting the sale of any specified kind of goods within any specified area (hereinafter referred to as the market area) except in a market established under this Act;

[5] *Source:* http://www.parliament.gov.zm/sites/default/files/.../acts/Markets%20Act.pd

- Requiring goods brought into markets for sale to be sold by public auction, and imposing and providing for the collection of a fee payable on the amount realized;
- Enabling the local authority from time to time to determine by resolution stallages, rents or tolls and fees for inspection of produce and providing for the collection thereof;
- Enabling the local authority from time to time to determine by resolution the days and the hours during each day on which a market may be held and preventing the sale and purchase of goods in the markets on any days or at any hours except those determined; (*g*) prescribing the weights, scales and measures to be used in the sale of any particular produce and regulating the use thereof; (*h*) the examination of produce or articles of food and prohibiting the adulteration thereof;
- Enabling the local authority from time to time to determine by resolution the maximum price which may be demanded on the sale by retail of any article of food in a market;
- Regulating the duties and conduct of inspectors and other persons appointed for the purposes of this Act.

4.3.8. The Urban and Regional Planning Act, 2015[6]

- This Act provides for development, planning and administration principles, standards and requirements for urban and regional planning processes and systems;
- Provide for a framework for administering and managing urban and regional planning for the Republic;
- Provide for a planning framework, guidelines, systems and processes for urban and regional planning for the Republic;
- Establish a democratic, accountable, transparent, participatory and inclusive process for urban and regional planning that allows for involvement of communities, private sector, interest groups and other stakeholders in the planning, implementation and operation of human settlement development;
- Ensure functional efficiency and socioeconomic integration by providing for integration of activities, uses and facilities;
- Establish procedures for integrated urban and regional planning in a devolved system of governance so as to ensure multi-sector cooperation, coordination and involvement of different levels of ministries, provincial administration, local authorities, traditional leaders and other stakeholders in urban and regional planning; ensure sustainable urban and rural development by promoting environmental, social and economic sustainability in development initiatives and controls at all levels of urban and regional planning;
- Ensure uniformity of law and policy with respect to urban and regional planning; repeal the Town and Country Planning Act, 1962, and the Housing (Statutory and Improvement Areas) Act, 1975; and provide for matters connected with, or incidental to, the foregoing;
- An interesting point to mention to this Act that relates directly with the food sector is that amongst the provisions for Regional development Plans is “the use and development of land of strategic importance for biodiversity or food security” (Part III, article 18 (d))

[6] *Source: http://www.parliament.gov.zm/sites/default/files/documents/acts/TheUrbanandRegionalPlanningAct,202015.pdf*

5. SNAP-SHOT OF THE LOCAL CONTEXT

In order to understand fully the CRFS for the City of Lusaka, it is important to take stock of both the natural and infrastructure resources available in the Lusaka CRFS. As presented in Figure 1, this region goes beyond the administrative boundaries of the City of Lusaka to include the surrounding districts which include Chongwe, Chibombo, Chilanga and Kafue. Similarly in describing the CRFS for Lusaka, the natural and infrastructure resources for the surrounding districts are included as well.

5.1. LUSAKA DISTRICT

Lusaka district is the largest urban centre in the Lusaka City region in terms of population size and economic activity. The district is rich in natural resources such as forests, ground and surface water, and land among others. However, these resources are threatened due to urban expansion and rapid change of land use.

5.1.1. Location and land

The City of Lusaka covers a total land surface area of 375 km^2 and shares boundaries with Chongwe District to the East, Chibombo District to the North, Kafue to the South East and Chilanga to the South (UN-Habitat, 2007). The geology of Lusaka comprises an ancient basement complex overlaid with limestone and dolomite. Its topography is mostly flat with an elevation ranging from 1,200 m to 1,300 m above sea level (JICA, 2009). In terms of land use categories, the City of Lusaka has ten (10) major land uses which include residential, commercial, industrial, agriculture, institutional, parks and recreation, cemetery, open spaces, administration, roads and utilities with residential being the largest land use covering an area of 21,176 hectares of the total land mass followed by agriculture as shown in Table 5.

Table 5. Land Use Categories in Lusaka City (Source: JICA, 2009)

	LAND USE		HECTARE (HA)
1	Residential		21,176
	I	*Formal Settlements*	6,847
	Ii	*Informal settlements*	4,851
	iii	*Proposed Housing Area*	1,155
	iv	*Small Holdings*	8,323
2	Commercial		1,064
3	Industrial		1,350
4	Roads and Utilities		863
5	Institution		1,252
6	Parks and Recreation		415
7	Administration		525
8	Cemetery		319
9	Agriculture		2,856
10	Open spaces		6,373
	Total		57,369

In terms of land use location, most of these land uses are scattered around the City in conformity with the zoning ordinances of the Doxiadis Plan of 1975 which was the first development plan of the City and was largely anchored on the principles of master planning. For instance, formal residential development is located to the East of the Central Business District (CBD) whereas most of the unplanned residential settlements are located towards the North, North-West and South of the CBD. Industrial uses are concentrated to the West while agriculture is on the East and South of the City as shown in Figure 3.

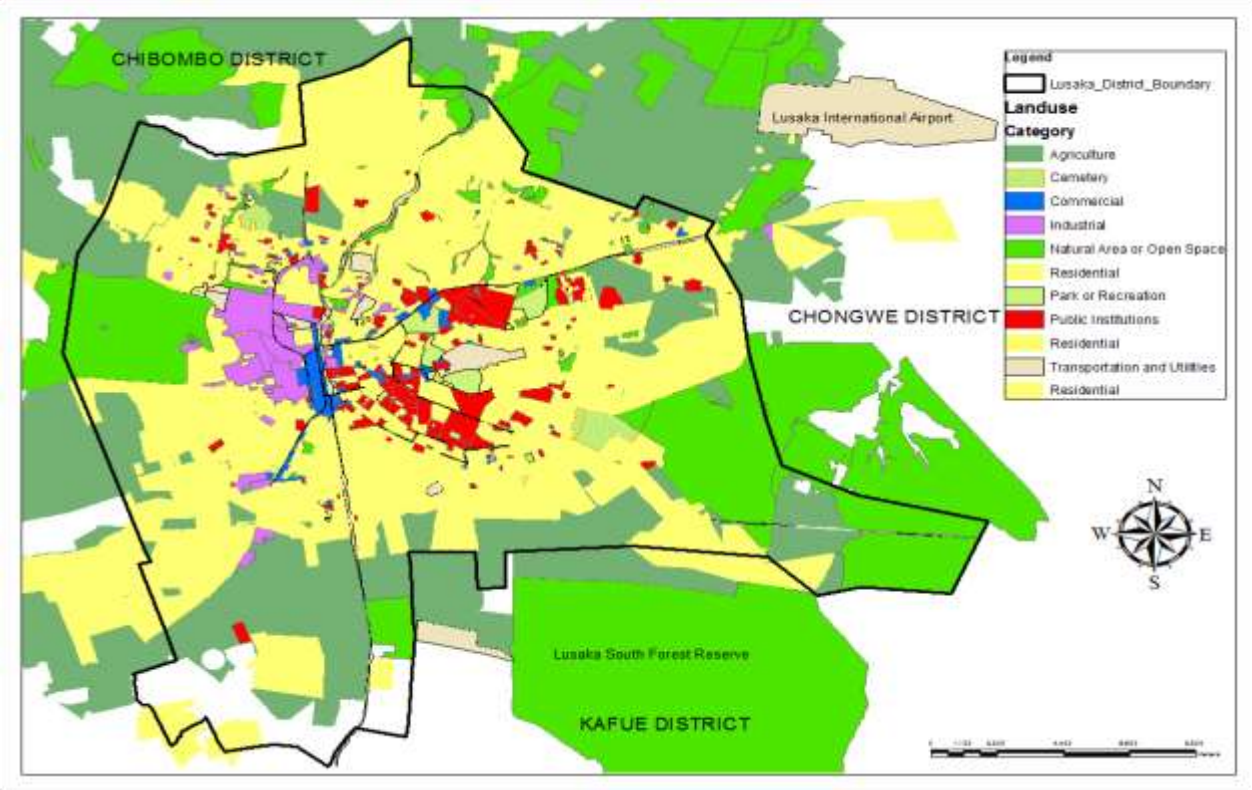


Figure 3. Spatial Distribution of Land Use in Lusaka and Surrounding Districts (Source: Author, 2016)

Inadequate land within the City boundary has constrained the re-development of Lusaka, especially in the peri-urban areas. As such, the Master Plan of Lusaka City prepared by JICA in 2009 and the Lusaka Integrated Development Plan (IDP) of 2000 both proposed the extension of the City boundary to provide adequate land for redevelopment and regeneration of the City and bring the Lusaka International Airport, which is currently in the neighbouring Chongwe District and additional land around the city within its boundary. However, these proposals have not been approved (LCC, 2008).

5.1.2. Land use institutional and legal framework

The principle legislation that guides land use planning in Zambia is the Urban and Regional Planning Act No. 3 of 2015 which repealed and replaced the Town and Country Planning Act Cap 283 of 1962. The new Act provides for the establishment of a planning framework for administering and managing urban and regional planning as well as guidelines, systems and processes for Urban and Regional Planning in Zambia. Under this Act, the responsibilities of the Minister of Local Government and Housing relating to Spatial Planning are to: i) appoint planning authorities and to delegate functions to them, ii) order the preparation of regional, structure and local area plans and to approve, revoke or modify such plans, iii) approve or reject applications for subdivision, development of land or change in land use, iv) consider appeals against rejection of applications by planning authorities for development, subdivision of land or change in land use or refer such applications to the Town and Country Planning Tribunal, v) recommend

the acquisition of reserve land for development purposes and to attend to the payment of compensation whenever required and vi) ensure enforcement of development control.

5.1.3. Water resources

According to a study by Japan International Corporation Agency (JICA) in 2009, the hydro-geological features of Lusaka City and adjoining areas are characterized by an aquifer having a unique karst, cavities, and fissures formed in soluble carbonate rocks. The City's climatic condition has clear classification of rainy season and dry season and this has also influenced the hydro-geological features of the city.

5.1.4. Surface water

Lusaka City is divided into three drainage basins namely Chongwe, Chunga- Mwembeshi and Kafue Basins (JICA, 2009). The City only has small-scale rivers and the prominent ones are Ngwerere, Chunga and Chalimbana streams which flow to the North-Eastern and North-Western directions respectively (LCC, 2008). The Ngwerere and Chalimbana streams drain most of the North-East of the City into the Chongwe River, a tributary of the Zambezi River. Other rivers of the City are drained to the Kafue River by the Chunga stream in the North-West and a series of small streams to the south of the City as shown in Figure 4. The Kafue River flows about 50 km south of Lusaka, outside the city boundaries. Water is obtained from the Kafue River at an extraction rate of 10, 500 m^3 /day, accounting for 50 % of the city's water supply. The city obtains the remainder of its water supply from underground water and the pumping rate is 110,000 m^3 /day (Lusaka DSA, 2008).

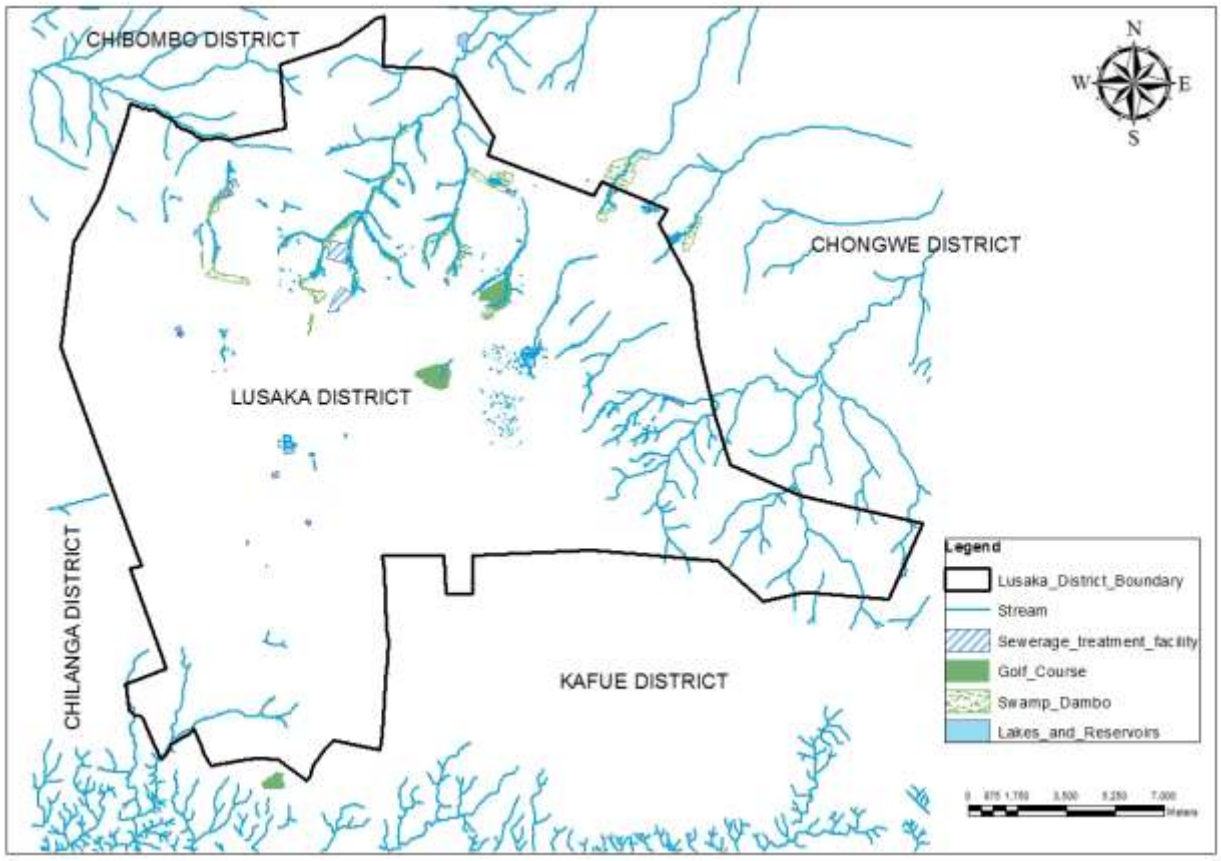


Figure 4. Surface Water Drainage System of Lusaka City Region (Source: Author, 2016)

5.1.5. Underground water

Underground water in Lusaka accounts for almost 61 % of the total water supply within Lusaka. The City's underground hydrology is built over a karstic dolomite aquifer comprising an ancient basement complex overlain by limestone and dolomite (JICA, 2009). However, its porous and soluble characteristics render it susceptible to pollution. The water table in Lusaka is generally close to the surface making the extraction of ground water easy. However, increased rates of urbanization and slow rate of connectivity to piped water supply systems by Lusaka Water and Sewerage has resulted into the exploitation of other sources such as underground water supply through the construction of private boreholes thereby exerting enormous pressure on the Lusaka aquifer (LCC, 2008).

5.1.6. Water resources institutional and legal structure

Water resources management in Zambia is regulated by the Water Resources Management Act No. 21 of 2011 which repealed and replaced the Water Act Cap 198 of 1949. This Act provides for the establishment of a water resource management authority and defines its powers and functions.

Established under the Ministry of Energy and Water Development, the Department of Water Affairs (DWA) is responsible for the overall coordination of the water sector including policy formulation and monitoring developments in the water sector. It is also responsible for both surface and ground water resources. DWA was originally responsible for many smaller schemes but has since seconded staff in certain localities to assist local authorities that have taken over these schemes. DWA is also responsible for drilling boreholes in rural areas using GRZ and donor funds before handing them over to V- WASHEs and D-WASHEs (GRZ, 2011).

5.1.7. Forests

Lusaka city had three (3) gazetted forest reserves and these are the Lusaka East Forest Reserve No. 27, Lusaka North Forest Reserve No. 28 and the Lusaka South Forest Reserve No. 26, and No. 55 administered by the Lusaka Forestry District Office (Figure 5) (JICA, 2009). However, the City currently has only one (1) gazetted forest reserve; namely the Lusaka East Forest Reserve No. 27. It is an indigenous forest with an area of 1,764 Ha and is located in Lusaka East near Bauleni Compound. The forestry reserve plays an important role in protecting the Chalimbana head waters. However, it is difficult to estimate the number of trees found in the forest as it consists of indigenous species that are not evenly distributed. The other two forest reserves managed by the district are in Kafue District and these are Lusaka South Forest Reserve No. 26 with an area of 4, 798 Ha which also houses the Lusaka South Multi Facility Economic Zone (MFEZ) and Forest Reserve No. 55 with an area of 1, 982 hectares (JICA, 2009).

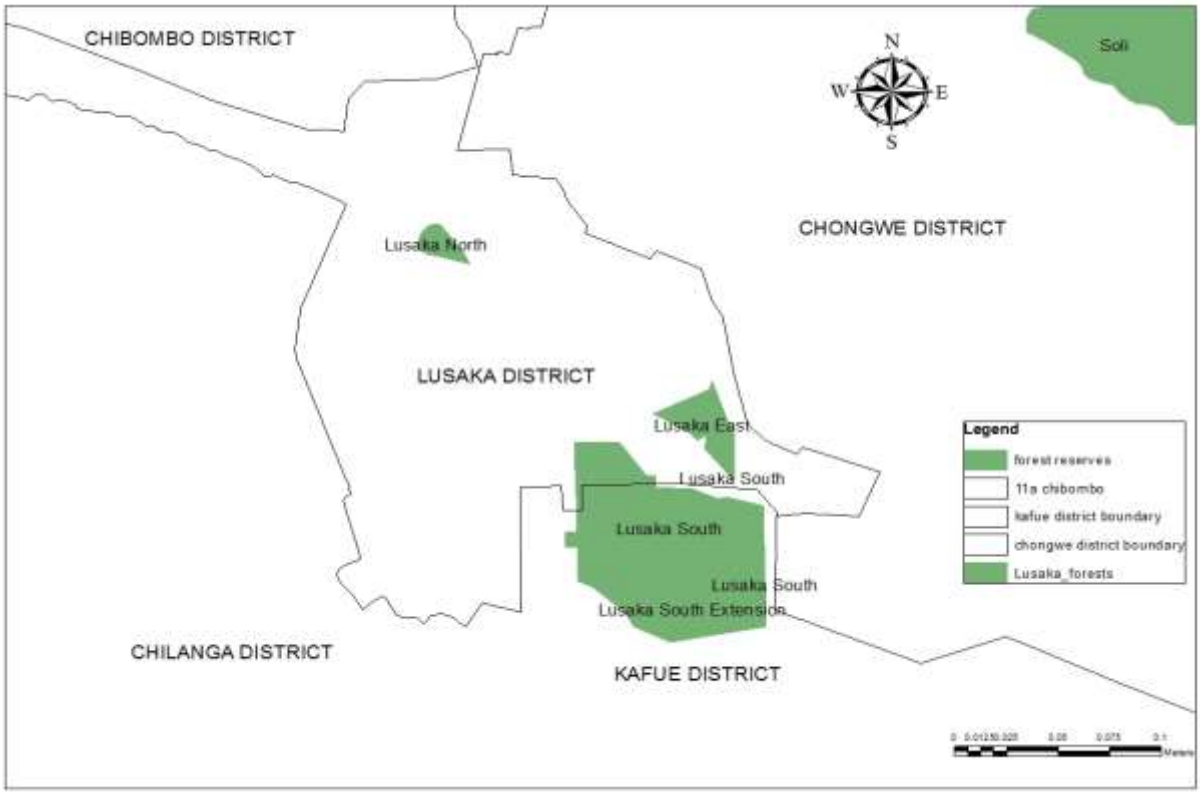


Figure 5. Distribution of Gazetted Forests in Lusaka (Source: Author, 2016)

The Lusaka North Forest Reserve No. 28 which was located near Chazanga and SOS covering an area 368 hectares has been depleted and degazetted. There are also two (2) private forests consisting of pines and eucalyptus in the Makeni area to provide firewood and construction poles. Moreover, some natural forests are located in Chisamba, Chipeme and Chongwe, and these consist of acacia, pine and mukusi trees (JICA, 2009).

5.1.8. Forest resources institutional and legal structure

The Forestry Department of the Ministry of Lands, Natural Resources and Environmental Protection (MLNREP) is a government agency that is responsible and mandated to provide forest management services in Zambia. The Forest Act of 1999 provides for the establishment of the forest department in this Ministry whose responsibilities include: the management of state forests, providing guidelines and supervision for the management, restoration and establishment of forests, as well as facilitating and regulating forest industries, providing extension services and research. The Forestry Department is also responsible for the implementation of the REDD+ activities in Zambia, at the national and sub-national levels, and it has representatives in each of the country's ten provinces, through provincial forest departments. The forest department's services can be categorized into three thematic areas: forest management, forest research and forest extension.

5.1.9. Road infrastructure

The official road network in Lusaka City has a total length of 1,600 km (Figure 6). On the other hand, the GIS data on the road network conducted by JICA in 2009 revealed that the City has about 2,800 km of roads and streets, including small paths and single tracks (JICA, 2009). The major roads have been improved well in the last decade with the help of the international community such as the Road Sector Investment Program Phase - I (ROADSIP-I) and the Project for Improvement and Maintenance of Lusaka City Roads (Phase - I, II, III). The improved roads include Great East Road, Great North Road, Kafue Road, Lumumba Road, Independence Avenue, Church Road and other major roads (JICA, 2009).

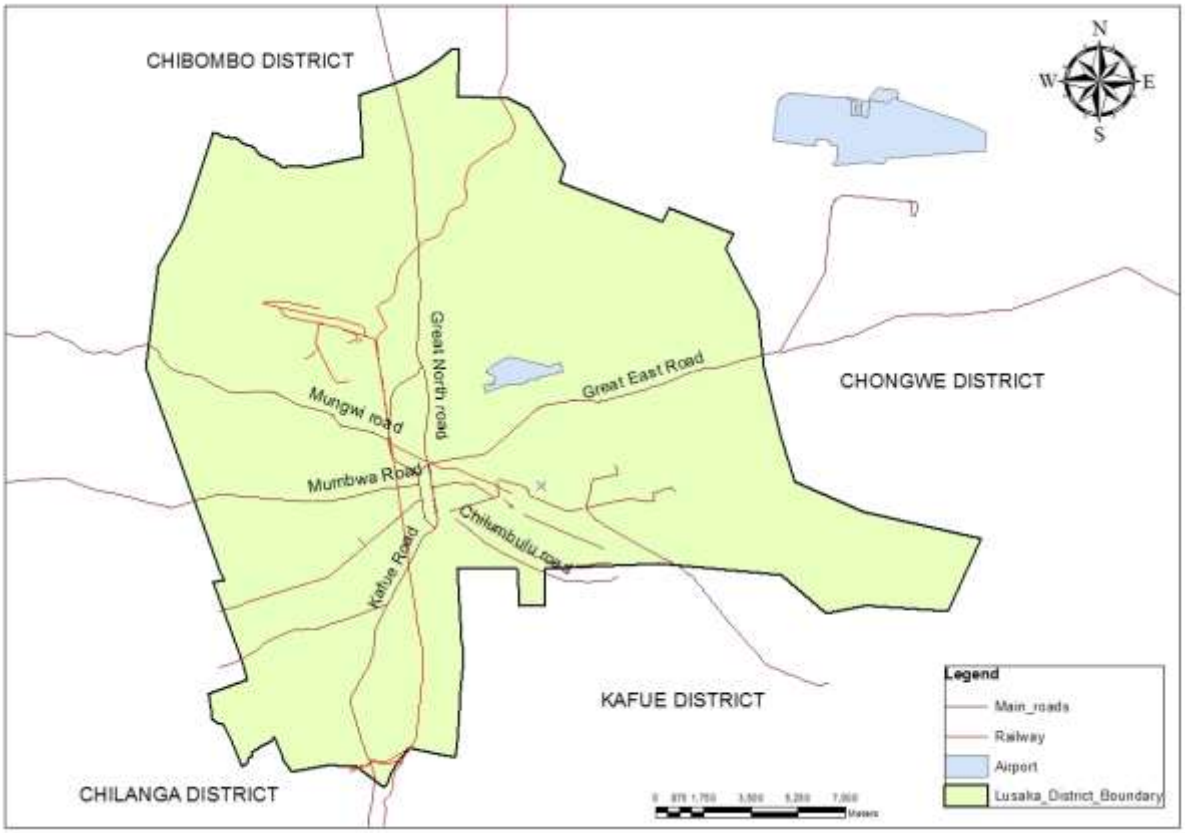


Figure 6. Major Road Infrastructure in Lusaka (Source: Author, 2016)

Lusaka City's road classification consists of major arterial, arterial, major collector, collector, and residential roads. Sometimes these roads are classified as trunk road, major road and collector roads. Generally, the main roads in Lusaka are paved and maintained in good condition while some street roads are unpaved and deteriorated.

Some roads of importance at city level such as Great East Road, Kafue Road, Independence Avenue and others are recognized as Trunk and Main Roads, while some minor roads that are of importance at community level are also recognized as Main Roads. Kafue Road is a trunk road that stretches to the south, connecting Lusaka, Kafue and Livingstone. It has a 6-lane section, along which some shopping

centres are located and industrial development is active. Great North Road is also a trunk road that connects Lusaka and the northern area such as Chibombo and Copperbelt. Recently, housing developments have been rapid along Great North Road. Cairo Road connects Kafue Road and Great North Road at both ends with roundabouts running through the town.

From Kabwe roundabout, the Great East Road, which is the trunk road between Lusaka and Eastern Province, stretches to the east with four lanes. Manda Hill Shopping Mall and Arcades Shopping Mall are located along this road, and Lusaka International Airport is connected via Airport Road. These three roads (Kafue Road, Great North Road, and Great East Road) are classified into trunk road outside Lusaka City (JICA, 2009). Mumbwa Road is a major road that connects Lusaka and the western region. From the south end of Cairo Road, Independence Avenue stretches to the east, turning its direction at the dual roundabout in Cathedral Hill to the south east, reaching its end at the roundabout with Chindo Road in Woodlands.

5.1.10. Road infrastructure institutional and legal structure

The national legislation and policy that governs the road sector in Zambia in respect to authorizing agencies include: The Local Government Act, Cap 281, The Road Act No. 12 of 2002 and The Transport Policy of 2002. The Government of the Republic of Zambia approved and adopted the Transport Policy in 2002 which led to the formation of the Road Fund Act No. 11, Road Act No. 12, and Road Traffic Act No. 13 of 2002. The policy has set out various objectives to govern the entire transport sector in the country.

The responsible ministries for the road sector in Zambia are the Ministry of Works, Supply, Transport and Communication (MWSTC), Ministry of Local Government and Housing (MLGH), and Ministry of Finance. As the Ministry responsible for policy making in the transport sector, the MWSTC formulated a Transport Policy in 2002. After its approval, a series of legal and institutional reforms were implemented (RDA, 2014). There are basically three agencies related to transport sector in Zambia and these are: Road Development Agency (RDA) established under the Public Roads Act No. 12 of 2002, the Road Transport and Safety Agency (RTSA) established under the Road Traffic Act No. 13 of 2002 and the National Road Fund Agency (NRFA) established under the Road Fund Act No. 11 of 2002.

Under the Public Roads Act No. 12 of 2002, RDA is responsible for road construction and maintenance in the country. On the other hand, LCC is responsible for all roads in Lusaka City, although the budget for construction, rehabilitation and maintenance of roads in Lusaka relies on the national budget through NRFA. The Road Transport and Safety Agency (RTSA) has various missions in road traffic management and these include vehicle registration, axle load control, licensing of Public Service Vehicles (PSV), concessions of passenger transport, traffic safety, and many others. Bus routes and the location of bus stops are planned and designated by LCC in Lusaka City. Concessions of bus operations by RTSA are only given on those routes. As a Local Road Authority (LRA), Lusaka City prepares the Annual Work Plan (AWP) for urban roads and submits it to MLGH, where AWPs from LRAs are compiled. RDA modifies and finalizes the AWP based on the budget guideline from NRFA (JICA, 2009).

5.1.11. Railway

The history of the development of Lusaka has strong relationship with railway construction. The city was developed as a railway siding and depot for the railway of Livingstone - Broken Hill. According to the JICA study of 2009, Zambia Railways (ZR) uses narrow gauge (1,067 mm), having a length of 846 km mainline and 427 km branch line. The south section of Lusaka Station is double track, while the north section uses single track. The railway system provides only intercity transport for passengers and freight. For efficient operations, the Government gave concession over Zambia Railways to Railway Systems of Zambia (RSZ) in 2004. However, its operation was not so active because there are only three passenger trains in each direction per week. In 2012, the concession was withdrawn and the company was given back to Zambia Railways. There was a commuter rail service provided by Njanji Commuter Services in the 1990s. Having a total length of 16 km, this rail service connected George Township and Chilenje Township and passed through the centre of the City. The commuter trains discontinued the service in 1998 because of a train accident (JICA, 2009). However, the Government intends to re-open this commuter railway line. The railway track of the main line is maintained relatively well. The rails on concrete sleepers are not so deformed and ballast is still there. However, the right-of-way in the centre of the city is occupied as temporary markets because only a few number of trains are in operation. In the south of Lusaka Station, the east side of the railway line has been dug and holes are close to the rail track.

5.1.12. Airport and air transport

The City of Lusaka has two airports namely; the Lusaka International Airport which is operated by the National Airport Corporation Limited (NACL) and the City Airport managed by Zambia Air Force, situated in the midst of residential areas such as Kalingalinga in the north and Kabulonga in the south. The Lusaka International Airport has a 3.9 km runway with a width of 45 m. It is located approximately 27 km east of the centre of the city. The airport was opened in 1967. According to NACL, the passenger terminal has a design capacity of two million passengers per year. However, the terminal facilities are outdated in terms of international security standards (JICA, 2009). Due to the recent increase in the number of international air passengers, the Lusaka International Airport is earmarked for expansion. It is anticipated that the Lusaka International Airport will deal with air cargo and both international and domestic passengers. The new passenger terminal for international flight and the new building for cargo traffic will provide high quality services.

5.1.13. Land tenure

There are two tenure systems in Zambia, i) customary, and ii) leasehold tenure. Customary tenure is an indigenous form of land holding which is generally held by communal association, under the strong chairmanship of a chief (Sichone, 2008). The customary lands in adjacent districts in Greater Lusaka area are under this tenure system. On the other hand, Leasehold or statutory tenure is a system of land holding known as state land and regulated by statutes such as the Town and Country Planning Act Cap

283, the Land survey Act Cap 188 and the Lands and deeds registry Act Cap 195 of the Laws of Zambia (JICA, 2009). Currently the City of Lusaka has no customary land left since all land within its municipal boundaries in under statutory tenure. However, the surrounding districts such as Chongwe, Chibombo and Kafue have relatively large portions of land under customary tenure.

5.1.14. Conversions

The Lands Act provides for the conversion of land held under customary tenure to leasehold tenure. The procedure for converting customary tenure to leasehold is provided for under a Statutory Instrument, which is now incorporated under the subsidiary legislation in the Lands Act. The regulations on the conversion of customary tenure to leasehold are issued by the Minister of Lands pursuant to section 31 of the Lands Act.

5.1.15. Demographics

Lusaka has a population of about 2.2 million people with women making about 1,118,884; (336,000 rural and 1,854,000 urban) showing a high level of urbanization. Lusaka City itself is in size the smallest district in the province and yet carries a population of 1.7 million meaning it has a high density (4,853/ km²) and is very congested. Lusaka has the highest density 100.4 persons per square kilometre in 2010 (ADB, 2015: 7).

> At provincial level, Lusaka had the highest annual population growth rate in the period 2000- 2010 at 4.7 percent. This is the result of many informal settlements across the City and its hinterland with a high level of poverty (75% of the slum and peri-urban population live on less than US$ 1 a day) (ADB, 2015: 8).

Population growth and urban influx have strained the ability of the Lusaka City Council and service providers to provide adequate service facilities, such as, adequate markets in the City. 60% of the population in the project area lives under the poverty datum line and unemployment is about 31% (ADB, 2015).

Although the economy of the City of Lusaka is somewhat more diversified than the national economy, it only provides formal employment to a small proportion of its labour force. The 1999 Integrated Development Plan for Lusaka, for example, put the number of people in formal employment in Lusaka at 120,233 or 35% of the labour force (Mulenga, 2003). The majority (65%) of the city's labour force, therefore, earns its livelihood from informal economic activities, which predominantly consist of unregistered and unregulated small-scale non-agricultural economic activities ranging from petty trading to metal fabrication and wood processing (Mulenga, 2003).

5.1.16. Local leadership and representation

In the Lusaka region like any other area urban area in Zambia, local leadership revolves around elected ward councillors; Ward Development Committees which are expected to provide horizontal linkages

among the various government agencies and programs within communities as well as vertical linkages with provincial and district development committees. Ward Development Committees are one means by which community participation is channelled. In addition to the formal structures, local NGOs and CBOs are active on food and nutrition related issues. NGO activities in Lusaka have included lobbying government for policy reforms on food safety and nutrition and outreach programmes to communities to educate citizens on the importance of food and nutrition matters at household level. Regarding local food production, major challenges are the fact that there is very little land to be utilized for crop and livestock production and the situation is worsened by the fact that clean water is not usually available for gardening (ADB, 2015). The general feature of the situation is overcrowded high density informal settlements, scarcity of land, poverty, and regular reliance on external food sources for the City residents.

5.1.17. Governance and land use management in Lusaka

Councillors are elected every three years to run the affairs of the city through the Lusaka City Council on behalf of the residents of the city. Full-time employees of the council are headed by a town clerk who deals with the daily affairs of the City (Mulenga, 2003). The councillors, however, approve all development projects for the city. The Lusaka City Council also serves as the planning authority for the City (Mulenga, 2003). It therefore, grants planning permission for all projects that alter the land use permanently. This includes conversion of land use from agriculture to non-agriculture use. It should be noted that the towns surrounding the administrative boundaries of Lusaka are not planning authorities. Thus, they depend on the Lusaka Province Planning Authority, an arm of government under the Ministry of Local Government and Housing, to undertake all physical planning and land-use related matters. Although the Lusaka City Council is a corporate body and is expected to manage the affairs of the City independently, it merely operates as an agent of the central government, which has delegated about 61 functions relating to provision of services to the residents of the City under the Local Government Act CAP 281. As agents of the central government, local authorities in Zambia, including the Lusaka City Council, do not enjoy financial autonomy.

5.2. KAFUE DISTRICT

Kafue district is one of the largest districts in the province after Lusaka and it is critical to the residents of Lusaka as it is one of the major sources of water.

5.2.1. Geographical Location

Kafue District lies in the southern tip of Lusaka province. It is only 45 km from Lusaka district, the capital city of Zambia. The district shares borders with Chongwe in the North-East, Chilanga in the North, Chirundu and Chikankanta in the South, Mazabuka in the South-West. It also shares an international boundary with Zimbabwe. The district has a landmass area of approximately 23,250 km representing 3% of Zambia's area. The Kafue River is the main river running through the district and the name of the

district is drawn from this river. The district hosts the confluence of the Kafue River and Zambezi River in Chiawa at Mafungautsi (KDC, 2010).

5.2.2. Climate

Kafue District experiences climatic conditions that are typical of the Central African Plateau with three distinct seasons; a dry, cool season lasting from mid-April to mid-August; a hot, dry season lasting from mid-August to October; and a hot, rainy season lasting from mid-November to early April. The rainfall pattern defines the district's two Agro-ecological regions. i.e. region II and region I. Region I is a low rainfall region (less than 800 mm annually) in the valley areas of Chiawa. Region II has moderate rainfall (800-1200 mm annually) on the plateau. From year to year, rainfall distribution is highly erratic and most of the rain falls between the months of December and February each year.

5.2.3. Topography

The District is dissected by two main rivers (Kafue and Zambezi) and streams with steep sided river/stream banks and valleys. The main physiographical features of Kafue District are the highland/hilly and lowland/flat land areas. The highland area, with a high point elevation of 1,247 m above sea level, covers the Northern and North-Eastern part of the District. The Namafuwa, Musoka and Mphande hills are the highest points on the North-Eastern part of the District. From the hills, the land surface falls rapidly, with slopes of over 30% until reaching lowland areas such as the Kafue Flats and Chiawa area in the South-Eastern part of the district. The larger part of the district (North-East) is hilly and mountainous (Zambezi escarpment) and largely uninhabited (KDC, 2010).

5.2.4. Hydrology

Kafue's ground water resources are abundant and estimated at 800,000 million m^3 with the ground water recharge estimated at 160,080 million m^3per year. It is worth noting that the two main water bodies (Zambezi and Kafue) provide the district with fishing opportunities with various fish species. The district also has the Mungu stream, Shimabala stream and a sizeable number of perennial streams.

5.2.5. Wildlife and vegetation

Kafue has abundant land and a lot of wildlife mostly found in the lower Zambezi in the Chiawa Game Management Area (GMA) and also in the undisturbed Mopane woodlands and wetlands along the Kafue River west of the District. The types of animals found in the GMA include elephants, buffaloes, waterbucks, impalas, kudus, dykers, zebras, warthogs, wild dogs, leopards, hippos, crocodiles, jackals, grysboks and porcupines which have mostly been depleted due to poaching. Privately owned Game Parks, such as Kafue Fisheries Game Ranch (Lechwe Lodge) and Lilayi Game Ranch also exist. Tree species

in the District include the *Miombo brachystegias, Julbernadias, Parinari curetelifolia, Pericopsis angolensis, Combretum species, and Uapaka kirkiana.*

5.2.6. Forest reserves

There are two Forest Reserves which the forestry department manages in the District namely; Mpande Hills Forest Reserve No 320 and Kafue Open Forest. Mpande Hills Local Forest Reserve lies in the North-Eastern side about 35 km from Kafue town with an area, of about 6,290 Hectares. The forest reserve was established to protect the catchment area for a number of streams originating from Mpande Hills, which are tributaries of Kafue River and to protect the catchment area for underground water supplies and further to enable carbon-sinking to mitigate effects of climate change and to contribute to the conservation of biological diversity. However, the forest has been depleted due to the settlement of over 500 people and are involved in cutting down of trees to support their agricultural activities. The Kafue Local Forest is the second forest reserve in the District located on the eastern part of Kafue town. The forest was set up in order to be sustainably supplying fuel wood to the local people. The forest was created to protect the Kafue River from siltation by maintaining vegetative cover on hilly areas and to provide residents of Kafue with fire wood. However, with the growth of the population, the local Council has been advocating for the de-gazetting of the forest to pave way for urban development (KDC, 2010).

5.2.7. Land and land use

Kafue District covers a total land surface area of 23,250 km^2 representing 3% of the country's total land area. A considerably large proportion of the District (North-Eastern) comprises hills and escarpments. The South-Eastern part is the Zambezi Valley (Chiawa area). In the South-West (Chanyanya area), is a very flat land often referred to as Kafue flood plain or Kafue flats. The rest of the district is either flat or small pockets of hilly land. Kafue District features a mixture of land use. This includes human settlements, industrial activities, agriculture, forest reserve, wildlife conservation, fisheries, and hydropower generation and water extraction. The district has only one main industrial urban centre which is Kafue Town. This urban area is a centre for manufacturing, commerce and services industry. Human settlements are a major part of land use in the urban area. It is believed that at least 51% of the district's population lives in the urban area, mostly in the informal settlements. In terms of size, the total land area covered by urban centres of the district is less than 1% and more than 99% of land area is rural. The predominant land use in the rural areas is agriculture.

5.2.8. Land tenure

Leasehold tenure in Kafue is either 14 or 99 years - mainly in the commercial production areas. This tenure system applies to state land, which is by far the smallest in the district. The largest proportion of land in the district is held under customary tenure and administered by the two traditional chiefs whose

chiefdoms span the district. Officially, land allocations by chiefs are subject to the approval of the Commissioner of Lands through the respective district authorities.

5.2.9. Roads and transport

The Great North Road is the major road cutting across Kafue District, running between Livingstone and beyond Lusaka. The road is generally in good shape, including the 45 km that passes through Kafue District. Out of the District, another tarred road reaches the Border Town of Chirundu (90 km from Kafue Town). One infrastructure focal point connected with Great North Road, is the Kafue River Bridge that connects the two Districts of Kafue and Mazabuka. The bridge is in very good condition. In the northern part of the District, Mumbwa Road acts as another major route for trade, transport and communication. The public road network in Kafue District is composed of three categories – Major Roads, Secondary Roads, and Township Roads. There are also dirt tracts and footpaths. The Secondary roads are also known as feeder roads, and are under the jurisdiction of the District Council. The condition of most feeder roads in the District is very poor, especially in the rainy season when they become impassable due to stagnant water that accumulates due to poor or no side drainages. Other transport infrastructure includes the railway line between Lusaka and Livingstone that runs through Kafue District, with a railway station placed in Kafue Town. In terms of air transport two small airfields are found in Kafue District. In addition, the Kafue River and Zambezi River are utilised as means of transport and also are considered as tourist attractions.

5.2.10. Mining

The District has some minerals being mined such as semi-precious stones like green formering and emeralds which are extracted in the Nakanga area. The District has also potential deposits of gold which are being exploited. Limestone is also mined in the District, mainly in Shimabala Area.

5.3. CHONGWE DISTRICT

Chongwe District was created in 1995 by splitting the former Lusaka Rural District into two separate districts: Chongwe and Kafue.

5.3.1. Location

The District is located in Lusaka Province of Zambia, 45 km East of Lusaka city (Mulimba, 2014). The district covers 11,259 km^2 lies between latitudes 15° and 15°45’ S, and longitudes 28°30’ and 29°30’ E (CDC, 2007).

5.3.2. Topography, soil types and climate

The landscape in Chongwe District consists of a series of east-west hill ranges at 1,200 – 1,500 m above sea level and plateau at an altitude of 910 - 1,200 m above sea level that is bounded by a hilly escarpment to the east and south that merges into the Lunsemfwa and Zambezi valleys in the North-East and South, respectively (CDC, 2006). The geology consists of gneisses, schists, quartzites and in some places, limestone and shales, especially in the South-Western part of the District. In the latter, the soils are clayey (with 34% clay) with relatively high organic matter content (3%) and pH 6.4. In the rest of the area, the soils are predominantly well-drained sandy loam (15% clay) and have a lower organic matter content (2%) and pH 5.3. The area receives a mean annual rainfall that ranges from 800 to 880 mm distributed from mid-November to March. The dry season lasts from April to mid-November and is divided into the cool dry (April-July) and hot dry (August-mid-November) seasons.

5.3.3. Forest types and reserves

The two main woodland types in the Chongwe include Miombo and Munga. The District had two forest reserves within the customary tenure, and a National park that were administered by government through the Forest Department and Zambia Wildlife Authority, respectively. However, two of the forest reserves (no. 75 (Soli) and no. 199 (Kanakantapa) were converted to an agriculture settlement scheme in 1992 to resettle unemployed urban youths and other general members of the public, while the National Parks and Wildlife Department estimated that 252 km^2 of the park had been encroached (Simasiku and Kalumba, 1997).

5.3.4. Land tenure

The distribution of land by tenure in Chongwe District is shown in Figure 7. Under customary tenure, land allocation is highly decentralized through village headmen/women compared to statutory land tenure. Most of the land in the area is under customary tenure in which tribal Chiefs and their village headmen/women allocate land for farming and settlement and settle land disputes. The rest of the land is state land that is administered by the Commissioner of Lands who issues renewable 99- year leasehold titles to land owners on behalf of the Republican President. State land is mainly used for commercial agriculture while elsewhere semi-commercial and subsistence agriculture are practiced on semi-permanent basis.

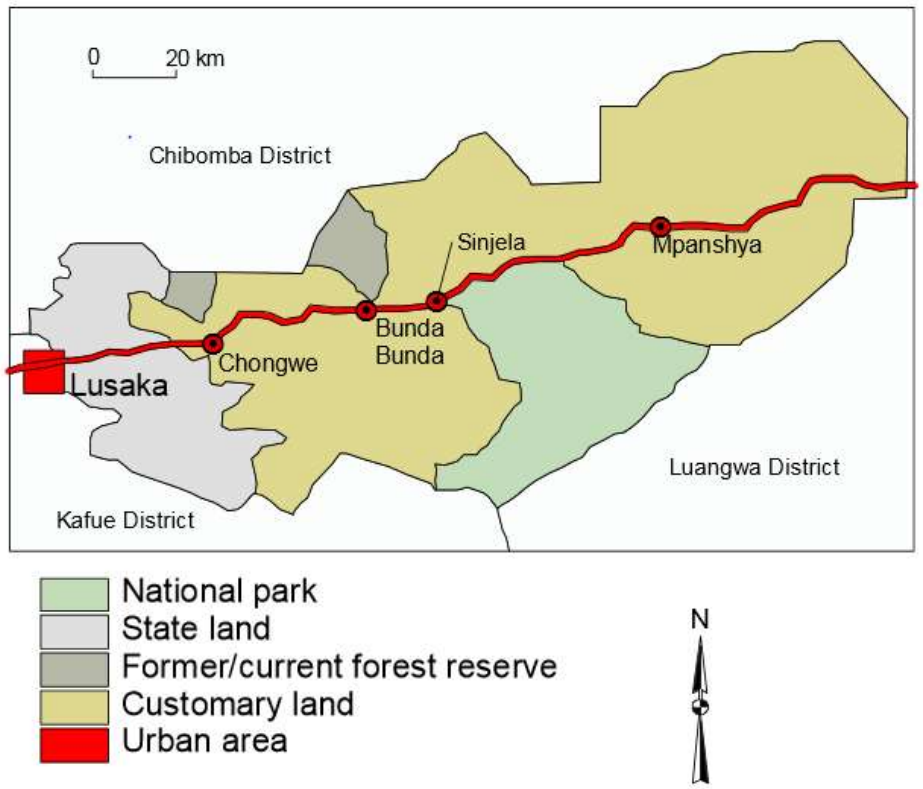


Figure 7. Land Tenure in Chongwe (Source: Chidumayo E., 1998)

5.4. CHIBOMBO DISTRICT

Chibombo District (formerly Kabwe Rural) is a large rural District in Central Province and is among the major agricultural producers in neighbouring Provinces.

5.4.1. Location

It is located between 27°15' and 29° East and between latitudes 14°25' and 15º S. The District shares boundaries with Lusaka on the South, Kabwe urban on the North, Chongwe on the East and Mumbwa on the West, Kapiri -Mposhi on the North-West and Mkushi Districts on the South-Eastern part. The District is 93km away from Lusaka and approximately 50km from Kabwe covering a total surface area of 13,670 km².

5.4.2. Climate

Generally, the climatic conditions are characterized by wet summers and dry winters. Chibombo District receives good rainfall with an annual average of 800 to 1,000 mm, although this varies from season to season. The temperature distribution is usually in the range of 29^{o}C mean monthly temperatures in summer and mean monthly winter temperatures are on average about 20^{o}C.

5.4.3. Topography

The dominant topography of Chibombo District is a relatively high plateau that is typical for most areas of Central Province, consisting of a gentle undulating plain. Its altitude is mostly around 1,300 m above sea level. There are also several small hills scattered in most parts of the District. These include Mukamwanji hills, Changale hills, Chikonkomene hills, Chikombwe hills and Kanwanjiba hills (CDC, 2010).

5.4.4. Vegetation and soils

The average soil types recorded in the District could be classified into two; the alluvial soils found in the dambos and the sandy loamy in the uplands. The upland soils are more widespread in the District. Their capacity to retain nutrients is good and they have high water-holding capacity. The upland soils are generally fertile because of high biomass of humus found in the Miombo woodland (Chidumayo, 1988). The alluvial soils are also found in most parts of the District, which favour the growth of Munga and Riparian woodlands. The late and uncontrolled fires have had their negative effects on the soils and other life forms in most parts of the forest reserves. A large portion of the district is covered by the Lukanga Swamps on the North-western part. This Swamp is a source of fish species, which are much sought by consumers within and outside the district. Generally, the vegetation types in the district are suitable for livestock husbandry.

5.4.5. Hydrology

The District has about 18 rivers and streams of which Momboshi, Mwembeshi, Mulungushi and Lunjofwa are the largest rivers (Figure 8). The Momboshi River drains into Mulungushi River, while Mulungushi drains into Lunsemfwa. The Lunjofwa River drains into the Lukanga swamps, while the Mwembeshi drains into the Kafue River. Most of these are seasonal and run dry in the dry season with the exception of Momboshi, and the Mulungushi.

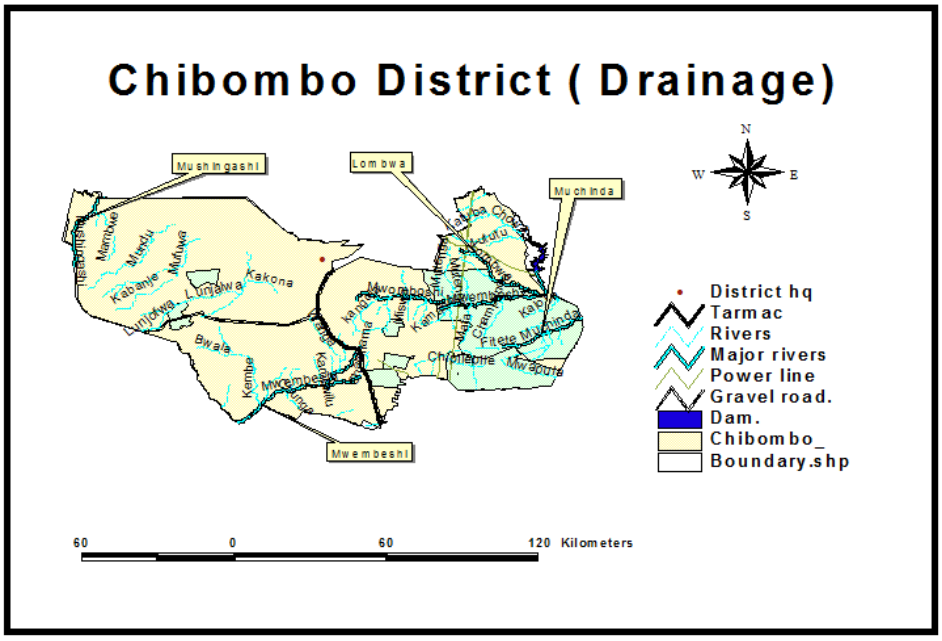


Figure 8. Chibombo District Drainage System (Source: CDC, 2010)

5.4.6. Land tenure

The largest portion of land in Chibombo District is held under the traditional land tenure system with occupancy and use rights allocated by chiefs. The Commissioner of Lands cannot alienate any land in the District or in an area where land is held under the customary tenure without consulting the chief and the local Authority. To convert customary land to formal leasehold tenure, it is necessary to obtain consent from the chief's authority over land allocation and is also subject to approval by the Commissioner of Lands. The District has state land and the Council has further opened up land for more development in the district among other things expanding the residential and commercial development. This decision has been taken to encourage both individuals and institutions operating in the district, to put up housing and office accommodation, as there is a critical shortage of infrastructure in this sector in the District.

5.4.7. Roads and transport

There about 145 km of tarred road and 325 km of gravelled gazetted roads in the District which are maintained by the Roads Department. Therefore, a total of 804 km of gravelled and ungravelled non-gazetted roads exit in the District.

5.5. CHILANGA DISTRICT

Chilanga district is one of the newly established Districts which has reasonably high agricultural productivity.

5.5.1. Location

The District shares its boundaries with Kafue to the South-East, Mumbwa to the west, and Lusaka to the North and Chibombo on the North-Western side. The District lies about 15 km south of the greater city of Lusaka.

5.5.2. Topography

Chilanga lies on the side of a large hill, which is a major decline in altitude between the plateau of Lusaka Province, and the Kafue River flats. The District has a mixture of open Savannah and Miombo trees which have been massively cut down either for wood fuel or paving way for the housing industry which has rapidly expanded in the District (Chilanga District Council, 2014).

5.5.3. Climate

Chilanga District experiences climate conditions that are typical of the Central African Plateau with three distinct seasons; a dry, cool season lasting from mid-April to mid-August; a hot, dry season lasting from mid-August to October; and a hot, rainy season lasting from mid-November to early April.The rainfall pattern defines the district's two Agro-ecological regions i.e. region II and region I.

5.5.4. Hydrology and vegetation

The District is water-stressed and faces challenges in domestic water supply. The District has a few streams which include Chilongolo and Chilanga, most of which are not perennial. Forests in Chilanga District are held on title by individuals or organisations. It has no reserved forest reserve, especially due to the agricultural activities. The common tree species found in the district are Acacia, Mukuyu, Musekese, Mulama and spacely distributed Mubuyu (baobab).

Summary

It is significant to observe that the City of Lusaka at the moment lacks natural resources upon which it can sustain itself. For example, the City does not have adequate agricultural land to exploit and feed itself. The City has therefore, to rely on other districts for most of the agricultural products such as maize, vegetables, fish and fruits. Kafue and Chibombo districts appear to be suppliers of fish and other products. Even regarding water resources, particularly surface water, the City gets its water for domestic use from Kafue River in Kafue District. However, Lusaka City seems to have comparative advantage in terms of infrastructure resources such as roads, railways and utilities.

6. CITY REGION FOOD SYSTEM CHARACTERIZATION

6.1. INPUT SUPPLY AND FOOD PRODUCTION

Agricultural input supply and production in Lusaka city and the periphery is influenced to a large extent by a number of factors such as government policy, location and socio-economic status of households. Commercial producers usually purchase their seeds, fertilizers, herbicides and working tools from agro-service shops locally and regionally. Agricultural production is generally characterized by rearing poultry and livestock as well as growing crops such as sunflower, groundnuts, soy beans, maize, cassava sweet potatoes and vegetables(to mention but a few). Maize is the major crop grown and is also the staple food in Lusaka and Zambia as a whole. Statistics show that Lusaka contributes marginally to the country's total maize production (only 4.3% compared to 19.8% by Eastern and 13% by Southern Provinces (CSO, 2014)). Figure 9 shows that Lusaka Province cultivates the least hectarage of the total maize in the country.

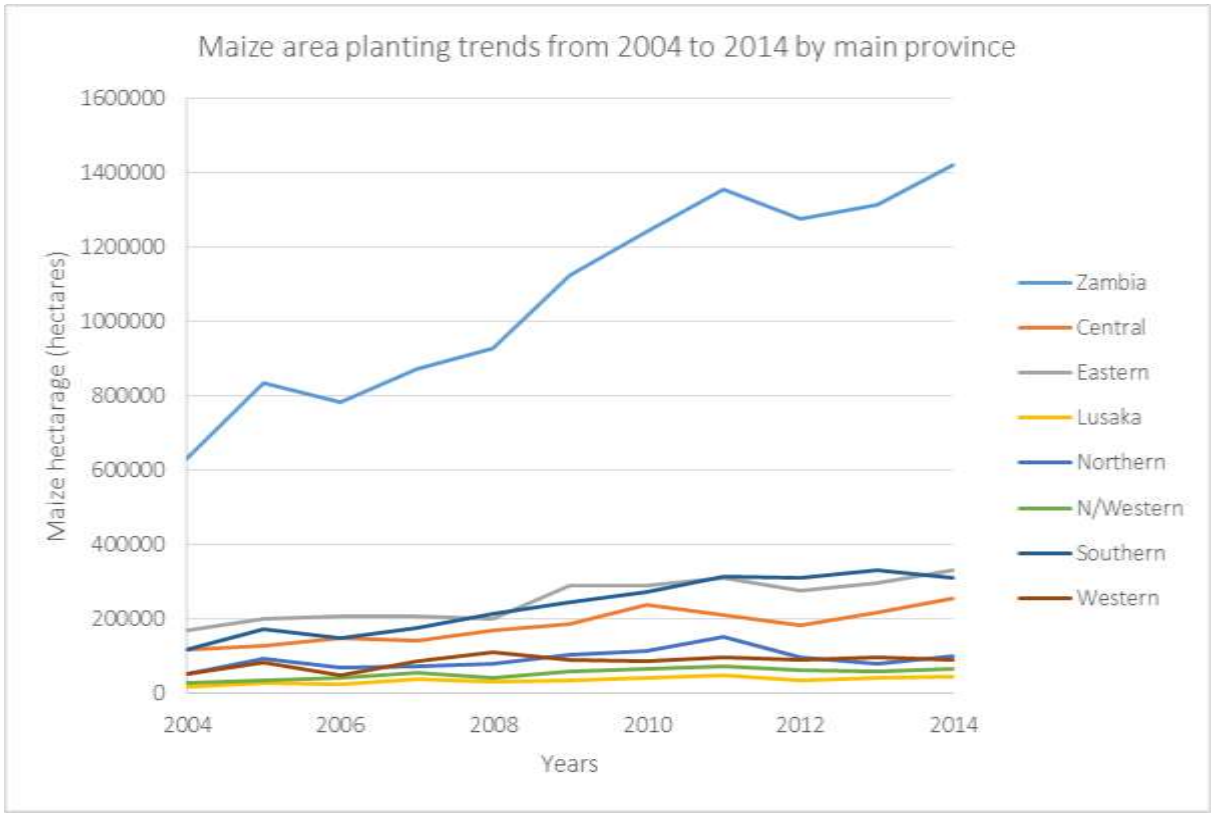


Figure 9. Maize area planting trends from 2004-2014 (Source: Author, 2016)

Some of the factors that explain this situation include issues of urbanization, lack of land use and expensive input supplies. In order to supplement their efforts of input supply, a number of small scale farmers have been receiving fertilizers from the government of Zambia through its farmer input support programme (FISP) aimed and increasing food production and ensuring food security. The

Ministry of Agriculture began the FISP implementation in the 2002/2003 season. This programme was originally designed to address the then declining crop production, especially maize, following a succession of droughts and flood seasons that the country experienced. These natural hazards resulted in a diminished asset base for many small-scale farmers, as they attempted to use whatever resources they had to finance crop production, and ensure their own domestic food security. Due to implementation of FISP and a number of other factors, such as favorable rainfall patterns, there has been an increase in maize production at national level as shown in Figure 10. However, Lusaka province continues to be the least contributor to this production despite housing a large number of the Zambian population. Figure 10 further shows that there has been a slight increase in the production of groundnuts, soy beans and sunflower. According to the CSO (2011), the expected production for maize in Lusaka city among the small scale as well as large scale producers was lowest in comparison with the surrounding areas as shown in Figure 11.

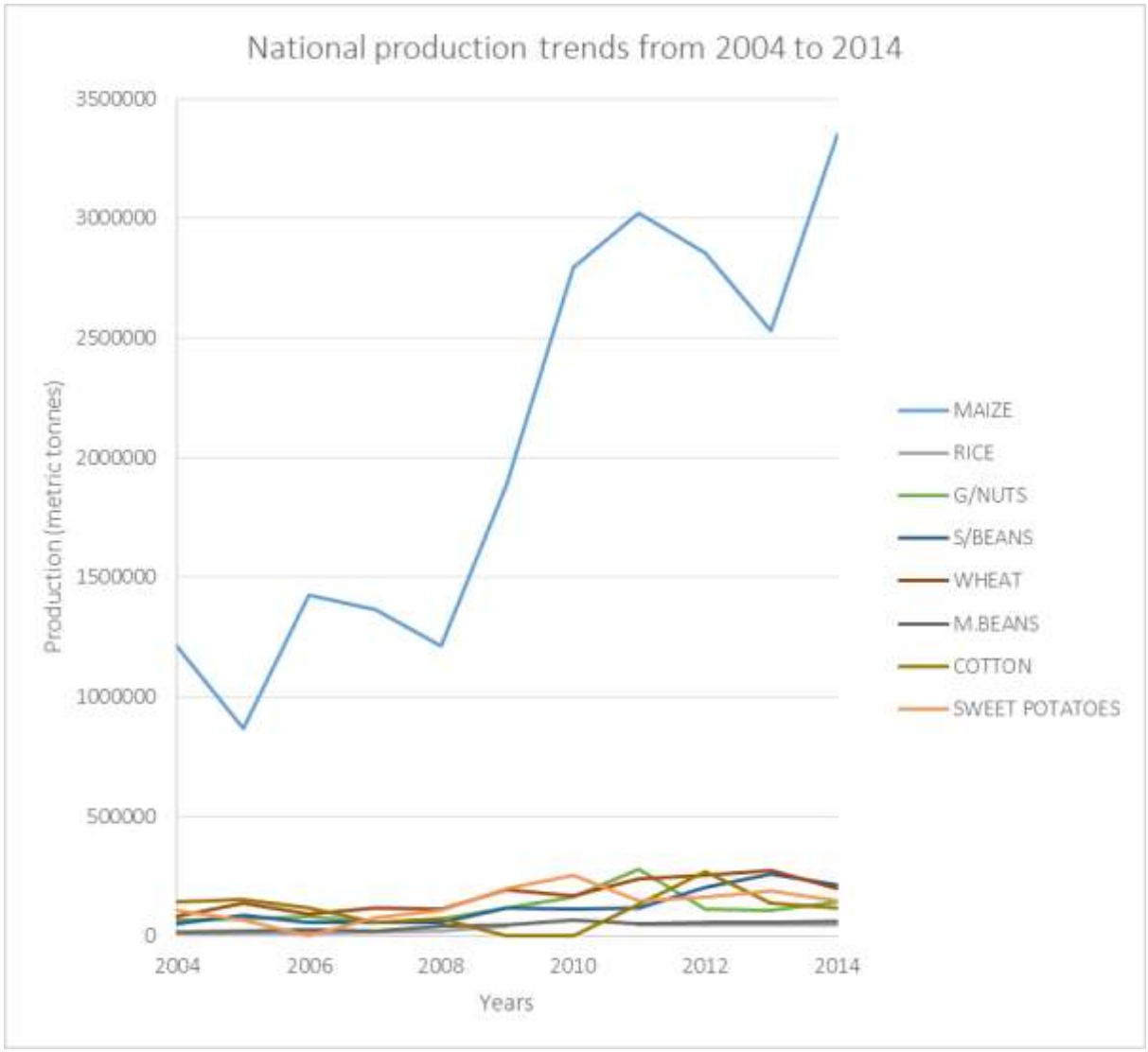


Figure 10. National Production trends for Selected Major Crops in Zambia

Figure 11. Production trends in selected districts for major crops in Zambia

A similar trend was observed for groundnuts (Figure 12). Little or no sorghum is grown in Lusaka. This could be attributed mostly to a lack of ready market and consumer preference. Presently, intermittent rainfall and increased heat events have continued to characterize the seasons across the country. This spatial variability in distribution and quantity will greatly contribute to reduced production if it persists because most small scale farmers are solely dependent on rainfall to produce crops.

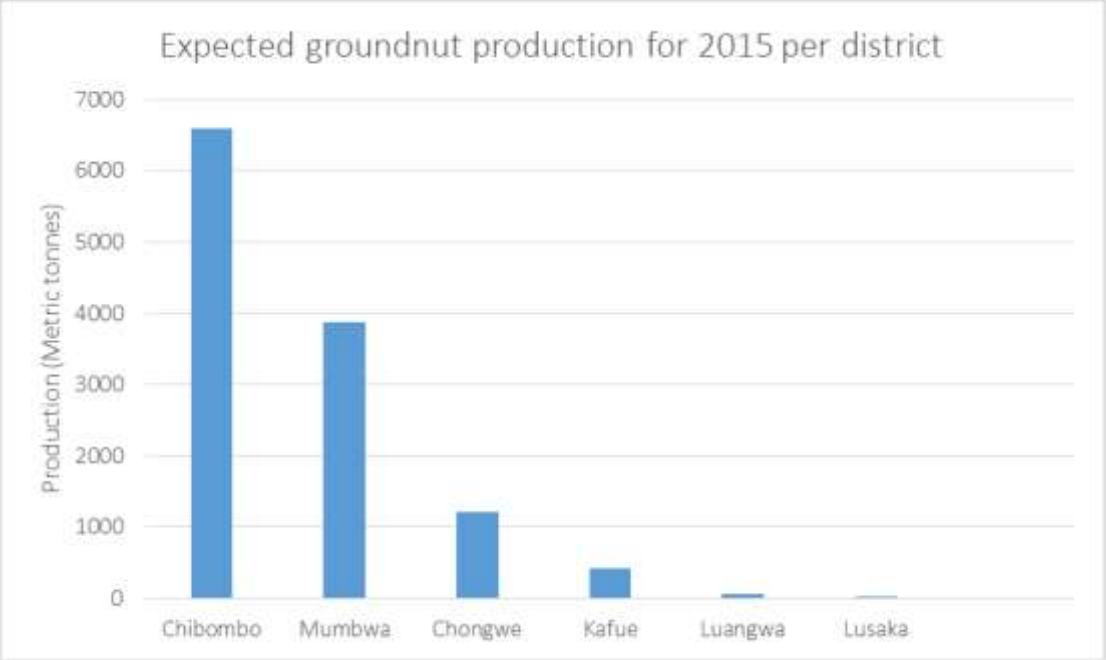


Figure 12. National Production trends for Selected Major Crops in Zambia

Stakeholders noted that one of the challenges to food production in the Lusaka CRFS is the lack of or reduced agricultural land. This is owing to the rampant re-zoning of land from agricultural to residential use. There is need for policy to be developed to curb this and ensure that key agricultural land is converted to small holdings and not residential plots to ensure food production near and around the City.

The Lusaka City Council and Planning Authority are the core bodies of government which are key players in ensuring that land is available for production, hence their role in the CRFS cannot be overemphasized. Local authority such as traditional leaders are also important in ensuring land is available for food production.

6.2. FOOD PRODUCTION AND CONSUMPTION IN LUSAKA

The Central Statistical Office (CSO) conducted the Zambia Urban Consumption Survey in August 2007 and February 2008 in the city of Lusaka, among other cities and towns. The primary objective of this survey was to develop a detailed understanding of the food and other consumption and expenditure behaviour of households in key urban areas of Zambia. This sub-section is based largely on the survey results compiled by IAPRI (2009) which provided key literature for this project.

6.2.1. Producing own food? - Households' involvement in food production in the City of Lusaka

A significant proportion, 41% of urban households, grows either field or horticultural crops in Lusaka. Most households have gardens rather than fields. Households in both the low and high income groups are engaged in gardening, but those that have a field are predominantly in the low income

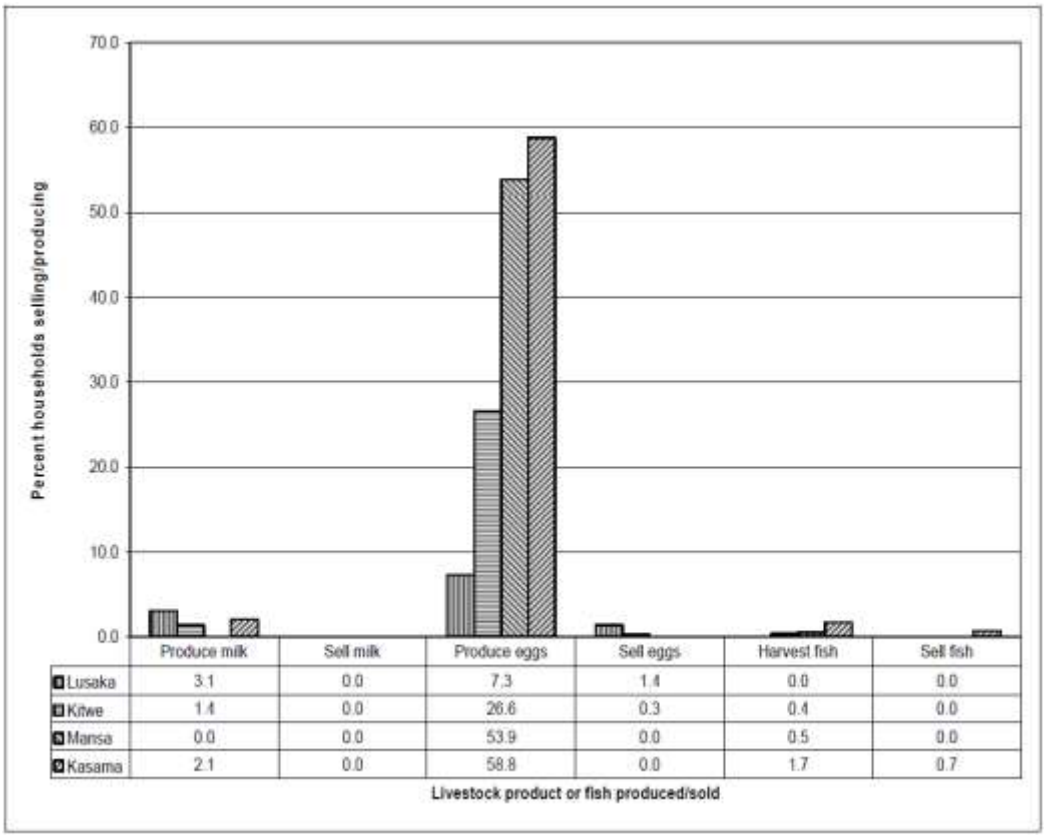
bracket (IAPRI, 2009). “A higher proportion of households in the low expenditure bracket grow maize. Most of the land, accounting for 69% of total land used for crop cultivation, is based outside of town for Lusaka” IAPRI, 2009: 104). Analysis following exclusion of crop plantings outside of town shows that:

> Only 24% of the cultivated maize was actually done inside town, though this accounted for 36% of total production and 60% of total maize sales in Lusaka. This implies that maize productivity is higher in plantings within town in Lusaka, although the actual area planted is less than that done outside of town in Lusaka (IAPRI, 2009: 137).

This means that the food situation in the City is influenced by what happens in the hinterland and in areas beyond Lusaka Province. A higher proportion of households growing maize outside of town sell some of the maize they produce, as compared to those that grow it within town. However, a higher proportion of the maize grown within town is sold as compared to that grown outside of town. For instance, in Lusaka, only a quarter of maize planted is retained within the city. IAPRI (2009) established that with regard to vegetables, failure to acquire a plot was followed in importance by having no space at the homestead, not having adequate time or labour, poor access to water and having no interest in Lusaka. Lack of space at the homestead is a more pressing constraint for households in Lusaka. It is also established that fields previously used by households for food production are no longer available is an important factor in determining the local food production in Lusaka (IAPRI, 2009). Farms are now far away and this has an adverse effect on local food situation.

6.2.2. Urban agriculture - Livestock production

Across Zambia, a considerable proportion of urban households keep livestock and poultry. This is higher among households in the less urbanized areas with only 20% of households in Lusaka involved in livestock production especially poultry. Chickens are the most commonly kept in Lusaka and the surrounding areas and then goats and pigs closely follow. The proportion of households producing milk is highest in Lusaka but none of the producers reported selling any (IAPRI, 2009).



	Produce milk	Sell milk	Produce eggs	Sell eggs	Harvest fish	Sell fish
Lusaka	3.1	0.0	7.3	1.4	0.0	0.0
Kitwe	1.4	0.0	26.6	0.3	0.4	0.0
Mansa	0.0	0.0	53.9	0.0	0.5	0.0
Kasama	2.1	0.0	58.8	0.0	1.7	0.7

Figure 13. Proportion of households with livestock that produced and/or sold milk, eggs or fish by location (Source: IAPRI, 2009: 98)

Figure 13 shows the proportion of households with livestock that produced and/or sold milk, eggs or fish by locations as of 2009. Eggs are the most commonly produced livestock product in all urban areas covered in the 2007- 2008 urban food survey. In spite of having the least proportion of households producing eggs, Lusaka has the highest proportion of households selling eggs. The proportion of households producing milk is highest in Lusaka although no household was reported selling milk. Generally, in Lusaka, the fact that households cannot easily acquire a plot for agriculture is the most important reason why many urban households cannot take part in urban agriculture. This is further compounded by the high cost of capital and difficulties encountered by farmers in trying to enter the formal food market system.

Urban food markets in Lusaka are hives of activity where farmers find a daily supply chain for their produce and consumers find accessible retail outlets. Traders are also integral players in linking farmers to markets and distributing food through a web of networks in and around the city. Small, medium and emerging commercial farmers use the urban market as their preferred supply chains. Abrahams (2010) argues that urban informal markets encourage the growing proportion of enterprising small farmers in Lusaka. The 'supermarket transition' as a proxy for the broader shift in the food economy is not a naturally evolving process. Nor does it represent the demise of the 'informal' food economy. The growth and dominance of supermarkets presents only one element of a larger, more resilient narrative. That these two very different forms of economic retail and food provisioning exist alongside each other, attests to the wider political economy system that allows

each to thrive and grow, but not at the expense of the other (Abrahams, 2010). Also, because the state increasingly recognises the importance of the urban market in providing employment, markets for small-scale farmers and accessible food retail outlets for urban residents. Likewise, large agribusinesses benefit from informal contracts with small-scale farmers because they are able to acquire the necessary volumes cheaply and regularly, while at the same time contributing to the livelihoods of those small-scale farmers. Abrahams (2010) considers the Lusaka food system as a hybrid one, in which there are multiple demonstrations of progress and development, as a better construct that does not necessarily point to a traditional food system evolving into a modern food system, but instead creating a 'mélange' of possibility.

There is an inter-play of forces that are shaping and characterising the present food system in Lusaka. It is important to recognise multiple sites of power in the local context and institutional relations. There are different forms, and often unsynchronised governance and institutional regimes in the food system in the City (Abrahams, 2010). The food system in Lusaka is characterised and influenced by neo-liberalism, which includes South Africa's dominant role in the region, and informalisation which equally resonates with the nature of urban transformation in the City. Thinking of the interlinking (inter-temporal) aspects as rationalisations, one would conclude that both material and ideological factors are at play in determining the current outlook food system in Lusaka. Existing food systems in the City, such as urban informal food markets, the supermarkets then, either embody neo-liberal rationalities and priorities, as well as or fulfil the role of urban food provisioning (Abrahams, 2010). For instance, despite the 'neoliberal turn' in Zambia, the government also continues to intermittently subsidize the cost of maize meal in the aim of contributing to cheaper prices for food.

Finally, the domestic political economy environment includes different rationalisations and is the product of different influences. The various aspects that are shown to have shaped Lusaka's food system are a result of shifting and transitioning political economy context. The domestic political economy context comprises the influences, sites of power and rationalisations within it. As Hart (2002), notes on explanatory factors for a trajectory of phenomena –the Zambian present agri-food system is an outcome of interconnectedness and continuity in political and institutional set ups. The near-complete economic liberalisation led to a collapse of industry including agro-processing. This led to a flourishing informal sector and the repositioning of the private sector in the agro-business. Thus, the everyday urban poverty rationality (Wragg, 2013) and the neo-liberal rationality (the informal food market such as Soweto Market (Table 6, Figure 14) (http://www.zambia-advisor.com/soweto-market.html) and the South African chain stores located at modern shopping malls) have subsequently emerged as key determinants of the food systems in Lusaka. In Hart's terms, we can see the Lusaka food system as comprising on-going processes through which sets of power-laden practices in the multiple, interconnected arena of everyday life at different spatial scales constantly rework that food system (Gibson-Graham, 2002 and Swyngedouw, 2005). Both regulated and unregulated food markets form important systems in the food value chain of Lusaka.

Table 6. The centrality of Soweto Market in the food system of Lusaka (Source : Kanchela and LaFleur, 2001)

Crop In Season	Volume (Tons)	Revenue Kwacha	Revenue US$	Price US$/ton
Cabbage	572.0	61,105,000	17,459	30.52
Onion	238.5	262,350,000	74,957	314.29
Potato	231.0	308,000,000	88,000	380.95
Sugar Cane	1,650.0	148,500,000	42,429	25.71
Sweet Potatoes	2,640.0	603,428,571	172,408	65.31
Tomatoes	1,100.0	440,000,000	125,714	114.29
Bananas	850.0	977,500,000	279,286	328.57

Crop Off Season	Volume (Tons)	Revenue Kwacha	Revenue US$	Price US$/ton
Cabbage	264.0	37,400,000	10,686	40.48
Onion	264.0	356,400,000	101,828	385.71
Potato	n/a	n/a	n/a	n/a
Sugar Cane	1,320.0	118,800,000	33,943	25.71
Sweet Potatoes	1,220.0	278,857,143	79,673	65.31
Tomatoes	440.0	825,000,000	235,714	535.71
Bananas	n/a	n/a	n/a	n/a

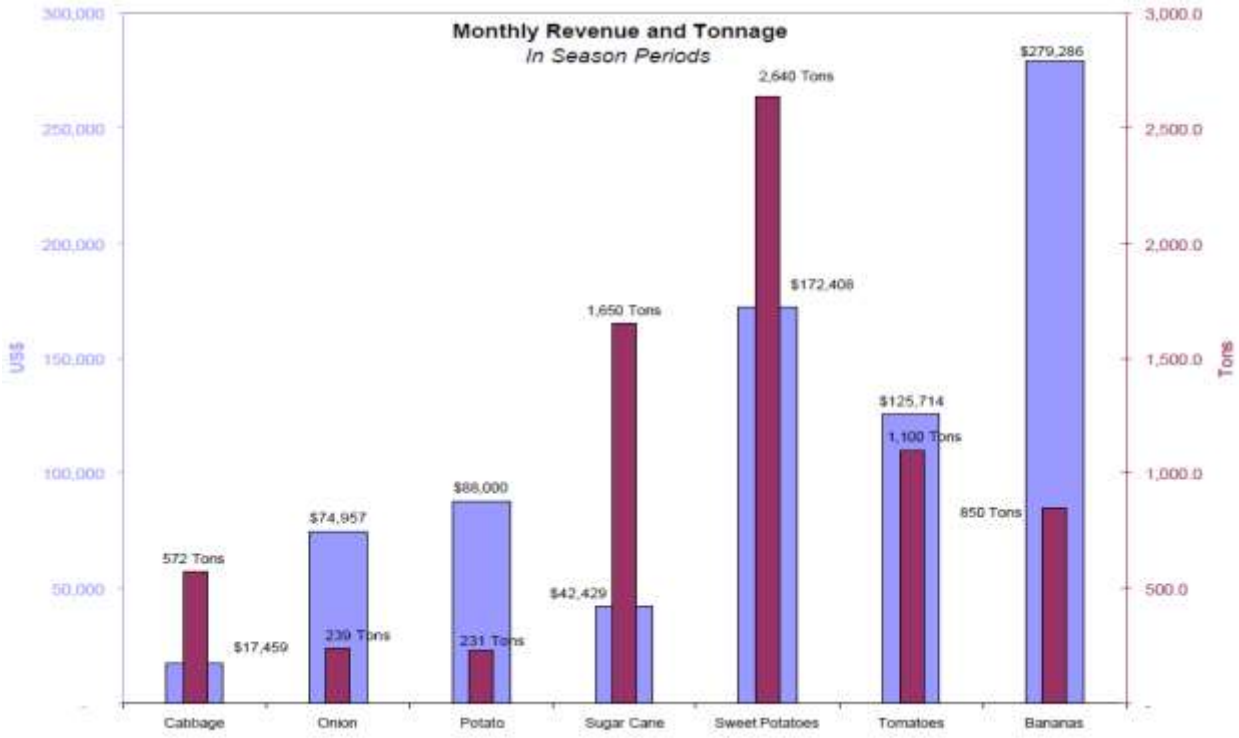


Figure 14. Agricultural products traded at Soweto Market (Source: Kanchela and LaFleur, 2001)

6.3. FOOD STORAGE, PROCESSING AND MANUFACTURING

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 exists a large number of losses due to damages in storage. This scourge is likely to increase with the prevailing and rising power outages that have hit the country as a whole. In order to have sustainable and resilient city, there is need for improved storage facilities and processing to increase shelf life of perishables. The Food Reserve Agency is mandated by government to ensure that food produced is well stored for future use by the nation. For instance, in case of droughts or floods, the disaster management unit can have stock to supply relief food for affected families. A lot of work is being done to help farmers increase the shelf-life of their produce such as use of super grain storage bags, metal silos and chemicals to kill storage pests.

The Processing and Manufacturing industries are still in their infancy in the City. This is exacerbated by stiff competition offered by the international processors and free trade policy among COMESA and SADC countries which Zambia is a member. Another challenge which was identified to retard the development of the processing industry was the consumer taste and preference. This was clearly outlined for fresh vegetables and fruits such as tomatoes. Consumers prefer to use fresh tomatoes in cooking instead of tomato paste, which has a long shelf life and is easier to store.

On the other hand, the manufacturing industry has had a fair boost in business owing to the mushrooming of various fast foods around the City. Manufacturers of paper plates, plastic cups and bottles, forks spoons, plastic containers are among the highly thriving industries in the food system. According to the 2011 CSO Report, the Manufacturing industry was dominated by Zambia Sugar PLC, Food processing firms, and several other manufacturing firms across the country. In this industry, there is need for local players to improve on quality in some cases in order to be more acceptable on the market.

6.4. FOOD WHOLESALE AND DISTRIBUTION

The wholesale and distribution industry in Zambia is characterized by a few players. ZAMBEEF is noted to be a significant player in the wholesale and distribution of beef, chicken, pork, milk, dairy products, eggs, edible oils, stock feed, and flour. Most of the millers are also involved in wholesale production. They produce mainly mealie-meal and wheat flour which is sold locally to retailers and across the borders to the Democratic Republic of Congo, Angola, Zimbabwe and Mozambique. The seed and fertilizer companies are also key players in the wholesale and distribution industry. The small scale farmers also sell their produce in bulk at the market though they have challenges of middle men. At Lusaka' Soweto market, exists the largest sale point for fresh produce which is an informal set-up. Being an informal set-up, there is no system in place to monitor pricing patterns and this has a direct loss on the producers. Additionally, there is no strict measure put in place to ensure safety and quality of the food that enters the market. The market environment can get extremely dangerous and a hub to bacteria and diseases especially in the rainy season.

The wholesale and distribution sector is affected to a great extent by lack of proper transportation and storage facilities. Most of the suppliers lack refrigeration facilities and use privately owned vehicles. There is need to put in place systems that look into the missing links of the food value chain in order to sustain food production and ensure food security for the city of Lusaka.

6.5. RETAILING AND MARKETING

This is equally a critical stage in the food value chain. The data presented in this section is derived primarily from the Food Security and Research Project, Central Statistical Office Reports of 2008 (Table 7). The survey involved 4 towns; 2 rural towns and 2 urban towns. For this section, only the data for Lusaka were used. These reports have peculiar definitions which are given below.

6.5.1. Definitions of different types of food and other item sellers (retailers and/or retailer/wholesalers)

Market Stand or Market Stall Vender
Retailers working from a fixed place –a stall or stand- in a market and the person who uses the stand pays levy to the council or some other responsible organization. This can also include retailers selling in areas right outside markets (on the street or sidewalks) assuming these vendors must also pay a fee or levy for use of their selling space/stand/stall.

Mobile vender
A retailer who sells his/her merchandise while walking or from/in the truck or van that moves to different places, or comes each day to a standard location.

Street vender
A small scale retailer who has no basic market infrastructure to facilitate selling his/her merchandise, but sells by or on the street, and away from a public market. They normally do not pay a levy or fee for using this selling space.

Ka Table
It is a small scale retail vender selling from a table on a street or in the yard of a house. These vendors pay no levy or fee for use of their selling space.

Kanthemba
This is a small scale retailer with a make-shift selling structure, where the owner brings his/her merchandise in the morning and removes them when closing in the evening. It can be along a street or in a yard or other location away from a public market.

Ka shop (Kiosk)
It is a retailer with a small shop or building where a customer buys merchandise through the window of the building. These are more permanent structures which permit the owner to leave the inventory of goods in the shop overnight without fear of theft.

Ka sector
Ka Sector is a collective term for the street vendor, mobile vendor, Ka Table, Kanthemba and Ka Shop.

Grocery/General Dealer/Shop -Retail Only
This is a retail shop where a customer buys merchandise over the counter and he/she is served by the owner of the shop (personal service).

Wholesale/retail Grocery/General Dealer/Shop
This is a wholesale and retail shop where a customer (both small retailers and consumers buy merchandise over the counter and he/she is served by the owner of the shop (personal service). These are important sources of procurement for small retailers of various types, in addition to serving consumers.

Mini mart
This is a retail store or shop which has both personal services and self-service, and tends to have longer hours of operation.

Small Supermarket
This a relatively small (square meters) retail store which uses mostly self-service but may not have a complete line of goods and it generally has some produce as well as basic staples, May also have a bakery and butchery, or at least sell meat products.

Large supermarket – independent
This is relatively large (sq meters) retail store which has only one outlet (store) and is mostly self-service and has complete line of goods, including produce section, a bakery and butchery.

Large supermarket – chain store outlets
It is a shop which has many outlets and it is mostly self-service and has a complete line of goods and it has its own bakery and butchery. Examples include Shoprite, Spur, and Melissa.

Butchery
This is a retail shop where meat products (beef, pork, ham etc), poultry and fish are sold.

Bakery
This is retail and baking shop where wheat products (bread, buns, cakes, etc) are made and sold at retail and wholesale.

Milk Bar/Container
This is a wholesale/retail shop where fresh and processed milk and milk products (cheese, yogurt) are sold.

Custom Grain Mill/Hammer Mill/Grinding Mill
These are small maize and cassava grinding mills where various qualities of meal can be produced.

6.5.2. Definitions used in determining the location of different types of retail outlets

Main Public Market Area
These are main public market areas that are located in the areas of the Central Business Districts of each city. These include the following:

Central Business District – First Class
These are areas located in the central parts of some urban areas where the quality of merchandise and the price of goods are relatively higher. The building of the shops and the rentals are relatively higher than in second class. (This category applies only to Lusaka and Kitwe.)

Central Business District – Second Class
These are areas located more towards bus stations and sometimes on the peripheral of the large urban areas. The quality of merchandise is lower and normally the price of merchandise is lower than the first class. The buildings are of relatively low quality. The rental fees for retail space are also lower than in the first class. These areas are located near the main bus stations. Examples are Kamwala in Lusaka and KMB in Kitwe.

Neighborhood/Residential – Public Market Area
These are Public Markets Areas located in residential areas. In Lusaka and Kitwe especially, there are a large number of neighborhood public markets. Examples are Nakadoli, Chamboli markets in Kitwe and Mtendere markets in Lusaka.

At my residence/plot
This is the case of the household buying something at their own house or in their yard

Neighbourhood
These are all the stand alone locations inside urban neighbourhoods and residential areas, but excluding all the other neighbourhood locations listed below.

Neighbourhood – Commercial Shopping Centre/Mall
These are commercial shopping areas with relatively large shops but are located in residential areas at some distance from the Central Business Districts of the cities. Examples of these are Manda Hill, Arcades, and Cross roads Shopping Mall in Lusaka.

Neighbourhood – Stand Alone/Strip Shop/Mall Locations
These are more organized and commercial shopping areas with 3-4 or more small shops found in residential areas as well. The distinguishing feature is that there is no large or medium public market nearby. These tend to be found at houses (e.g. ka table), along important roads and bus stops where lots of potential customers pass by and these are generally found in residential areas.

Outside the city
This is the case where a consumer travels to a location outside the city limits to purchase a specific product.

Table 7. Retail channels used for staple food purchases by location and ranked by adult equivalent expenditure terciles

	Lusaka			Kitwe			Mansa			Kasama		
	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male
Retail Channels	% of Total Monthly Food Expenditures on Staples											
Market stand / stall	31.82	30.51	32.11	41.47	41.16	41.52	48.47	50.80	47.70	50.08	56.18	48.74
Mobile and street vendors	8.02	6.76	8.31	6.91	7.27	6.84	9.61	9.48	9.65	15.22	12.20	15.88
KaSector (Katable/ Kantemba/Kashop (kiosk)	18.32	17.82	18.43	13.85	13.31	13.95	9.85	10.55	9.61	9.55	8.52	9.78
Retail/whole grocer / general dealer / shop	30.33	30.37	30.32	25.79	23.09	26.28	14.37	14.53	14.32	10.78	9.31	11.10
Mini-mart / small supermarket	1.45	1.43	1.45	.26	.19	.27	.04	.00	.06	.21	.00	.25
Large supermarket, independent	.63	.69	.62	.15	.23	.13	.00	.00	.00	.13	.41	.07
Large supermarket, chain	6.76	9.06	6.23	5.88	7.75	5.53	9.60	7.22	10.39	6.98	6.40	7.10
Bakery	.61	.83	.56	2.55	2.69	2.53	5.54	5.32	5.62	1.88	1.40	1.98
Private household	1.55	1.72	1.51	2.48	3.21	2.34	2.34	2.10	2.41	3.78	4.48	3.62
Other	.52	.81	.45	.68	1.10	.60	.18	.00	.24	1.41	1.09	1.48
Total %	100	100	100	100	100	100	100	100	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

Based on the relative proportion of income spent in different retail outlets the main retail outlets were as follows:

1. Market stands (32%);
2. Retail store or wholesale, general dealer (30 %);
3. Small roadside traders 18 %).

On the basis of household income there are slight differences in that those in high income bracket use markets slightly less at 28.6 % compared to 32.9 by the lower income bracket.
Large supermarket chains accounted for about 6.7 % on average but are used for 14.25 % of high income compared to 1 % of the low income earners purchases.

6.6. CONSUMPTION

Consumption is yet another key and also final stage in the food value chain. The phase is affected by several factors such as food availability and accessibility, and pricing.

6.6.1. Household food expenditure - broad food categories for Lusaka households

According to IAPRI (2009), cereals and staples are the most consumed food in the City of Lusaka. Meat and eggs account for 13% to17% of the total food consumed in most households of Lusaka City, with vegetables accounting for 11% to 15%. The expenditure shares of these food categories, including legumes and sugar/oils, are higher among low income households. The expenditure shares of dairy products, meat and eggs, and food bought and consumed away from home, on the other hand, are higher among households in the high income bracket (IAPRI, 2009)

6.6.2. The staple food for Lusaka- a selective scan of literature

IAPRI (2009) found that maize is the most consumed staple with an average food share of 10-12%. However, wheat products have also become increasingly important in Lusaka. The share of expenditure on maize is highest in the low expenditure households. On the other hand, the survey established that the expenditure share of wheat is higher in the medium and high expenditure households in Lusaka. Overall, the informal/traditional market system's share of staples purchases is high, ranging from 60% to 79%. In contrast, the retail share for commercially manufactured maize meal, including re-packaged products, is much lower with a 31% proportion in the City. The market share of supermarkets, including mini-marts, of maize meal purchases is low in low expenditure households with only about 2% compared to 20% in higher expenditure households. The survey established that cereals and poultry products are consumed in much higher proportions than any other food products in the City of Lusaka.

6.6.3. Fruits and Vegetables: Types and levels of consumption

Rape, tomato, onion and local leaves are the most consumed vegetables in Lusaka. The main fruits consumed are bananas, oranges/tangerines and apples (IAPRI, 2009). In the ranking of expenditure shares, all vegetable expenditure shares are higher in the low than the high expenditure households. The shares of bananas, oranges/tangerines and apples are higher in the high expenditure households while those of other fruits (taken together as mangoes, avocados, water melons, guavas, and lemons) are higher among households in the low expenditure households.

> The dominance of the traditional/informal system in the marketing of fruits and vegetables is overwhelming with over 95% in comparison to the formal markets. Although the share of formal system retail outlets (grocers, mini-marts and supermarkets) is 6-10 times higher in the high than low expenditure households, the traditional/informal system still predominates with over 90% market share (IAPRI, 2009: 28).

According to CSO/MACO (Year), food items consumed are given in Table 8.

Table 8. Household per adult equivalent shares of broad food categories by urban area

	Lusaka	Kitwe	Mansa	Kasama
Weighted Number of Households	268,024	78,499	9,305	20,901
Food Items	---------- % of Total Monthly Food Expenditures----------			
Cereals & staples	24.0	27.2	27.9	27.1
Dairy items	5.2	3.5	1.7	2.0
Meat & eggs	16.7	15.5	12.7	14.4
Fish	7.6	8.3	12.3	12.4
Vegetables	13.6	14.9	11.4	14.2
Fruits	3.6	4.0	3.7	4.0
Legumes	3.7	3.3	3.7	3.7
Sugar & oils	7.9	8.9	8.5	8.7
Other foods	4.7	4.8	4.7	6.0
Tobacco & alcohol	5.3	4.8	6.3	4.1
Food away from home	7.8	4.8	6.9	3.5
Total %	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

Based on the relative proportion of income expenditure, the consumption patterns reveal the following trends in the broad food categories consumed in Lusaka (Table 8).
In terms of ranking it was as follows:

1. Cereals and staples (24.0 %);
2. Meat and eggs (16.7 %);
3. Vegetables (13.6 %);
4. Sugar and oils (7.9 %);
5. Fish (7.6 %);
6. Fruits and legumes (beans) about 3.6 %).

Table 10 further shows the specific food share of household monthly expenditure.

Table 9. Household per adult equivalent shares of staples and other foods by urban area (Source: IAPRI, 2009)

	Lusaka	Kitwe	Mansa	Kasama
Weighted Number of Households	268,024	78,499	9,305	20,901
Food Items	% of Total Monthly Food Expenditures			
Maize	9.5	12.3	12.2	12.3
Rice	2.1	2.4	2.3	3.2
Wheat	9.8	9.8	5.0	4.7
Cassava	.2	.5	5.7	3.7
Other staples	2.4	2.2	2.7	3.1
Sugar	3.4	3.5	3.3	3.3
Dairy	5.2	3.5	1.7	2.0
Animal protein	24.3	23.8	25.0	26.9
Fruits & vegetables	17.2	18.9	15.1	18.2
Other food prepared at home	18.2	18.3	20.1	19.1
Food away from home	7.8	4.8	6.9	3.5
Total %	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

In terms of specific food share of monthly food expenses per adult the ranking was

1. Animal protein (24.3 %);
2. Other foods prepared at home (18.2 %);
3. Fruits and vegetables (17.2 %);
4. Wheat products (9.8 %);
5. Maize (9.5 %);
6. Foods consumed away from home, mostly from restaurants (7.8 %);
7. Dairy products (5.2 %);
8. Cassava and other staples such as rice comprised less than 5 %.

Fruits and vegetables were second in importance to animal protein. Thus wheat and maize were the main cereals, whereas cassava and rice were of less importance. It is important to note that animal protein and vegetables are consumed together with maize porridge (nshima) as accompanying relish while wheat is consumed mainly as bread for breakfast together with milk (dairy product).

First, urban Zambian households spent a lower fraction of their total expenditures on food in 2007/8 (46-55%) than they did in 1991 (61%). This finding indicates that urban households in general have more disposable income to spend on non-food items than they did in the early 1990s and is consistent with the decline in the extreme poverty headcount rate in urban Zambia from 32% in 1991 to 20% in 2006. The finding of a lower food share in total consumption pertains to a period in which food prices were at unprecedentedly high levels during the 2007/08 food crisis in the Southern Africa Region. Nevertheless, food budget shares among relatively poor households remain very high around 60-73%. Policies and programmes to reduce marketing costs from farmers to urban consumers will be

important to reduce food prices for consumers and improve their disposable incomes and living standards.

Second, the food group with the largest consumption share among Zambian urban households is meat and eggs, accounting for roughly 15-17% of the value of food consumption. Other food groups with large consumption shares are vegetables (10.1-12.6%) and fish (7.1-11.6%), maize products (7.6-11.1%), wheat products (5.9-10.5%), and sugar and oil (6.7-8.4%).

Third, among the staple carbohydrates, although maize budget shares in 2007/8 exceeded those for other staple foods among relatively poor urban consumers, wheat was the most important staple carbohydrate in value of consumption terms among urban consumers. Maize is no longer the dominant staple food in urban Zambia, except among the poor. The increasing diversification of urban staple food diets may allow for greater inter-commodity substitution potential during maize production shortfalls.

Table 10 indicates household per adult equivalent shares of fruit and vegetables as well as other foods.

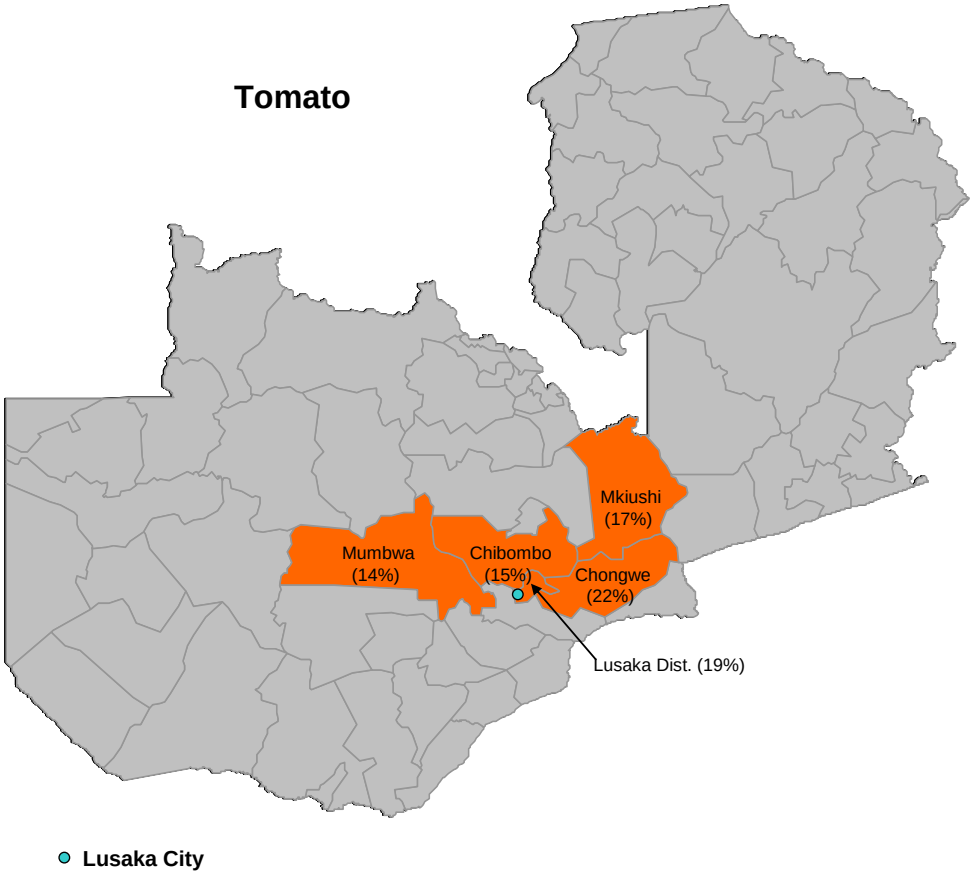
Table 10. Household per adult equivalent shares of fruit and vegetables and other foods by urban area location

	Lusaka	Kitwe	Mansa	Kasama
Number of Households	268,024	78,499	9,305	20,901
Food Items	....% of Total Monthly Food Expenditures			
Rape	4.0	4.7	2.8	4.1
Tomato	3.5	3.8	2.9	3.6
Onion	1.6	1.9	1.2	1.4
Cabbage	.7	.5	.7	.7
Local leaves	2.2	2.8	2.8	2.8
Other vegetables	1.6	1.3	1.1	1.6
Banana	1.1	1.0	.7	.7
Oranges / tangerines	.7	.7	.5	.4
Apple	.5	.5	.2	.2
Other fruit	1.3	1.9	2.3	2.8
Cereals & staples	24.0	27.2	27.9	27.1
Animal protein	24.3	23.8	25.0	26.9
Other food prepared at home	26.8	25.4	25.1	24.4
Food away from home	7.8	4.8	6.9	3.5
Total %	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

Table 10 clearly indicates that the major vegetables purchased were as follows:

1. Rape (4.0 %);
2. Tomato (3.5 %);
3. Local vegetables (2.2 %);
4. Bananas were the main fruits (1.1 %);
5. Citrus fruits mostly oranges and tangerines (0.7 %).



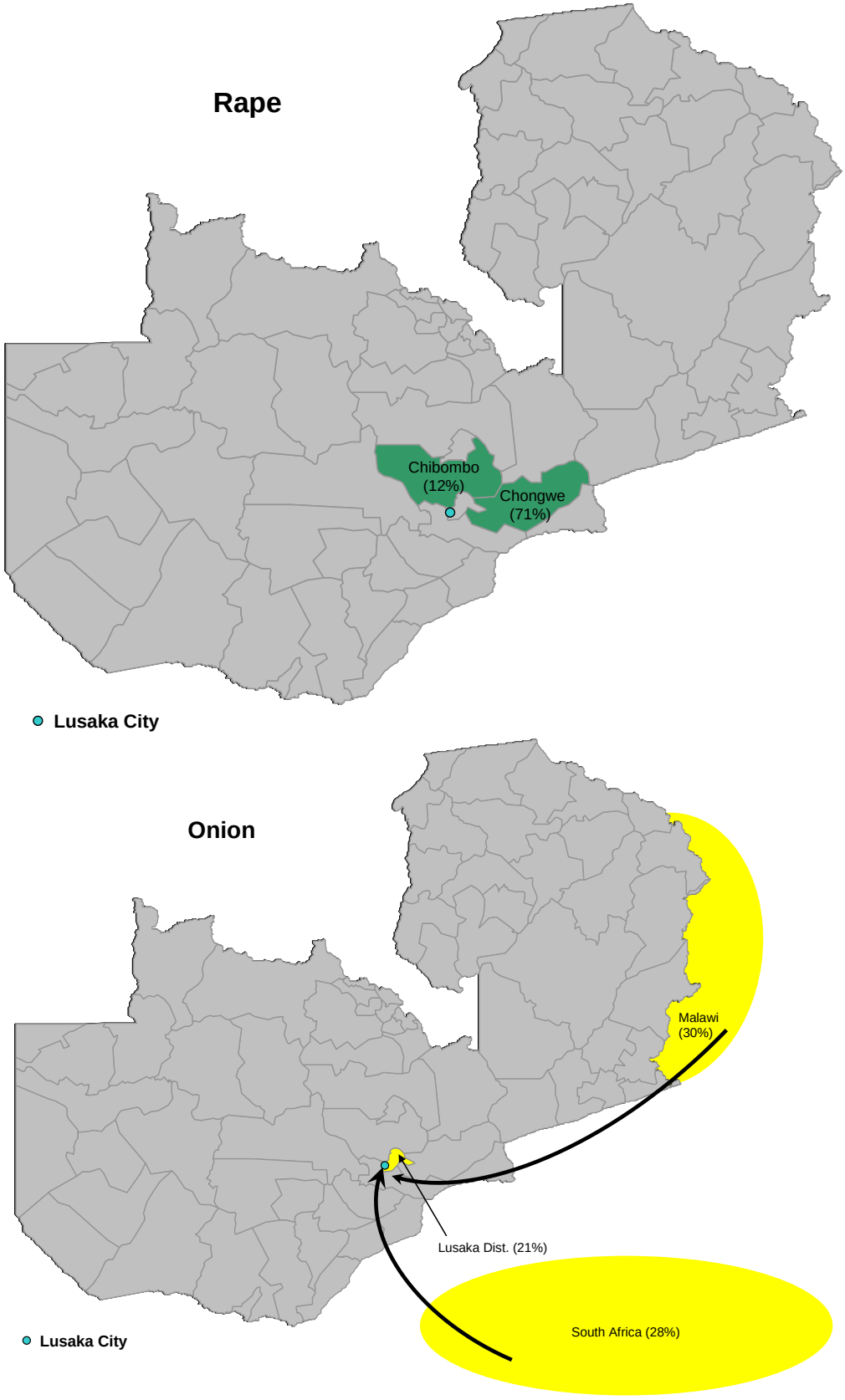


Figure 15. Major sources of Tomato, Rape, and Onion Supplied to Soweto Market, Lusaka (Source. IAPRI, 2009, 18)

The significance of these figures is that the major sources for these types of are outside the City of Lusaka. This has implications on the food price and accessibility due to distance.

Table 11. Household per adult equivalent shares of broad food categories by location and ranked by adult equivalent expenditure terciles

	Lusaka				Kitwe				Mansa				Kasama			
	Overall	Low	Medium	High	Overall	Low	Medium	High	Overall	Low	Medium	High	Overall	Low	Medium	High
Weighted Number of Households	268,024	89,168	89,666	89,190	78,499	26,102	26,171	26,226	9,304	3,104	3,080	3,120	20,901	7,013	6,953	6,935
Food Items	% of Total Monthly Food Expenditures															
Cereals & staples	24.0	28.3	24.4	19.3	27.2	31.3	28.1	22.1	27.9	32.8	27.3	23.7	27.1	32.3	25.9	23.1
Dairy items	5.2	3.4	5.6	6.7	3.5	1.8	3.6	5.2	1.7	.3	1.5	3.3	2.0	.5	1.6	3.8
Meat & eggs	16.7	13.7	17.9	18.5	15.5	11.9	15.7	18.8	12.7	7.3	14.1	16.7	14.4	10.3	14.8	18.2
Fish	7.6	8.8	7.3	6.6	8.3	8.7	8.8	7.5	12.3	13.6	12.9	10.5	12.4	13.2	12.9	11.2
Vegetables	13.6	17.6	13.3	9.9	14.9	18.9	14.7	11.0	11.4	13.0	11.7	9.6	14.2	17.2	14.0	11.3
Fruits	3.6	2.6	3.7	4.5	4.0	3.2	3.6	5.2	3.7	4.6	3.3	3.2	4.0	4.6	3.6	3.7
Legumes	3.7	4.6	3.6	2.8	3.3	3.7	3.3	3.0	3.7	4.6	3.5	3.0	3.7	4.5	3.7	2.8
Sugar & oils	7.9	10.2	7.7	5.7	8.9	10.1	9.1	7.4	8.5	8.0	8.8	8.8	8.7	8.8	8.9	8.4
Other foods	4.7	3.2	4.8	6.2	4.8	3.8	4.6	5.8	4.7	3.5	4.2	6.7	6.0	4.9	6.0	6.9
Tobacco & alcohol	5.3	2.9	5.3	7.5	4.8	4.1	3.7	6.6	6.3	6.4	6.0	6.6	4.1	2.5	4.8	5.0
Food away from home	7.8	4.7	6.4	12.3	4.8	2.3	4.7	7.3	6.9	6.1	6.6	8.0	3.5	1.1	3.6	5.6
Total %	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

When segregated according incomes, the high income households spent less of their income on cereals and staples (19.3%) compared to 28.3 % in low incomes. On the other hand high income household consumed more meat and eggs (18.5%) compared to 13.7% in low income households. In addition, low income households at 10.2% consumed almost twice the amount of sugar and oils compared to high income (5.7%) (Table 11).

6.6.4. Nutrition

Post-independence Zambia has been characterized by high level of rural urban migration. Most urban households do not have poor access to food, but also consume foods from a very narrow range of food types (Mulenga 2013). Research has shown that up to 93 % of households live in informal settlements and about 70 % of the city's population is food insecure.

Table 12. Household qualitative views about selected measures of their own food security by household per adult equivalent food expenditure tercile and by location

Food security Status Indictor	Lusaka				Kitwe				Mansa				Kasama			
	Overall	low	medium	high	Overall	low	medium	high	Overall	low	medium	high	Overall	low	medium	high
	Number of Meals Desired and Attained Per Day in Past 30 days															
Ideal number of main meals	3.1	3.2	3.2	3.1	3.2	3.1	3.2	3.2	3.3	3.1	3.3	3.4	3.1	3.0	3.1	3.2
In past 30 days number of main meals typically eaten per day	2.8	2.6	2.9	2.9	2.7	2.4	2.7	2.9	2.7	2.4	2.7	3.0	2.7	2.5	2.7	3.0
Achievement Levels	% Actual / Ideal Number of Meals per day															
Percent Actual/ideal meals	**90.3**	**81.3**	**90.6**	**93.5**	**84.4**	**77.4**	**84.4**	**90.6**	**81.8**	**77.4**	**81.8**	**88.2**	**87.7**	**83.3**	**87.1**	**93.8**
Number of Days in Past 30 That Something Occurred	Number of Days in Past 30 that Something Occurred															
Number of days in past 30 days a main meal was skipped	1.4	2.5	1.3	.5	2.4	4.6	1.9	.8	2.4	3.4	2.4	1.3	2.1	3.0	2.1	1.1
Number of days in past 30 days without a main meal during the entire day	.2	.5	.1	.1	.5	.9	.4	.1	.2	.4	.3	.0	.3	.5	.5	.0
Number of days in past 30 days the main meal was smaller than usual	2.0	3.9	1.7	.6	1.9	3.4	1.7	.7	1.8	2.6	1.7	1.1	1.6	2.5	1.6	.8
Number of days in past 30 days the household worried about where food would come from	3.2	5.9	2.6	.9	2.9	5.7	2.1	1.1	1.9	2.5	2.0	1.3	2.0	3.0	2.1	1.0
Number of days in past 30 days asked neighbors or relatives for food to make a meal	.9	1.7	.8	.3	.9	1.	.7	.3	.6	1.0	.6	.3	.6	.9	.6	.3
Total Food Security Index	**7.7**	**14.5**	**6.5**	**2.4**	**8.6**	**16.2**	**6.8**	**3.0**	**6.9**	**9.9**	**7.0**	**4.0**	**6.6**	**9.9**	**6.9**	**3.2**
Enumerator qualitative rank of household food security status (1-5)	3.4	2.7	3.4	4.1	3.5	2.7	3.6	4.2	3.5	2.8	3.6	4.0	3.5	3.0	3.4	4.2

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

Table 12 shows the food security perception of the given households, in the last 30 days at the time of the survey. The highlights of Table 13 with respect to low income households are as follows;

1. Skipping a main meal 1.4 % (2.5);
2. No meal the whole day 0.2 % (0.5);
3. Number of days when main meal was smaller than usual 2.0 % (3.9);
4. Number of days when family worried about where the next meal would come from 3.2 % (5);
5. Number of days when they had to ask neighbours for food 0.9 % (1.7);
6. Total food security index 7.7 % (14.5);
7. Food security ranking (by enumerator from 1 to 5) 3.4 (2.7).

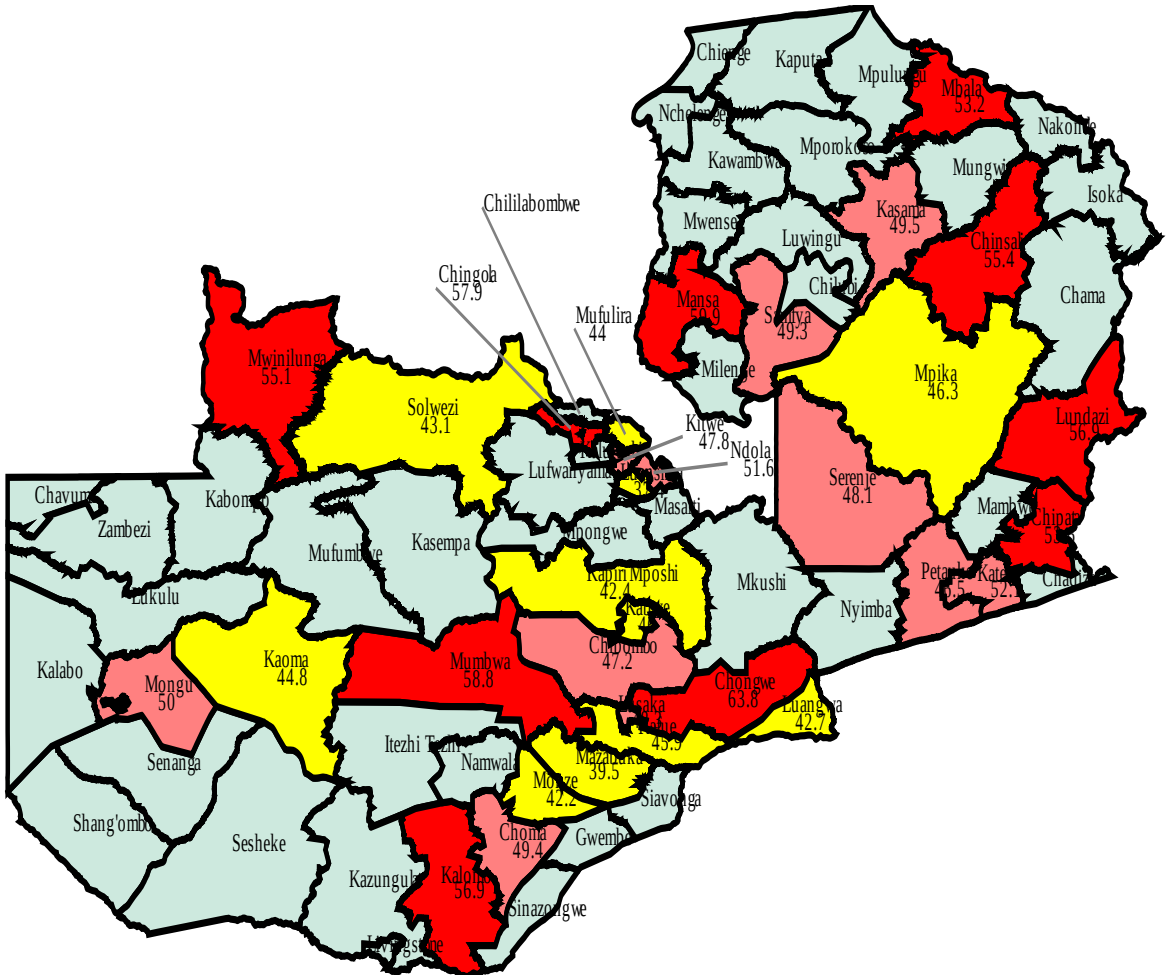


Figure 16. Stunting rate among children in the different Zambian districts

According to WHO, maximum stunting rate for children is 2 % but for Lusaka, the rate is about 4.8 % which more than twice the accepted rate (Figure 18). This is an indication of chronic malnutrition as a result non availability of nutritious food.

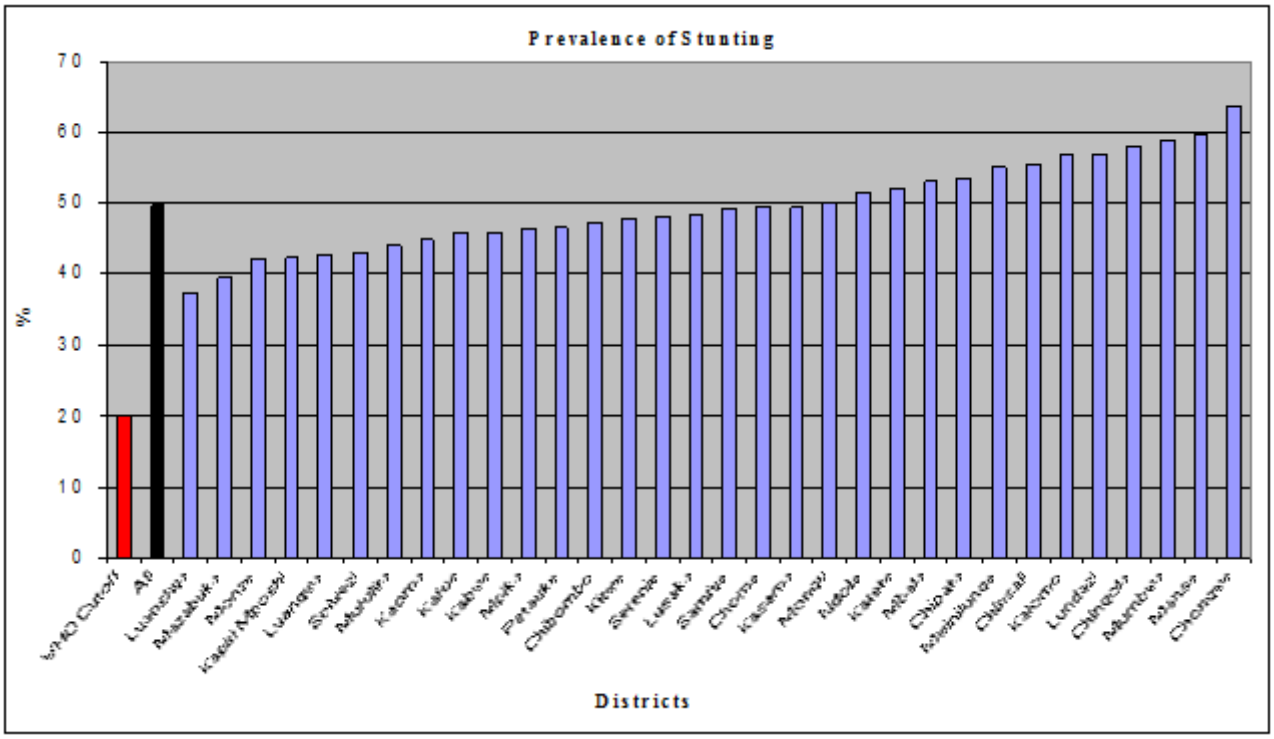


Figure 17. Prevalence of stunting among children in the different Zambian administrative districts

6.7. FOOD WASTE AND MANAGEMENT

Food waste and management have an implication in terms food availability. There is a general lack of integrated waste management systems especially at the market level. As result waste that can be converted into organic compost or converted to biogas to produce power goes to waste.

The 4 pillars of sustainable food production systems are,

a) Intensification of production and increase of land converted to fallow;
b) Diversification of diets and livelihoods;
c) Investment into aquaculture;
d) Reduction of post-harvest losses.

Emphasis is usually placed on the first three to the neglect of the 4th strategy. Losses after harvest account for significant total food losses. In relative terms, cereals and other low moisture commodities such as maize and wheat have comparatively lower post-harvest losses. Estimates for cereals have been put at under 20 %.
High water content products such as fruits and vegetables because of their perishable nature have higher post-harvest losses. Some estimates have put post-harvest losses of horticultural products at up to 50 %.

Table 13. Post-harvest losses of fresh vegetable during retail stage (2001- 2004). Data collected from Soweto and Kaunda Square Stage 1 Lusaka markets (Source IAPRI, 2009)

Market	Rape	Tomato	Cabbage	Dry onion	Average
	% of weekly purchases that goes to waste				
Soweto	7.9	8.8	2.5	0.8	5.0
Kaunda Square Stage 1	6.8	4.2	0.0	2.9	4.0
Main Masala	3.7	6.9	0.7	1.2	3.3
Average	6.1	6.6	1.3	1.6	4.1

Of the 4 common vegetables, the highest losses occur in tomato average 6.6 %, followed by rape (*Brassica napus*) 6.1 % cabbage (1.3 %) and 1.6 % (Table 13)
Studies have shown differences between developed and developing countries regarding which stages in the value chain losses occur. Whereas in developing countries major losses occur in on- farm and transport stages, in developing countries the major points at which losses occur is in the home and at the municipal stages (Figure 19).
The implications are that to rectify this situation locally more effort has to be directed to reducing post-harvest losses at the farm and transport by improving harvest and transport systems.

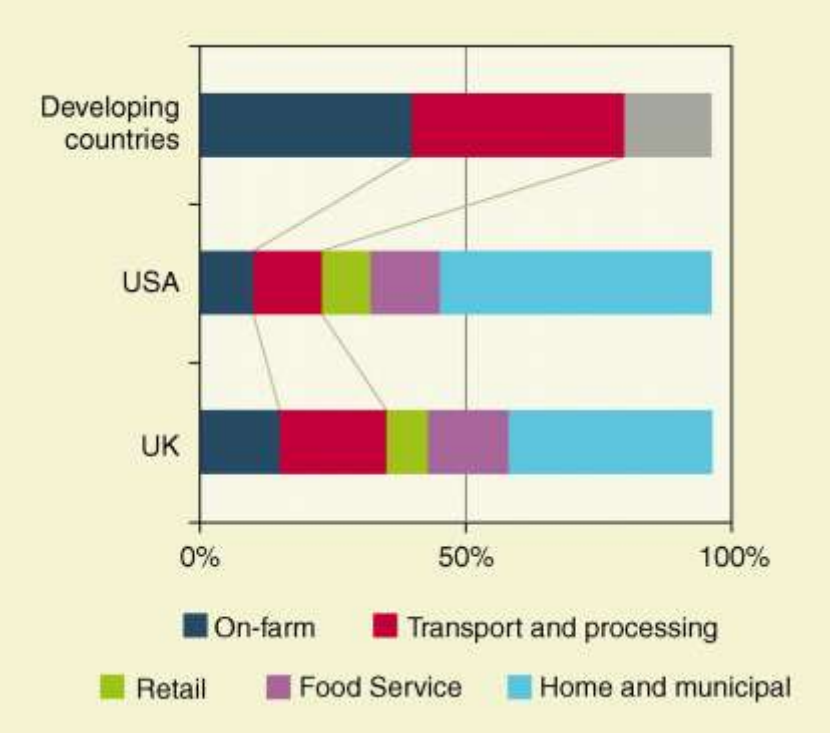


Figure 18. Make up of total food waste in developed and developing countries. ***NB: Retail, food service and home and municipal categories are lumped together for developing countries.*** *(Source: Godfray et al., 2010))*

7. CONCLUSION AND WAY FORWARD

7.1. CONCLUSION

The outcome from the stakeholders' workshop resonates with much of the reviewed literature. Issues of access to land, cost of investment capital among emerging farmers are adversely affecting the agricultural system in Lusaka and the surrounding areas. Furthermore, unsynchronised institutional set ups dealing with food safety, urban planning and land use management, restrictive food market environment and nutrition issues are the anchors of the challenges faced by the food industry in Lusaka. In addition, the rapid urbanisation process that Lusaka has witnessed in the past decade has been happening without due regard to the food sector. The key gaps that have been identified by stakeholders and by review of literature include the following:

i. In Zambia data and information on the food value chain is scattered among different institutions and groups. There is no common readily accessible platform such as data bases, websites where such information can be accessed and retrieved. In order to determine the quantities of food coming into Lusaka, volumes traded at the major wholesale markets such as Soweto, numbers and types of animals processed at abattoirs need to be determined. Currently, markets and informal abattoirs do not keep records.
ii. The exact sources of food for Lusaka need to be established, especially local sources.
iii. The retail system used seems to be influenced by economic status of the consumer. The upper income brackets favour formal retail outlets whereas the lower income population uses informal retail outlets. There could be some commonality in sourcing of the food. However, the relationship between the formal and informal food markets has not been established.
iv. Joint planning between Lusaka and the surrounding districts is recommended 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 for Lusaka CRFS because of the apparent overlap with surrounding districts. This would provide a policy and institutional framework to anchor implementation processes.
v. The negative impact of accelerated re- zoning of agricultural land to urban use (buildings) on food security is not given due consideration Lusaka and therefore not addressed fully in literature.
vi. Additionally the impact of climate change on the food and water systems in Lusaka are not adequately covered in the available literature.

7.2. WAY FORWARD

Based on this characterization of the CRFS and the local authorities priorities, 3 key issues to be in-depth assessed have been highlighted through a multi-stakeholder process:

1) Food supply, processing and distribution system

There is the need to further understand the value chains and the food flows, especially in regards to the sources of the food, its processing and its distribution in the city. Indeed, it appears that there is an important information gap in terms of value chain management. The mapping of the food flows, the analysis of the infrastructures along the food chain, the assessment of the governance mechanisms of the markets, and the study of the food losses and waste occurring along the value chain, will allow the identification of the main issues within the food supply, processing and distribution system. It could then be possible, by addressing these issues, to build a more sustainable and inclusive food chain for smallholder producers and businesses, and urban dwellers.

2) Sustainable production, resilience of production systems

The production systems in the Lusaka CRFS also need a specific attention. In the territory, there is an important problem in regards to land use, mostly because of the accelerated rezoning of agricultural land to urban use on food security. On another hand, production systems seem to have a negative impact on environment, due to inadequate agricultural practices.

3) Consumption, food security and nutrition aspects

And finally, issues on consumption, food security and nutrition need to be better assessed. Indeed, the post-independence period in Zambia has been characterized by an important rural-urban migration, leading to high level of food insecurity in the cities: 70% or urban dwellers in Zambia are considered as food insecured. There is the need to further understand the drivers of food insecurity and malnutrition, as well as the level of sustainability of the diets, in order to better address them.

These 3 areas will be further assessed during the next phase, in order to identify the gaps and bottlenecks to be addressed. Priorities will then be identified to be included in the local strategic plan during the last phase, in constant collaboration with the municipality and the stakeholders involved in the CRFS.

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APPENDICES

Appendix I: City-Region Food Systems (CRFS) Project Stakeholder Workshop Programme

Venue Mika Conference centre, Lusaka. Date Thursday, 12th November, 2015

Time	Activity	Responsible
08.00-08.30	Registration	FAO Secretariat
08.30-09.00	Official Opening of Workshop	FAO Representative
09.00- 09.10	Introduction	All participants
09.10-09.30	Outline of the objectives of the workshop	G. Hampwaye
09.30-10.00	Overview of the CRFS Project	G. Hampwaye/M.Mataa
10.00-10.15	Plenary Session	All participants
10.15- 10.30	Tea/Coffee Break	
10.30-10.45	Planning & Policy	LCC, MLGH &Lusaka Province Planning Authority
10.45-11.00	Agricultural Production	DACO Lusaka, Zambeef, Poultry Association of Zambia, Zambia Dairy Association
11.00-11.15	Bulking and Wholesale	Zambeef
11.15-11.30	Markets/Retailers	Zambeef, Spar and Game Stores & Informal
11.30-11.45	Education, and Research and Development	Kasisi Agric. Centre, ZARI & IAPRI
11.45-12.00	Advocacy	JCTR, Caritas, Nutrition Coalition
12.00-12.15	Extension and Technology Dissemination	DACO-, Chilanga, Chibombo, ZNFU
12.00-13.00	Plenary Session	All participants: Network relations (net-mapping)
13.00-14.00	Lunch	TBA
14.00-15.15	Delimitation of the Lusaka City Region	G. Hampwaye, G. Siame
15.15-15.30	Tea/Coffee Break	TBA
15:30- 15:45	Way forward i.e. identification of critical issues for the CRFS Project.	M. Mataa/G. Siame & All participants
15.45- 16:00	Closing Remarks and end of workshop	G. Hampwaye

Appendix II: List of invitees

Name of Participant	Position	Organization	Station	Cell	Email
1. Sylvia/Maxwell Zulu	Director	Lusaka Province Planning Authority	Lusaka	+260 977 494 225	mzulu70@yahoo.com
2. Stephen Kabwe	Research Associate	Indaba Agricultural Policy Research Institute	Lusaka	+260 977 771 097/81/976 826 391	stephen.kabwe@iapri.org.zm
3. Godfrey Chitalu	Food Sales Manager	Game Stores	Lusaka		GodfreyC@game.co.za
4. Sharon Chileshe	Officer	Jesuit Centre for Theoretical Reflections	Lusaka		
5. Mr. Misheck Lungu	Permanent Secretary	Ministry of Local Government & Housing	Lusaka	+260 211 250 528/+260 955 799055	lungumisheck@yahoo.com
6. Ms. Mulemwa	Health Inspector	Chilanga District Council	Chilanga	+260 977 874757	
7. Francis Sibamba	Human Resources & Corporate Affairs Manager	Spar	Lusaka	0968778892	francis@spar.co.zm
8. TBA	Lusaka District Agricultural Coordinator	Ministry of Agriculture	Lusaka		
9. TBA	Chilanga District Agriculture Coordinator	Ministry of Agriculture	Chilanga		
10. TBA	Chongwe	Ministry of Agriculture	Chongwe		
11. TBA	Chibombo District Agriculture Coordinator	Ministry of Agriculture	Chibombo		
12. Eugine Kabalika	Head of Programmes	Caritas	Lusaka		
13. TBA	Director	Nutrition Coalition	Lusaka		
14. TBA	Director, Public Health	Lusaka City Council	Lusaka		
15. Bridget O'conner	Organic Trainer	Kasisi Agriculture Centre	Chongwe		
16. Godfrey Hampwaye	Principal Consultant	UNZA	Lusaka	+260 977 806 063/955 806 063	hampwaye@yahoo.co.uk
17. Mebelo Mataa	Consultant	UNZA	Lusaka		
18. Gilbert Siame	Consultant	UNZA	Lusaka		

19. Olipa Lungu Kamanga	Consultant	UNZA	Lusaka	+260 966 848 588 / +260950481008	olipalungu@gmail.com
20. Jones Kayawe	Head, Environment and Technical Services	ZAMBEEF	Lusaka	+260 211369000/+269 977 999 221	Jones kc@zambeef.co.zm
21. Ellah Chembe	Deputy Director	Zambia National Farmers' Union	Lusaka	+260 211 252 834 / 252 649	chembe@znfu.org.zm
22. Mathews Ngosa	ZAMCHICK & Former Executive Director	Zamchick/Poultry Association of Zambia	Lusaka		
23. TBA	Public Health Inspector	Chongwe District Council	Chongwe		
24. TBA	Public Health Inspector	Chibombo District Council	Chibombo		
25. TBA	Manager	Dairy Association of Zambia	Lusaka		
26. Jacob Mwitwa	Principal Consultant	Copperbelt University	Kitwe		Jacob.mwitwa@gmail.com
27. TBA	Director	world vision	Lusaka		
28. TBA	Director	National Food and Nutrition Commission	Lusaka		
29. TBA	Director	Consumer Protection of Zambia	Lusaka		
30. TBA	Director	Civil Society Scaling up Nutrition	Lusaka		
31. TBA	Director	ZARI	Chilanga		
32. Shirley Ng'andu	Vegetable specialist/ Lecturer	UNZA	Lusaka		sng'andu@unza.zm
33. Ken Chilemu	Specialist	IDE	Lusaka		
34.	Reynolds K. Shula	Principal Specialist (Land Husbandry)	Lusaka MA Headquarters		Shula.reynolds@iconnct.zm
35. Richard Luhila		IDE	Lusaka		

Appendix III: List of actual participants

	ATTENDANCE LIST FOR THE CITY REGION FOOD SYSTEMS FAO WORKSHOP 12TH NOVEMBER 2014 AT MIKA CONVENTION CENTRE				
	NAME	ORGANIZATION	POSITION	CELL PHONE NUMBER	EMAIL ADDRESS
1	JONES C. KAYAWE	BANABEEF	HEAD - ENVIRONMENT	0977 999 221	joneskc@banabeef.co.zm
2	MIKE MWANZA	NATIONAL FOOD AND NUTRITION [illegible]	[illegible] NUTRITIONIST	0979158899	mikemwanza@gmail.com
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4	EMMANUEL CHILESHE	MINISTRY OF AGRIC	DISTRICT AGRIC. COORD	0973604660	emmanuelchileshe@yahoo.com
5	JOSEPHINE M. PHIRI	CHIBOMBO COUNCIL	COUNCIL SECRETARY	0977 470440	[illegible]@gmail.com
6	GODFREY CHITALU	GAME STORES	S/M MANAGER	0974199762	godfreyc@game.co.za
7	Maxwell Zulu	LG - MLGH	Chief Planner	0977494225	m.zulu70@yahoo.com
8	MEBELO MATAKA	UNZA	LECTURER	0977 808868	mebelomataka@yahoo.com
9	OLIPA N.L KAMANGA	UNZA	LECTURER	0978889588	olipa.kamanga@unza.zm
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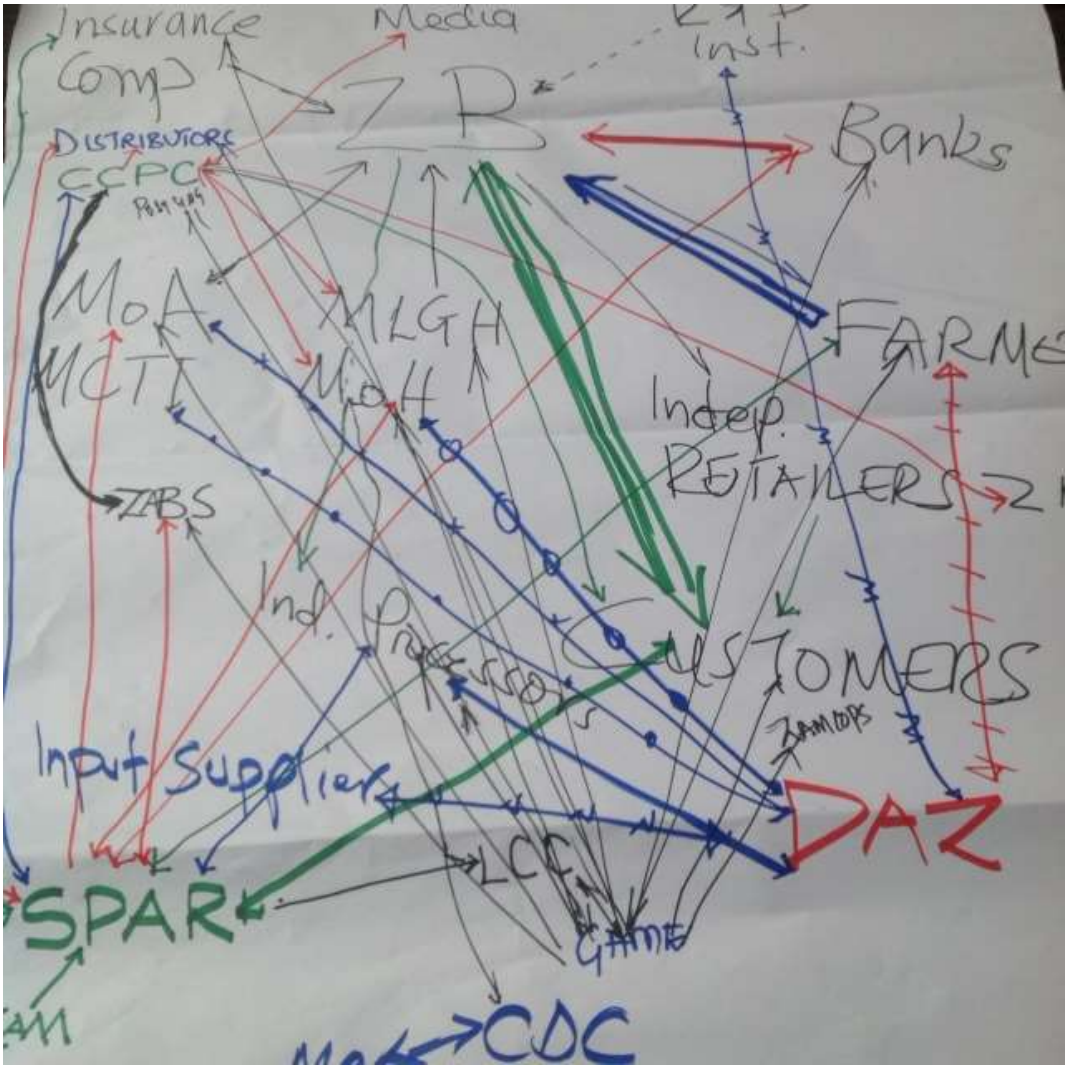
15	GODFREY HAMPWAYE	UNZA	LECTURER	0977808083	hampwaye@yahoo.co.uk
16	PHILEMON MANZI	STAR ZAMBIA	GROUP OPS EXECUTIVE	0965287014	philemonmanzi@[illegible].co.zm
17	Makongo Nyangola	FAO	Ops & Logistics [illegible]	0962454842	makongo.nyangola@fao.org

Appendix IV: Picture of Netmap



❖ Purpose and principles

***Purpose**:* A SAFA is an evaluation of the sustainability performance of a company or production site that forms part of a supply chain rooted in primary production. The purpose of a SAFA is to contribute to the realisation of the above-mentioned vision by supporting the implementation of effective sustainability management and communication in the agriculture and food sector, worldwide. Stakeholders in food production, distribution and retail can do a SAFA to substantiate sustainability claims and to enhance sustainability management in their value chain.

❖ Subject and scope

With a SAFA, the performance of a company, branch of a company or production site is rated concerning *economic, environmental, social* and *governance* sustainability. A SAFA can address all entities in value chains based on primary production, from the site of primary production (agriculture, fisheries, forestry) to that of final sales to the consumer (Fig. 1). A SAFA can be limited to a single production site or step of the value chain. Sustainability ratings can be aggregated for multiple sites and along a value chain. A SAFA neither is a rating of product sustainability, nor does it cover the use and end-of-life phases of products (ISO, 2009).

Thematic scope: sustainability dimensions and themes The SAFA sustainability rating pertains to the four dimensions of sustainability. Within these dimension, 20 sustainability themes were identified, each of which contains sub-themes (Table 1; wording based on UN, 2007). Details on dimensions, themes, sub-themes and indicators are provided in part in the SAFA guidelines.

Table 1. SAFA sustainability dimensions, core sustainability themes (left) and sub-themes (right).

GOOD GOVERNANCE	
G1 Governance structure	Corporate ethics; Due diligence
G2 Accountability	Holistic audits; Responsibility
G3 Participation	Stakeholder dialogue; Grievance procedures; Conflict resolution
G4 Rule of law	Commitment to fairness and legitimacy; Remedy, restoration and prevention; Co-responsibility; Resource appropriation
G5 Holistic management	Sustainability in quality management; Certified production and sourcing; Full-cost accounting
ENVIRONMENTAL INTEGRITY	
E1 Atmosphere	Greenhouse gases; Air pollution
E2 Freshwater	Water quantity; Water quality
E3 Land	Organic matter; Physical structure; Chemical quality; Land degradation and de-sertification
E4 Biodiversity	Habitat diversity and connectivity; Ecosystem integrity; Wild biodiversity; Agri-cultural biodiversity; Threatened species
E5 Materials and energy	Non-renewable resources; Energy supply; Eco-efficiency; Waste disposal
E6 Animal welfare	Freedom from stress; Species-appropriate conditions
ECONOMIC RESILIENCE	
C1 Investment	Internal investment; Community investment; Long-ranging investment
C2 Vulnerability	Stability of supply; Stability of marketing; Liquidity and insurance; Employment; Stability of production
C3 Product safety and quality	Product information; Traceability; Food safety; Food quality
C4 Local economy	Value creation; Local procurement
SOCIAL WELL-BEING	
S1 Decent livelihood	Wage level; Capacity building
S2 Labour rights	Employment; Forced labour; Child labour; Freedom of association and bargain-ing; Working hours
S3 Equity	Non-discrimination; Gender equality; Support to vulnerable people
S4 Human health and safety	Physical and psycho-social health; Health resources; Food security
S5 Cultural diversity	Indigenous knowledge; Food sovereignty

❖ Assessment procedure

For a detailed description of the SAFA assessment procedure, see part B of the Guidelines. To conduct a SAFA, the following phases must be run through:

1) Setting goal and scope of the assessment,
2) Adapting the SAFA Guidelines: relevance and compliance check,
3) Selecting tools and indicators,
4) Collecting data,
5) Analysing and interpreting SAFA results.
6) Reporting

The final visible output of a SAFA is the SAFA report, comprising a descriptive and an analytical part.