ENHANCING INTEGRATION OF LOCAL FOOD SYSTEMS INTO SPATIAL PLANNING IN LUSAKA, ZAMBIA.

BY
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‘A Planned City Sweeps the Poor Away....’

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APPROVAL

This dissertation by Chongo Kaulule is approved as a fulfilment of the requirements for award of a degree of Doctor of Philosophy in Geography**.**

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DECLARATION

I, **Chongo Twiza Siame Kaulule Computer Number 2018267515**, declare that this thesis is a representation of my work. It has not previously been submitted for a degree, diploma or other qualification at this or any other University. All published work or material from other sources incorporated in this thesis have been specifically acknowledged and adequate reference thereby given.

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ABSTRACT

Most sub-Saharan African cities face a lack of cogent integration and consideration of food systems (FS) in spatial planning. This has exacerbated the ongoing food insecurity in urban regions. This exigent situation calls for the integration of food systems into spatial planning. In Zambia, the proposed Lusaka City Region Food System (LCRFS) can aid the inclusion of Food systems in spatial planning. Unfortunately, in the global south, systems for food production, distribution, and processes are at odds with spatial planning. This is because they have been approached as parallels instead of different sides of the same coin. This research has developed a framework that will serve as a roadmap for improving how food systems are integrated into spatial planning. The next step involved the evaluation of the food systems in Lusaka, which was done in two phases. The first phase was to determine the city's level of food security from three residential areas: Chazanga, Mtendere East, and Kalikiliki. The second phase evaluated the sources of various foods from within the LCRFS to address the characteristics of spatial planning and the food system for Lusaka. This was done by conducting 1500 farm surveys of fresh foods within the LCRFS and 75 traders from certain markets were selected. The nexus between spatial planning and food systems was identified by evaluating existing connections, strengths, and weaknesses of this nexus, and how the existing policies address both formal and informal actors. Thematic analysis was used to assess the study's qualitative components and univalent analysis for quantitative components. The pragmatism philosophical approach was used to operationalize the integration of food systems in spatial planning and a case study was employed for Lusaka city. This was accomplished by first conducting a critical analysis of Lusaka's spatial planning environment, supplemented by key informant interviews with five snowball-selected individuals who had knowledge of Lusaka's historical development and considered the personnel of the Lusaka City Council (LCC). An embedded mixed method was possible with this method. The flux of processes, experiences, and practices served as the foundation for the ontological assumption. The epistemological presumptions were centred on the practices and applicability in real-world situations. The theoretical framework is interdisciplinary and is influenced by several sources in spatial planning, including normative and substantive planning theories, knowledge co-production, and city food region systems. The results show that many methods have been employed to reduce food insecurity in urban areas and informal settlements. Some of the strategies are the production of food in peri-urban areas; the zoning of land for agricultural use in the LCRFS; the provision of water for domestic and agricultural use; the upkeep and construction of roads; and the opening of trading points closer to consumers. However, despite these initiatives, there is still a lack of a defined framework for proactively integrating food systems into spatial planning and a weak integration of these techniques. Furthermore, the study established that both formal and informal food sources play a critical role in ensuring food security in Lusaka. The use of a modernistic approach in governing spatial planning visa vi food systems in Lusaka was centre as such, contributing to the continued loss of agricultural land both in the city and surrounding districts that constitute the proposed LCRFS. Some of the recommendations provided include collaboration; the development of larger markets; the encouragement of backyard gardening; and the rerouting and improvement of road networks from agricultural areas. The study concluded that various legal frameworks that speak to spatial planning and food systems are in silos and that planning professionals have neglected the issue of food. The implications of the findings call for a robust involvement of all stakeholders. There is a need to examine the current planning legislation applicable to the local context in tandem with the problems being experienced. The following papers have since been published; “Food Insecurity in Informal Settlements of Lusaka: Spatial Planning as the Missing Link” and “Situation Analysis of Provider and Consumer in the Food System Concept of Sub-Saharan Africa with spatial planning taking centre stage: Some insights from Zambia.

DEDICATION

To

God

My Mother Charity Harold Chilombo Mwango Witola Kaulule, my Father Joseph Siame Kaulule, my fiancé Dr Theresa Muzyamba (TJ), my brothers Musawila Kela Siame Kaulule 'Bashi Utailo Nayame Kaulule', Joseph 'Kay' Siame Kaulule and 'Yama' Kapola Kelvin Witola for your ever-loving support and encouragement and your unconditional love and believing in me.

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ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
BCR	Building Coverage Ratio
BSAC	British South African Company
CBD	Central Business District
CIAM	Congress Internationaux d'Architecture Moderne
COMESA	Common Market for Eastern and Southern Africa
CPC	Competition and Consumer Protection
CRFS	City Region Food System
CUDP	Comprehensive Urban Development Plan
CURP	Centre for Urban and Regional Planning
DACO	District Agriculture Coordinator
DDI	Domestic Direct Investment
DMMU	Disaster Mitigation and Management Unity
FAO	Food Agriculture Organization
FAR	Floor Area Ratio
FDI	Foreign Direct Investment
FGD	Focus Group Discussion
FISP	Farmer Input Support Program
FRA	Food Reserve Agency
FS	Food System
GI	Green Infrastructure
GIS	Geography Information System
GPS	Global Positioning System
GRZ	Government of the Republic of Zambia
HDDS	Household Dietary Diversity Score
HIV	Human Immunodeficiency Virus
Hivos	Humanistisch Instituut voor Ontwikkelingssamenwerking
IAPRI	Indaba Agriculture Policy Research Institute
IDP	Integrated Development Plan
IT	Information Technology
JICA	Japanese International Corporation Agency
KII	Key Informant Interview
KKIA	Kenneth Kaunda International Airport
LCC	Lusaka City Council
LCRFS	Lusaka City Region Food System
LDP	Lusaka Development Plan
LEMFEZ	Lusaka East Multi-Facility Economic Zone
LSMFEZ	Lusaka South Multi-Facility Economic Zone
LWSC	Lusaka Water Supply and Sanitation Company
MFEZ	Multi-Facility Economic Zone
MOA	Ministry of Agriculture
NFNC	National Food and Nutritional Commission
NNC	National Nutrition Commission
NRDC	National Resource Development College
NUA	New Urban Agenda
PAM	Program Against Malnutrition
PPHPZ	People's Process on Housing and Poverty in Zambia
RDA	Road Development Agency

SADC	Southern African Development Community
SAO	Senior Agriculture Officer
SDF	Structure Development Plan
SDG	Sustainable Development Goal
SIA	Statutory and Improvement Areas Act
SLA	Sustainable Livelihood Approach
SME	Small and Medium Size Enterprises
SNAP	Second National Agriculture Policy
SUN	Scaling Up Nutrition
TCPA	Town and Country Planning Act
UA	Urban Agriculture
UGS	Urban Green System
UN	United Nations
UNZA	University of Zambia
URP	Urban and Regional Planning Act
USA	United States of America
UUS	Unplanned Urban Settlement
WARMA	Water Resources Management Authority
WDC	Ward Development Committee
ZABS	Zambia Bureau of Standards
ZCC	Zambia Competition Commission
ZNFU	Zambia National Farmers Union

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.0 Introduction

Food has always been at the centre of human evolution and settlement development. Food is essential to the survival of humans and indeed all living things. On the other hand, spatial planning has influenced human existence from time immemorial, especially in the growth and development of urban areas. The role that settlement evolution plays in centred food production is irrefutable; however, it has often been omitted in spatial planning, especially for cities and towns in both the global north and south (Watson, 2009). Much of the focus on agricultural food production has been emphasized in rural areas, with a tendency among planners to rezone or assign urban space previously meant for food production. This practice is perpetuated by the misconception that there is no correlation between spatial planning and food security. Consequently, food production through agriculture has been left out of spatial planning as planners feel it is someone else's responsibility to plan for agricultural-related food. Agricultural food production includes the growth and harvesting of crops and the rearing and slaughter of livestock. Other examples include milking, catching fish, and the collection of hen eggs (Donovan et al., 2011).

This chapter introduces how the integration of food systems can be enhanced in spatial planning for the city of Lusaka, with the Lusaka City Region Food System (LCRFS) taking centre stage. A City Region Food System (CRFS) is the complex network of actors, processes, and relationships to do with food production, processing, marketing, and consumption that exist in a given geographical region that includes a more or less concentrated urban centre and its surrounding peri-urban and rural hinterland; a regional landscape across which flows of people, goods, and ecosystem services are managed (Dubbeling et al., 2017, p. 22). The chapter offers a study context from the colonial period through to the present day and an overview by contextualizing urbanization from a global to a national perspective, food security, as well as spatial planning and food systems. It further presents the problem under study; the aim and objectives; subsequent questions that the research will address; the significance of the study; rationale; conceptual framework; and thesis structure.

1.1 Study Context and Overview

1.1.1 Rapid Urbanization

The search for work and a better life has significantly contributed to rapid urbanization in Africa. According to the Food and Agriculture Organization (FAO) in 2019, urban areas

worldwide already outnumbered rural areas in terms of population. In 2018, 55.3 per cent of the global population lived in urban spaces, while 44.7 per cent lived in rural areas. By 2021, urban areas accounted for 56.61 per cent of the Earth's total population. This trend is expected to continue, with an estimated 68 per cent of the world's population living in urban areas by 2030, as projected by the United Nations (UN) in 2021. In real terms, approximately 4.46 billion people are living in urban areas and 3.42 billion in rural areas globally. To put this into perspective, the urban population in 1950 was only 751 million. These statistics show that an added 2.22 billion people now live in urban areas. Moreover, 90 per cent of the projected urban population growth is expected to occur in Africa and Asia. Conversely, the rural population has experienced slower growth since 1950 and is expected to decrease from 3.42 billion to 3.1 billion by 2050. Table 1 illustrates the urbanization trend across global regions from 1950 to 2021, as well as the projected population by 2050 (UN, 2021).

Table 1: Urbanization by Region

Region	Population (1950)		Population (2021)		Population (2050)		Urban (%)			Growth Rate (%)
	Urban	Rural	Urban	Rural	Urban	Rural	1950	2021	2050	
Asia	246,192,916	1,157,868,674	2,408,318,385	2,252,719,984	3,479,058,559	1,777,868,940	17.5	51.7	66.2	1.98
Africa	32,658,962	196,011,057	608,654,401	777,000,214	1,488,920,045	1,038,636,716	14.3	43.9	58.9	3.56
Europe	284,085,263	265,289,756	558,453,858	185,042,265	598,957,027	116,863,987	51.7	75.1	83.7	0.32
Latin America & the Caribbean	69,759,111	99,158,582	545,983,737	124,527,251	685,070,437	94,770,764	41.3	81.4	87.9	1.22
Northern America	110,300,439	62,302,185	307,697,259	64,133,908	386,689,862	47,964,961	63.9	82.8	88.9	0.96
Oceania	7,906,247	4,741,529	29,309,513	13,623,859	41,160,232	15,961,223	62.5	68.3	72.1	1.35

Source: UN (2021: 20) (World Urbanization Prospects)

As shown in Table 1, Africa has the highest urban growth rate at 3.56 per cent. It is projected that by 2050, over half of Africans will be living in urban areas. Sub-Saharan Africa will experience the highest rate of urbanization. However, unlike in the global north, rapid urbanization in sub-Saharan Africa does not necessarily lead to an improvement in the standard of living (Watson, 2002). One common trend in sub-Saharan Africa is the increase in informal settlements on land that was previously used for food production. This has contributed to the persistence of poverty in urban areas (Chirisa & Matamanda, 2016; Prasad & Mostafa, 2017). The high urbanization rate in sub-Saharan African cities has led to the emergence of informal settlements with poor infrastructure, limited public amenities, inadequate space for food production, and a lack of physical planning. In other words, residents have been neglected by spatial planners, resulting in difficulties in accessing necessities such as food and water. With

increased urbanization, urban areas are expanding into rural areas at a rate faster than the provision of basic needs (Hill, 1986). If these expansions are not accompanied by other necessary provisions, poverty and food insecurity will continue to rise (Koc et al., 1999; Maxwell, 1999; Battersby, 2013). The rapid urban progression is characterized by the continuous shifting of city boundaries and the expansion of urban administrative regions into neighbouring rural land, which was previously used for agriculture (Toriro, 2018). In Zambia, mining has played a significant role in urbanization. The opening of the Kabwe mine in 1906 led to the establishment of the first mining settlement (Chileshe, 2010). Subsequently, several mining towns developed in Copperbelt Province, accompanied by infrastructure development such as roads, railways, hospitals, schools, and sports facilities. These facilities attracted a large population to the mining towns. One noteworthy development during this period was the construction of the railway line by Cecil Rhodes, which was initially planned to connect from Cape to Cairo. The railway continues to affect Zambia's urban landscape today (Chitengi, 2015). Zambia's independence in 1964 lifted the movement restrictions imposed by the British-led government, resulting in rapid migration and urbanization (GRZ, 2018). The combination of mining and infrastructure development further accelerated urbanization in Zambia. Push factors from rural to urban areas that influenced urbanization in Zambia included limited economic opportunities in rural areas, agricultural challenges, infrastructure and service deficiencies in rural areas, land redistribution policies, as well as a lack of social services and amenities in rural areas.

"Between 1963 and 1969, the urban population grew at a rate of 9.1 per cent per annum but declined to 6.7 per cent from 1969 to 1980 as the economy entered a long period of decline and stagnation. When copper prices fell in the first part of the 1970s, mining accounted for about 90 per cent of Zambia's export earnings and 41 per cent of the national budget. The share of the population living in urban areas soared to 40 percent between 1980 and 1990 before declining to 35 percent in 2000. An upturn in urbanization started after 2000 coinciding with the start of a mining boom and has been projected to hit 60 percent by 2050. In absolute numbers, Zambia's urban population is projected to rise more than five times from 5 million in 2010 to 26.8 million in 2050" (GRZ, 2018, p. 11).

1.1.2 Food Security

Food security is defined as a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and preferences for an active and healthy life (FAO, 2016). When food security is lacking, it hurts urban social security (Cohen & Garrett, 2009). Before the COVID-19 pandemic, research showed that the rapid urbanization in the global South, specifically in African cities, was linked

to food insecurity, particularly in informal settlements (UN, 2021). The arrival of COVID-19 worsened the situation to the point where both the health and social development of informal settlements were and continue to be significantly affected in the aftermath of the pandemic.

1.1.2.1 Food Security and Global Protocols/Agendas

As the urban population increases, so does the demand for food. Aluga & Kabwe (2009) argue that each urban area should be responsible for providing food for its residents by creating a favourable environment for urban agriculture, a practice successfully implemented in cities like Milan. However, many African towns and cities have a large population living in informal settlements that are unable to produce enough food for their consumption. The ongoing debate on whether rural areas are more food secure than urban areas highlights the challenges faced by urban areas, including availability, accessibility, stability, and utilization of food. It is not surprising, therefore, that evidence suggests that towns and cities are more food insecure compared to rural settings (Pothukuchi & Kaufman, 1999). This lack of food security in urban areas is more prevalent in the Global South, particularly in Sub-Saharan cities and towns like Mutari in Zimbabwe. Efforts have been made by various sub-Saharan governments to improve food security in urban areas through the Sustainable Development Goals (SDGs), specifically SDG-1, whose aim is to alleviate poverty; SDG-2, which aims to end hunger; and SDG-11, which aims to create inclusive, safe, and resilient cities (UN, 2015). Unfortunately, the strategies used to achieve these goals do not prioritize food security within cities, nor do they consider the geographical aspects of food production. As a result, cities without food production are often overlooked (Battersby, 2018).

The New Urban Agenda (NUA), like the SDGs, emphasizes the importance of urban space for socio-economic growth. One of its key areas of focus is urban food provision, recognizing food security as a major concern for urban organizations as urbanization continues (Kaulule et al., 2021). The NUA highlights the increasing concern about urban food security by referencing SDG-2, which aims to end hunger "in all its forms". Despite rapid urbanization, the NUA remains committed to creating sustainable and inclusive cities that are food secure. The proposed cities are built on the principles of appropriate planning, economic efficiency, decent work opportunities, and the recognition of the working poor and the informal economy, which are vital to people's livelihoods in the Global South (UN, 2017).

Achieving these goals requires governments to implement enabling policy frameworks. As the importance of planned and sustainable cities gains recognition, it is crucial to develop systems

that are applicable in the Global South. Similarly, the Millennium Development Goals (MDGs) and the SDGs, have been criticized for overlooking underlying inequalities and local contexts. It is therefore necessary to further understand the connection between food and planning regulations to fully realize the SDGs. As a signatory to both the MDGs and SDGs, Zambia is well-positioned to integrate food systems into spatial planning processes as it strives to achieve these goals.

1.1.3 Spatial Planning and Food Systems in Zambia

Spatial Planning deals with the spatial arrangement and development of living, working, and environmental conditions at a wide range of spatial levels. On the other hand, FAO (2018) defines a food system as an inclusion of a different range of stakeholders and their interlaced value-adding activities involved in the production, aggregation, processing, distribution, consumption, and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal, and natural environments in which they are embedded. It should be noted that this thesis only focused on the production, processing, transportation, and distribution aspects of the food system. The nexus between spatial planning and food systems in towns and cities is poorly understood, ineffectively enunciated, and not enthusiastically apparent to most people, including those who operate in the fields of spatial planning and food systems (Park et al., 2019). Food systems and their specific integration into spatial planning are neither recognized by organizations nor allocated amorphous roles and responsibilities in government as a whole or local government specifically. They are also unambiguously documented by legislative or policy mechanisms. For many people and organizations, the link between food systems and land use planning is either too long a bow to draw or their field of perception is too narrow in terms of root cause and effect (Toriro, 2018).

Zambia's urban population was 40 per cent in the 1980s but reduced to about 35 per cent by 2000 through a period of counter-urbanization (Central Statistical Office, 2013). Subsequently, urbanization has continued progressing, with the urban population doubling between 2000 and 2010. The 2010 census revealed the urban population as 39 per cent of Zambia's total population of 13 million (or around 5.1 million urban dwellers). Researchers and spatial planners need to acknowledge the implications of this urban population trajectory and the need for urban areas to produce and supply food within cities. Interventions must also be put in place to ensure cities become food secure even as they expand physically and increase in population.

The lack of nexus between spatial planning and food systems can be seen in the cities' inability to create space for food production through agriculture. And their failure to pursue visions through structure plans to expand the cities and urban areas to accommodate industrial and social infrastructure development hence, food insecurity in the city of Lusaka (Taylor & Thole, 2015). Poor performance of urban planning and factors such as the inadequate planning laws and building standards (in some cases still a colonial legacy); bureaucratized and inefficient urban land policy; the shortage of qualified planners and other built environment professionals; as well as the nature and informality of the economy and urbanization process are likely to affect future development in Zambia (Parnell et al., 2009; UN, 2009a).

The poor performance of urban planning in Zambia and Africa can also be attributed to demographic prospects such as the urban transition and Africa's contemporary urban problems. These include insufficient levels of urban infrastructure and services and the lack of capacity of most urban residents to pay for them. Other factors that have contributed to food insecurity in cities like Lusaka are informal urbanization as well as urbanization without industrialization, which is characterized by poverty, massive unplanned peri-urban areas, informal housing, social exclusion, gated communities, and the informal economy (UN, 2009a, 2010; Arimah, 2010).

These factors indicate the need to integrate food systems into spatial planning. At its core, integration refers to activities that include actors from various sectors deliberately coordinating their work to maximize impact and progress toward common or complementary goals (Battersby, 2012). Integration is most effective when it purposefully leverages opportunities to reach more people, offer better services, reduce inequality, or reduce costs. For integration to fully work, there must be a consideration of political dynamics as they play a fundamental role in matters relating to food security and spatial planning. This can be done by positioning governments as primary actors in the physical, social, and economic aspects of a nation's food security. Therefore, any attempts to improve agriculture and food security outcomes must consider the role of governance to create a symbiotic relationship that leads to more inclusive and effective food systems.

1.2 Problem Statement

Food systems have often been least considered in spatial planning and city policymaking in most sub-Saharan African Cities like Lusaka (Battersby, 2018). This has contributed to the persistent food insecurity in urban areas, especially for residents of informal settlements who

face physical and mental stress, as well as poor health outcomes from limited food choices (Mulenga, 2013).

About 93 per cent of informal households in Lusaka are food insecure with informal settlements accounting for 75 per cent of Lusaka's population (Mulenga, 2013). Contemporary evidence from the literature suggests that food insecurity in urban areas, especially with increased informal settlements is more problematic when it comes to planning for food security than in rural areas (Chitengi, 2015). Moreover, informal settlements have traditionally been ignored for spatial planning until an area is upgraded. This has contributed to the inadequate integration of food systems in spatial planning.

Several strategies have been used to mitigate food insecurity in urban areas (Battersby, 2018). These include food production in peri-urban areas; zoning of agricultural land in cities; provision of water; road construction and maintenance for enhanced food accessibility; and the opening of trading points closer to consumers for both physical and economic food access, among others. Despite these interventions, the integration of spatial planning into these strategies is weak (Slade, et al., 2016). Furthermore, there is a lack of consideration of the City Region Food System (CRFS) and a lack of a coherent framework for proactively integrating food systems into spatial planning in informal settlements and Lusaka city.

Given the above background, there are weaknesses and gaps in the integration of food systems into spatial planning, especially for informal settlements. This is partly because of the current Integration Development Plan (IDP) which has no clear mandate for food production and food promotion. Furthermore, it has not provided for the integration of food systems when it should have. Section 19, sub-section 4 (e) of the Urban and Regional Planning Act completely neglects food systems in spatial planning as a priority area.

> *"(i) Housing development, informal settlement upgrading and improvement; (ii) Social service provision; (iii) Infrastructure development, revitalization, renewal and maintenance; (iv) Local economic development; (v) Environmental management; (vi) Protection of ecologically sensitive areas, heritage and cultural sites; and (vii) Poverty alleviation." (GRZ, 2015, p. 24)*

According to the URP Act, 2015 Part III Section 19 Sub-Section 3:

> *"An integrated development plan shall be the principal planning instrument to guide and inform all planning and development in the area of the local authority and all planning decisions of a planning authority."*

The problem, therefore, is that there is the absence of an effective multilevel institutional coordinated response to the problem of food insecurity both institutions directly linked to food production and those indirectly linked are working in silos; mainstream conceptualization of food insecurity as a problem is more inclined towards the rural areas than the urban areas; the design and nature or training for spatial planners does not prioritize food systems; and the lack of a localized food policy for a city such as Lusaka that is inclusive of the informal settlements. It is against this background that this study sought to develop a framework that will integrate food systems into spatial planning for the city of Lusaka for both the formal and informal settlements.

1.3 Aim

The aim of this study was to investigate enhanced integration of local food systems into spatial planning in the city of Lusaka.

1.4 Objectives of the Study

To achieve the above aim, the following objectives were formulated for the study:

1. To review the impact of spatial planning on the landscape of Lusaka
2. To assess food systems and food security in Lusaka
3. To examine the nexus between spatial planning and food systems of Lusaka
4. To develop a proposal of an integrated framework for spatial planning and food security in Lusaka.

1.5 Research Questions

The research answered the following questions:

1. How is the spatial planning landscape of Lusaka from its inception to date?
2. How are the food systems in Lusaka?
3. What is the food security status of Lusaka?
4. How has food security been integrated into spatial planning in Lusaka?
5. How can the relationship between spatial planning and food security be enhanced in Lusaka?

1.6 Rationale for this Study

The research findings have provided spatial planners and food managers at the city scale with a new approach to identifying and assessing future risks and vulnerabilities facing the urban food system amidst formal and informal urbanization. The Lusaka setting was used to address

gaps in understanding critical factors affecting food security in the urban environment, particularly the role that a city can play in ensuring food security. The research findings further highlighted how spatial planning can be used as a tool for ensuring food security in cities, not only in Zambia but the whole of sub-Saharan Africa. It has provided an opportunity to link the two distinct but complementary disciplines of spatial planning and urban food. Furthermore, integrating food systems into spatial planning can contribute to sustainable development goals. By strategically planning the location of agricultural activities, food processing facilities, and distribution networks, planners can support environmentally friendly practices, reduce carbon footprints, and minimize the negative impact on ecosystems. Spatial planning allows for the efficient allocation of land, water, and other resources. By identifying suitable areas for agriculture, urban farming, and food processing, planners can help optimize resource use and minimize waste. This can enhance food production and distribution efficiency. Spatial planning can contribute to improved food security by ensuring a more reliable and equitable distribution of food resources. By strategically locating food storage facilities and distribution centres, planners can help create more resilient and responsive food supply chains.

1.7 Operational Definitions of Selected Terminologies

Food - CAP 295 of the Public Health Act defines food as means by any article used for food or drink other than drugs or water, and articles intended to enter or be used in the preparation of such food, and flavouring matters and condiments.

Formal Economies - The part of an economy that the government is fully aware of and regulates through its authorities, particularly in the areas of contract and company law, taxation, and labour law.

Garden City Concept – This was a 20th-century urban planning movement promoting satellite communities surrounding the central city separated by green belts. These Garden cities would contain proportionate residences, industry, and agriculture areas. This was the concept used in the original planning of Lusaka.

Informal Economies - The diversified set of economic activities, enterprises, jobs, and workers that are not regulated or protected by the state. The concept originally applied to self-employment in small, unregistered enterprises. It has been expanded to include wage employment in unprotected jobs.

Informal Settlement- According to the URP of 2015:

a) Groups of people living on land they have no legal claim to.
b) Houses of a temporary, semi-permanent, or permanent nature erected on land that has not formally been permitted by the planning authority and serviced for residential use under this Act or any other written law.
c) Clusters of housing and other structures built without the formal permission of the planning authorities under this Act, any other written law, or the repealed Acts; or
d) Settlements that have only temporary permission from the planning authority to occupy the settled land.

Local Food- These are foods that are produced within the Lusaka City Region Food System consisting of the Lusaka district and the surrounding districts.

1.8 Structure of the thesis

The thesis follows the stipulated University of Zambia doctoral thesis structure. Chapter one is the introduction. The introductory chapter covers the following segments: the background to the study; the study context and overview which looks at rapid urbanization, food security, spatial planning, and food systems; the problem statement; the aim; the objectives; the research questions; the rationale; and the conceptualization of selected terminologies.

Chapter Two is a review of relevant literature on food systems and spatial planning which highlights the research gaps. The chapter provides the theoretical framework of the study which includes the CRFS and the normative planning theories. These are followed by a conceptual framework.

Chapter Three presents the study setting and research methodology used to collect and analyse data. It first addresses the research setting/study area and then the philosophical perspective of the study. The topics covered by the chapter include the research design; research paradigm; the population and sample; data collection procedures; data analysis; as well as ethical, legal, and administrative considerations.

Chapter Four addresses the first objective of the study which is the conceptualization of the spatial planning landscape of Lusaka. It also addresses other pertinent issues such as demographic trends; historical background; trends in tenure; legislation; urban growth and physical land cover; strategic urban planning; governance; and politics and power relations.

Chapter Five tackles the second objective which is the assessment of food systems and food security in Lusaka. The assessment in this chapter is done from the concept of the food system itself, the LFS, the food security of Lusaka and the legislations guiding food accessibility in Lusaka.

Chapter Six is based on the third objective which deals with the nexus between spatial planning and food systems in Lusaka. The chapter delves into the pertinent issues that exist between spatial planning and food systems, the inclusion of food in spatial planning and the various legislations that govern this nexus.

The proposed framework of the study is presented in Chapter Seven. The chapter dissects the various sections of the developed framework for easier comprehension by key stakeholders.

The conclusion is provided in Chapter Eight and contains a summary of the main findings of the study, the policy recommendations, as well as a summary of the findings from the various themes explored by the research.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.0 Introduction

This chapter presents the Literature review and the theoretical framework of the research - 'enhancing the integration of local food systems into spatial planning for Lusaka'. As Pike et al. (2006) elucidate, the essence of theories is to assist in the understanding of how and why phenomena exist and present themselves in a certain way. They offer an understanding of two-way dynamics and how they co-exist. Alexander explains that:

> *In Theory, then, is the blueprint we use to assemble the bricks of fact and experience into the coherent structure of understanding. But theory is not only a basis for understanding the world around us; it is also the foundation for developing skills needed for applications... Practice needs theory not only to structure the world and the environment, which are the objects of actions but also to explain their actions to the actors themselves (1992:2-3).*

The theories discussed in this study provide insight into the relationship between spatial planning, informality, and food systems. This study used the CRFS as a basis for argument because it is the one that best elucidates the relationship between spatial planning, informality, and food systems. The study also explored the Garden City Concept, the Just City Theory, the communicative theory, and the co-production theory. The literature is presented in a twofold manner: one specific to the food systems and the other to spatial planning.

The integration of local food systems into spatial planning is appearing as a critical part of sustainable development, responding to global challenges while capitalizing on opportunities for positive change. One pressing concern is the escalating issue of global food security, exacerbated by a burgeoning population and climate change impacts on agriculture (Alexandratos & Bruinsma, 2012). Local food systems offer a solution by enhancing resilience against global shocks and ensuring a more robust, diversified food supply (Godfray, 2010). For example, the COVID-19 pandemic and according to Deconinck *et al* (2020) the COVID-19 pandemic laid bare vulnerabilities in global supply chains, underscoring the significance of well-integrated local food planning as countries with such systems were better equipped to respond to disruptions (Deconinck, et al., 2020).

Land use planning and food production have significant synergies that are crucial for sustainable development. Effective land use planning ensures the allocation of land for agricultural purposes, facilitating efficient food production while preserving natural resources and ecosystems (Global Land Programme, 2017). One example of this synergy is the concept

of agroforestry, where trees and crops are cultivated together on the same land. This practice not only enhances food production by providing diverse yields but also contributes to soil fertility, water retention, and biodiversity conservation.

Additionally, zoning regulations in urban planning can incorporate provisions for urban agriculture, allowing for the cultivation of food within city limits. This not only reduces the carbon footprint associated with food transportation but also enhances food security by promoting local production. Furthermore, land use planning can incorporate measures to protect farmland from urban sprawl, ensuring that fertile land remains available for food production. Countries like the Netherlands have implemented innovative land use policies, such as compact city development and greenbelt preservation, to safeguard agricultural land while accommodating urban growth (Global Land Programme, 2017).

Environmental sustainability is another imperative driving the integration of local food systems into spatial planning. Conventional agricultural practices often contribute to environmental degradation, such as deforestation, soil erosion, and water pollution. By incorporating local food systems into planning, there is an opportunity to shift towards more sustainable and regenerative agricultural practices. Initiatives like the agroecology movement in countries like France highlight the potential for environmentally friendly farming practices, emphasizing the integration of local ecosystems into planning to enhance biodiversity and reduce reliance on harmful chemical inputs (Tilman, 2002)

Beyond environmental considerations, the preservation of cultural identity and social cohesion within communities is a compelling rationale for integrating local food systems into spatial planning. Local food systems are deeply rooted in cultural practices and heritage. Planning that recognizes and supports these connections contributes to the preservation of traditional knowledge and fosters social cohesion. Examples from regions like the Himalayas demonstrate how the integration of local food systems can play a pivotal role in maintaining cultural diversity and nurturing community bonds (Holt & Amilien, 2007). Moreover, there are economic benefits, with strengthened local food systems contributing to economic resilience, job creation, and overall local development through initiatives such as farmers' markets and community-supported agriculture. However, realizing these benefits requires addressing policy and governance challenges, including aligning national and regional policies to support decentralized, community-driven food systems. The ongoing reform of the European Union's Common Agricultural Policy (CAP) serves as an example of efforts to encourage member

states to integrate local food systems into their planning strategies, emphasizing the importance of policy coherence for success in this endeavour (European Commission, 2023).

2.1 Food Systems: An Assimilated Perspective in Food Security

As Utopian as it may sound, the earth's sustainability, especially in the context of development from a physical and social perspective depends largely on the food security of the entire human population. Achieving that level of food security depends on the environment's ability to provide food that is wealthy and healthy. Such an environment would have to be resilient to the challenges of climate change and exist within governance systems that are committed to providing a fair platform for food accessibility, availability, affordability, utilization, and stability. Food systems "comprise of all the components (environment, people, inputs, processes, infrastructures, institutions, etc.) and accomplishments that are in tandem to the production, processing, distribution, preparation, and consumption of food, and disposal of food products that originate from agriculture, forestry, or fisheries, as well as the outcomes of these activities" (High Level Panel of Experts, 2014; FAO, 2018).

A food system consists of several subsystems, among them are systems that are concerned with finances in agriculture and systems that ensure irrigation. The food system also interrelates with correlated systems such as healthiness, trade, and edification. For sustainability to be reached, the food system must be enhanced so that all people benefit through their livelihood and the environment (FAO, 2018). An urban food system is characterized by different components including, production, processing, distribution/access, consumption, and disposal/valorisation. For example, the urban food system comprises urban agriculture (community and rooftop gardens, vertical farming), food production (local farms, hydroponics), distribution (food centres, co-operatives), processing (facilities, artisanal producers), retail (supermarkets, farmers' markets), waste management, transportation, consumption (restaurants, education), policy (urban agriculture, regulations), and community engagement (Community Supported Agriculture, events). From a Zambian perspective, most of the research conducted has focused greatly on urban agriculture at the expense of the food system and the CRFS. Notable among the studies conducted in food systems in Lusaka is that of FAO in 2016. The other is the 2013 study by the African Food Security Urban Network (AFSUN) which focused on households, especially those in informal settlements. However, the study did not consider the possible connection between spatial planning and how it can enhance food systems. It is this gap in research that this thesis endeavoured to fill. Thus,

investigated major constituents of the food systems are comprised of food production, food processing, food distribution, and food consumption.

2.1.1 Food Production

Food production is not limited to agriculture. It is inclusive of production in manufacturing and processing industries. However, in the context of this study, food production refers to agricultural production for both urban and city region food agricultural practices. The broad areas of concentration were crop and animal production which included fish farming, poultry, and egg production. Food production also comprises the production of food within one's residential area, either as backyard gardening or any other form (on-plot). It also comprises the production of food in open spaces which are the preserve of the authorities. These are mostly areas kept for other usages or indeed not habitable - such as road reserves and infills (Mougeot, 2005).

Work has been done on urban food production, mostly through urban agriculture, and how it has helped to stabilize food security. However, many of the interventions and traditional concepts have been implemented under the assumption that food production is a rural activity or someone else's problem and not an urban or even a spatial planner's problem. Food production is viewed as the country's problem and as such, must be done on a larger scale of production. Consequently, there is a scarcity of large commercial farms in urban areas which has in turn led to the lack of inclusion of food systems in spatial planning (Battersby, 2018). In numerous urban cities, limited available land poses a challenge for food production, as a significant portion is prioritized for various projects, restricting the allocation of space for agricultural activities (Gehl, 2010).

Urban food production has been neglected by spatial planners extensively and some consider the practice illegal. Mbiba (1995) made similar observations when he attributed the slow development of urban food production today to such neglect. This mindset has led to the creation of an unfavourable environment for food production in urban areas. This unfavourable environment led to the slashing of maize grown in some of Lusaka's residential areas and the discouragement of poultry keeping in residential areas (Times of Zambia, 2015). The problem was partly exacerbated by the Town and Country Planning Act, though in existence from independence to 2015, it had no deliberate aspect of promoting urban food production. The plan had become absolute and outdated as it did not respond to the unique problems of the global south but was a product of the global north. The introduction of the Urban and Regional Planning Act number 3 of 2015 was intended to fix this gap and raise hope for urban food

production. However, since its inception in 2015, the issue persists. Nevertheless, the negative attitudes towards food production have not completely kept urban food producers in the region and the local urban areas from positively contributing to household food security by way of making food and income available (Mbiba, 2005).

More progress has been made at a global level to address the challenge of urban food production. For instance, the Milan Urban Food Policy Pact of 2015 called on cities to:

> *provide permanent and reliable access to adequate, safe, local, diversified, fair, healthy and nutrient-rich food for all; and that the task of feeding cities will face multiple constraints posed by inter alia, unbalanced distribution and access, environmental degradation, resource scarcity, and climate change, unsustainable production and consumption patterns, and food loss and waste (Milan Urban Food Policy Pact, 2015, p. 2).*

Since the announcement of the policy pact, some sub-Saharan African nations have successfully responded to the call to action. Countries like Botswana and South Africa took a stance on Urban Agriculture (UA) and have since embarked on the development of sustainable cities. However, it should be noted that the efforts toward the change of 'heart' on urban agriculture have also been influenced by international organisations such as NGOs with food as a focus area (Veenhuizen, 2006; Koc, et al., 1999). Owing to this, UA policies have been developed in some of the cities in southern Africa, among them Ndola in Zambia. Others are Bulawayo in Zimbabwe and Cape Town in South Africa. The case of Ndola is a clear indication that cities can influence food production at a micro level rather than depend on national legislation or policies. However, despite this progress, UA remains to be fully embraced even in the cities that have recorded success. The narrative that depicts food production as a rural and backward activity must be changed to one that promotes it as an urban and progressive activity (Dubbeling et al., 2010; Mkwambishi et al., 2011; Battersby, 2013; 2018).

Additionally, both the local authorities and the NGOs have looked at UA as the only solution to the challenge of food insecurity. They have passionately promoted it and in some instances heavily invested in it. However, other scholars have challenged UA in favour of seeking regional solutions for sourcing food in cities or other urban areas (Crush, et al., 2010; Haysom & Battersby, 2016; Toriro, 2018). The weaknesses of UA pointed out by the critics have made it an insufficient solution on its own for urban food insecurity, especially when the negative perceptions that the authorities have about it are factored in (Battersby, 2018). Some critics argue that UA is limited in the quantities of food produced compared to the broader CRFS.

Secondly, much of the space meant for UA has been taken up by grey developments. As a solution, they propose by-passing UA as the key to developing food-sustainable cities (Haysom & Battersby, 2016).

2.1.2 Food Processing

Farm produce can be consumed directly, stored, or transported to markets or processing plants where some other type of value will be added. These products can be from either animals or crops and can be processed in numerous ways such as cans - as with tinned fish or tinned tomatoes or grinding into mealie meal or floor (Da Silva, et al., 2009). Food processing can thus be said to be an activity that starts at post-harvest and ends with value addition.

Food processing has faced many challenges in most sub-Saharan African countries. The major challenge has to do with perishables as they require the technical know-how, infrastructure policy intervention, and a culture that appreciates and understands the preservation and consumption of such persevered foods (Mbiba, 2005). The processing of products such as maize is well controlled in the sub-Saharan region due to the importance attached to it as a staple food. Its production and processing are carefully controlled through grain marketing boards that are present in these countries (Smale & Jayne, 2003). In Zambia, the Food Reserve Agency (FRA) was established to ensure that maize is bought from various farmers around the country to preserve it and ensure its availability. Thereafter, apart from buying directly from the farmers, various millers who are the main maize meal processors purchase from FRA. Among the major millers are National Milling, Pemba Milling, and Milile Milling. Zambia National Service (ZNS) Milling and UNZA Milling by the University of Zambia were the latest milling companies in the LCRF.

Throughout the world, food processing has changed over the years. For instance, from the 1950s to around the 1980s, governments controlled food processing on a large scale. This made it impossible for individuals to process food at that level due to cost implications. However, global policy changed after the 1980s introduced globalization and for Zambia liberalization in 1991 transformed the state of food production and processing. Even though food processing scales were still done at a large scale, smaller food processors of both crops and animals became major players in the market. When the International Monitory Fund (IMF) instituted conditions such as the Structure Adjustment Program (SAP) in Zambia, the result was the precipitation of economic challenges that inspired people to venture into all forms of income-generating activities, with food processing being one of them (Reardon, et al., 2009).

Studies on food processing in Zambia have been conducted (Aluga & Kabwe, 2009; Ngwenya, 2008). However, this study focused on spatial planning and food systems, which is a different path from the one taken by the other scholars. It should be noted that if indeed studies have been done on food processing concerning CRFS and the integration of food systems into spatial planning, no such work on Lusaka exists.

2.1.3 Food Distribution

Food distribution in this context looked at the various ways in which the food produced will reach different consumers. It includes both transportation and retailing. In most sub-Saharan African countries, food distribution can either be formal or informal. Formal implies operating within the confines of the law. For example, formal trading places are licensed for operation while informal ones operate without a license and are typically small scalars such as street vendors or home-based traders.

Similar to most sub-Saharan countries, Zambia's food distribution, especially retailing was government controlled from the 1960s to the 1990s. The period is referred to as the 'pre-liberalization' phase where nationalization was the driving force behind everything (Reardon, et al., 2009). Nationalization was aimed at promoting local products, safeguarding food from external shocks such as diseases and ensuring the protection of national resources (Duminy, 2018). All trading activities were controlled by political party leaders, various government technocrats, and trade associates (Smith, 2016). This led to a shortage of food around the country and food insecurity. Thus, culminating in the removal of the first government of Zambia from office heightened food shortages inspired riots in the major urban areas of Lusaka and the Copperbelt in the 1990s (Ntalasha, 2004).

In Zambia, the existence and functioning of retailing as a form of food distribution is done through various laws and regulations. The local authorities are mandated to monitor the adherence of food distributors at the retail level. Although trading licenses are a prerequisite to operation, the literature suggests that most traders or retailers are operating informally. This sets them in the crosshairs of regulating authorities for non-compliance. This situation is not unique to Zambia as it is experienced by the entire region (Mitullah, 2004; Frayne & Crush, 2010; Tawodzera, et al., 2012; Kamete, 2012; Mulenga, 2013). Since most African cities are characterized by informal settlements, authorities cannot afford to take radical measures on those operating informally. This is because the latter assists the formal food distributors in addressing shortages and regulating pricing for certain food commodities. In the absence of such synergy, food deserts are likely to occur - as certain areas experience food shortages

compared to others. However, a single instance of absence of food at a smaller scale does not equal a food desert (Battersby & Crush, 2014; Cummins & Mclntyre, 2002; Battersby, 2012). As such the informal sector supports the formal sector in ensuring that food is ever-present.

The influence of chain stores, supermarkets, and malls cannot be overlooked as suppliers of urban food, especially in Lusaka. Several scholars have written about the importance of supermarkets on urban food in what can be termed the 'supermarket revolution' in Africa (Weatherspoon & Reardon, 2003; Reardon, et al., 2004; Battersby & Peyton, 2014). Zambia's first international supermarket opened in 1995. The growth of modern supermarkets in Zambia is unquestionable, with South African stores in particular dominating the richer urban market (Mulenga, 2013). There are currently 48 international supermarkets with over 10 chain brands in urban centres selling fresh goods, partially processed foods such as maize meal, and ultra-processed convenience and snack foods. As the world evolves into a global village, supermarkets are associated with modernity and urbanization. They have become convenient food sources, greatly influencing informal food retailers, especially when they are situated near or within an informal settlement (Frayne & Crush, 2010; Crush, et al., 2015; Battersby, 2018). However, the influx of shopping malls in Lusaka has not inspired the documentation of these changing trends.

Some scholars have written about the role played by the informal sector in ensuring food security in urban areas, specifically in food retailing (Mulenga, 2013; Mulenga, 2016; Mwango, et al., 2019; Consumer Unit Trust Society Lusaka, 2020). The informal sector plays a crucial role in the food system by encompassing small-scale, unregulated activities such as street vendors, local markets, and home-based enterprises. It contributes to food accessibility, affordability, and diversity, especially in urban areas, offering a vital supplement to formal food distribution channels (Skinner & Haysom, 2016). Additionally, it has been recognized that informality is perpetuated by poverty – an assertion that is supported by the prevailing state of most, if not all dwellers of informal settlements (Mitullah, 2004; Kamete, 2012). Informal food distributors simply respond to the needs of the informal residents who most often cannot afford the actual amounts of fully packaged foods. For instance, retailers buy cooking oil in bulk and repackage it in smaller quantities to make it affordable for the informal settlers – a situation commonly referred to as 'economic realities. Sometimes the informal traders operate beyond the normal hours to ensure accessibility (Battersby, 2013). Unfortunately, the operations of these small grocery shops in most residential areas in the formal and informal areas are not in the hands of locals. They have been taken over by the Rwandans (anecdote

information), a testament to the low economic status of indigenous Zambians that handicaps them from running these shops. With the informality in informal settlements recognized, it is of utmost importance that it be thoroughly considered in spatial planning and organization. There is a gap in the literature concerning the amalgamation of informal food issues and spatial planning policies at both city and regional levels. Some scholars consider the sector marginal and temporary and therefore incapable of playing a significant role in economic development (Toriro, 2018).

For food security to be attained, an investigation on food safety must be considered to ascertain whether the food in informal markets is safe or not. FAO (2007) noted that over 2.5 million people worldwide consume food bought from the streets daily. It is therefore important to determine and regulate informal food markets. Such a move would give impedance to the authorities to constantly remove street vendors and regulate the other kinds of informal food markets (Battersby, 2018). In doing so, authorities in Zambia and many other African countries have been forced to choose between doing the right thing and cutting off people's livelihoods. In most cases, the latter is a morally unacceptable option.

Informal food markets are not the only ones that contribute to the lack of food safety and hygiene. The formal food market has also recorded cases of disease outbreaks like cholera, as was the case with Lusaka's biggest market, Soweto in 2017-2018. Other notable cases involve Hungry Lion - when in an unprecedented development, cholera was recorded at Levy Mall which is one of Lusaka's biggest shopping malls; and Zambeef – in a case concerning embalmed meat (Ministry of Health, 2017). Literature on the lack of safety in informal food markets exists but not much on the safety of formal food markets. It can be concluded therefore that the status of literature (its existence and/or lack thereof) is a testament to the local authority's lack of consideration for safety in the formal and informal markets. Any action taken by authorities to control the status quo has not been sufficiently documented. This is because spatial planners blame the informal traders for spreading diseases, neglecting other factors such as the lack of proper sanitation, water, and waste disposal infrastructure. In the end, the urban poor suffer the blame.

Chain stores significantly contribute to food systems by optimizing supply chains and distribution networks. Their standardized processes ensure a consistent supply of diverse products, enhancing consumer accessibility. Economies of scale enable competitive pricing, making food more affordable. However, their dominance raises concerns about local business

displacement and limited product variety. Striking a balance between the efficiency of chain stores and the need to support local businesses is essential for fostering resilient and sustainable food systems (Food and Agriculture Organization of the United Nations, 2021).

The safety of formal food markets is substantiated by findings from assorted studies that highlight their compliance and hygiene. In a study conducted by Hichaambwa (2010), the complex challenges faced by street food vendors in Zambia were highlighted, revealing pertinent issues such as poor hygiene practices, insufficient access to clean water, and inadequate waste disposal, which posed significant risks to public health. The study underscored the necessity for multifaceted interventions, including training programs for vendors, spatial planning, enhanced water infrastructure, and effective waste management systems, to improve food safety and protect consumers (Hichaambwa & Tschirley, 2010).

Chisala et al. (2021) found that in twelve markets in Zambia, eleven offered essential facilities, yet non-compliance with Zambian laws on adequacy and privacy was prevalent. Most traders, dissatisfied with facilities, used them due to a lack of alternatives, highlighting a gap between provided amenities and regulatory standards. Poor sanitation risked public health, urging urgent rectification for a safer market environment for the informal traders (Chisala, et al., 2021).

Zambia National Food Systems Transformation Pathways (2021) articulate the nation's vision for achieving sustainable and resilient food systems by 2030, aligning with the five Food Systems Summit Pathways. The strategy tackles various challenges, emphasizing widespread access to safe, nutritious foods to eradicate food insecurity. Simultaneously, it advocates a shift toward healthier, more sustainable consumption patterns. A crucial aspect is enhancing nature-positive food production, encouraging practices that help both the environment and human health. The strategy emphasizes advancing equitable livelihoods in the food system, fostering inclusivity and fairness. Lastly, it underscores the need to build resilience against vulnerabilities, shocks, and stresses. In essence, Zambia's strategy integrates these pathways cohesively, offering a comprehensive approach to address complexities for a sustainable and resilient food system by 2030.

The FAO Food Systems Profile for Zambia provides a comprehensive analysis and potential pathways for improvement. It focuses on four key dimensions: food security, nutrition, and health; inclusive economic growth, jobs, and livelihoods; sustainable natural resource use and environment; and territorial balance and equity. Zambia relies on local production for 84 per

cent of its food calories, mainly maize, roots, and tubers, facing challenges like climate change and limited input access. Malnutrition, particularly micronutrient deficiencies, persists despite sufficient calorie intake. Smallholder farmers, a significant part of the sector, encounter barriers like limited market access and technology. The profile emphasizes sustainable resource management, addressing threats like land degradation and water scarcity. Solutions include promoting climate-smart agriculture, improving smallholders' market access, diversifying production, and investing in research and development, offering a strategic framework for Zambia's food system evolution (FAO, 2022).

Although the links between poverty, food security, and urban growth are well documented, there appears to be limited literature on the role and impact of land use planning in the retailing debates. Thus, this study examined the nexus of food systems as a whole and the role that spatial planning can play in ensuring that land use planning positively impacts the food systems in Lusaka.

Having established these three aspects, food production, food processing, and food distribution as parts of food systems, it is time to examine the role that spatial planning plays in food systems.

2.2 Spatial Planning and the Issue of Food

Spatial Planning involves planning in space to ensure orderly and well-arranged functions for the well-being of the public. Spatial planning follows laid-down procedures that should be community-driven. Public interest is always at the centre of spatial planning in the quest to benefit the people being planned for (Tibaijuka, 2006; Kamete, 2012).

The planning legislation of most African countries has remained stagnant for years and is usually an adaptation or replication of the colonial power without considering the unique needs of the implementing country (United Nations, 2017). Planning legislation lays down procedures for public interest, however, it should be noted that public interest is subject to change with time, space, and place. Currently, legislation around spatial planning and various legislation has not been effective in addressing the day-to-day challenges that plague cities and urban areas such as food insecurity (the condition of not having access to sufficient food, or food of an adequate quality, to meet one's basic needs), scarcity of accommodation, rapid urbanization, degradation of infrastructure, poverty, water and sanitation (Watson, 2009; Tibaijuka, 2006).

Zambia stands out as one of the African nations that has updated its spatial planning legislation, moving away from the British colonial ACT. Zambia is among the few African countries that have reformed their spatial planning legislation. The repealing of the Town and Country Planning Act (TCPA) (a colonial planning legislation) with the 2015 Urban and Regional Planning (URP) Act No. 3 was a move in the right direction. Another planning legislation repealed by Zambia is the Statutory and Improvement Areas Act (an Act to provide for the control and improvement of housing in certain areas; and to provide for matters connected with or incidental thereto) which to some extent promoted informal settlements. These repeals were made because of the changing times and needs that made the past Acts irrelevant and obsolete. The challenge now is to monitor and evaluate these new Acts to ensure that they are flexible and responsive to the ever-changing environment and needs of the people. The URP Act aimed to address informal settlement challenges by fostering inclusive planning, formalization, infrastructure upgrades, and private sector involvement. It marked a pivotal shift, emphasizing sustainable urban development in Zambia's management of urban areas.

By and large, the traditional formal processes of spatial planning are complemented by informal ways that tend to be more flexible. An analysis of both the formal and informal procedures of spatial planning reveals that the levels set for food production, food processing, and food retailing do not meet the needs of urban centres in sub-Saharan Africa, including Zambia (Kamete, 2012). There is a need to re-examine the planning institutional and regulatory frameworks so that they consider the interests of the contemporary public (De Zeeuw & Drechsel, 2015).

If notable progress is to be made in spatial planning, legislators and planners will have to find innovative ways of developing and implementing a regulatory framework that is food-inclusive. Such a framework should incorporate the co-production of ideas, apply a communicative approach, and ensure a 'just city (Watson, 2002; Mbiba, 2005; Chirisa & Matamanda, 2016)'. These approaches, as Watson (2002) asserts, are especially important to planners from sub-Saharan African countries who constantly battle extreme forms of social breakdowns, divisions, and inequalities. The proposed legislative framework should therefore ensure that food is available, accessible, stable, and well-utilised. This calls for wide consultations with key stakeholders from both formal and informal urban areas. Watson (2002) recommends the communicative theory as a means of creating an ideal environment for discovering solutions through stakeholder engagements and debates that are democratically driven and inclusive. A conflation of the 'just city' approach, bottom-up approach, as well as

the co-production empowerment and pragmatic approach to service provision, will ensure that the voiceless in Lusaka are heard and their needs factored into the legislative framework for spatial planning.

Food systems are multi-faceted and have territorial, management, planning, social and political dimensions, and nuances. The territorial dimension makes it a land-use planning issue that urban planners must consciously deal with. The food supply chain is spatial, thus making it a spatial planning issue (Morgan & Sonnino, 2010; Ladner, 2011). Food production, processing, and retailing occur in space; therefore, they need land, which is managed through urban planning, regulated by laws, and implemented through Master Plans and layout plans (Mkwambishi, et al., 2011). The spatially bound food supply chains comprise farms (plots), transportation corridors, farm produce processing plants or industries, and markets (Koc, et al., 1999). Although urban food strategies differ from city to city, the common denominator is the intention to connect and create synergies between different public domains. These include the environment, spatial planning, public health, economic planning, and social planning - which in one way or another other affect food supply and access (Wiskerke, 2009; Toriro, 2018). Even though this sounds like the logical thing to do, literature does not allude to any practical examples where this exists.

A significant amount of literature was found on urban food in Africa. Whilst some of it comprehensively covered urban food as a system, most of it only covered aspects of the urban food system. Most of the literature focused on food production or UA and mainly covered their benefits, negative impact, and conflicts (Mbiba, 1995; Mudimu, 1996; Binns and Lynch, 1998; Tevera, 1999; Kutiwa et al, 2010; Moyo, 2013). Other scholars addressed informal food supplies and their importance in feeding cities (Crush and Frayne, 2010; Njaya, 2014). Some scholars question the rhetoric of the capacity of urban agriculture to feed cities (Frayne et al, 2014; Haysom and Battersby, 2016). Other food studies revealed the ‘increasing urbanization’ of poverty and why understanding urban food security is now an important component of urban management (Tawodzera, 2010; Crush and Frayne, 2011; De Zeeuw and Drechsel, 2015).

Food insecurity refers to the limited or uncertain access to sufficient, safe, and nutritious food that meets individuals' dietary needs for an active and healthy life. Food insecurity is a pressing issue that has far-reaching consequences. Despite being a hub of economic and political activities, Lusaka faces significant challenges in ensuring food security for its residents. Rapid urbanization, poverty, and unequal distribution of resources contribute to this problem. Many

households in Lusaka struggle to afford an adequate and diverse diet, leading to malnutrition and other health issues (WFP, 2021). There is limited literature that covers the connection between planning and food. Although Mbiba's early work identified planning regulations as a hurdle to the success of urban UA, it is not detailed (Mbiba, 1994 and 1995). Battersby's observation that planners do not accommodate urban food production due to it being framed as a rural issue at least comes closer to creating a link between foods and planning (Battersby, 2013;2018). There is very little that has been done to examine the 'processes through which urban food systems are governed' (Smit, 2016:80).

2.3 Theoretical Framework

It should be noted that several theories were brought out because the study brought together two different but complementally disciplines food systems and spatial planning. As such it was prudent to look at several theories.

2.3.1 City Region Food System: Its Origins and Ideological Undertones in Some Detail

The CRFS is relatively a new concept developed between 2012 and 2013 and pioneered by multilevel stakeholders such as the United Nations, local authorities, the civil service, and researchers. It is a response to the changing world and rapid urbanization, and it is a means to an end amidst the development of new policies and prevailing scientific debates (Dubbeling, et al., 2017). The CRFS is defined as:

> *"the complex network of actors, processes and relationships to do with food production, processing, marketing, and consumption that exist in a given geographical region that includes a more or less concentrated urban centre and its surrounding peri-urban and rural hinterland; a regional landscape across which flows of people, goods and ecosystem services are managed" (Dubbeling, et al., 2017, p. 22).*

In as much as cities and regions differ in the way they are managed, matters of urban-rural partnerships and inter-municipal cooperation have no regard for customary administrative boundaries: thus, the invention of the concept of a city region. The major essence of the concept of CRFS has been to understand the relationship between cities and the peripherals more justifiably. Secondly, it is to encourage resilient inter-linkages from urban to rural locations for food production and as providers of natural resources and ecosystem service.

Following the unprecedented levels of informal settlements, rapid urban growth, increasing urban paucity of food, and climate change influences, the significance of the annexation of urban food security with urban food systems in spatial planning has increasingly been accepted

by both the global North and global south. The rural and urban areas depend on a well-functioning food system for development because of the give-and-take relationship that exists between the rural and urban areas which greatly influences food systems. In response to this interaction, CRFS has developed an auspicious tactic to support authorities, policymakers, and multi-stakeholders to arrive at solutions that will ensure a well-functioning urban and regional food system. This food system must be characterized by sustainability and resilience across urban and rural areas (Dubbeling, et al., 2017).

For informal settlements to be food secure, CRFS must be looked at as a possible solution. Lusaka City lacks space for food production through agriculture because most of the space in the city has been utilized for residential development. Most agriculturally productive land that surrounded the initially planned city of Lusaka are diverse areas such as Chongwe to the east around Kenneth Kaunda International Airport (KKIA), peripheral of Chilanga to the southwest, and Ngwerere to the northwest have now been subdivided and occupied. Therefore, pushing agricultural food production to the outskates of the city. Not only has this backed the distant growth of agricultural produce, but it has also led to food insecurity in the city, especially among the informal settlements. Affordability, availability, accessibility, and utilization of food have thus been compromised. Consequently, the CRFS stands as an alternative in the provision of much-needed food for the city of Lusaka. This is why this study adopted the CRFS as the theoretical framework.

Spatial planning needs to effectively consider the best ways of protecting areas that fall under the Lusaka CRFS for continued production and supply of food to the city. If the city of Lusaka were to plan for the CRFS, it would need massive land which, unfortunately, is unavailable. The remaining food-producing areas within the city must therefore be protected to effectively contribute to UA. Informal settlements will need to be planned, upgraded, or developed to ease the residents' burden of spending on water and transport and increase their disposable income which subsequently leads to food security. Supporting the work of the CRFS will require these regions to be transformed into resilient and sustainable settlements where both the rural and urban residents have a well-improved livelihood. Matters relating to the advancement of production capabilities, access to inputs, sustainability of production practices and market entree for smallholder farmers in urban, peri-urban and rural areas in the city region will require singular consideration.

Promoting CRFS ensures diversity of scale, systems, production points, production strategy, and background. It also minimizes external inputs and external development, and it enhances the natural resource base. Given the rising population of Lusaka, the JICA Team (2019) raised the following questions:

i) How can the multiplicity of food in supply and production be surged?
ii) How can global warming be reduced?
iii) What will it take to make green water the primary source of production?
iv) How can nitrogen and phosphorous be recycled to conserve energy?
v) How can biodiversity be increased?
vi) How can renewable energy in the food system be increased?
vii) How can the livelihood potential be increased?
viii) How can dietary patterns be altered into healthier and more sustainable ones?
ix) How can food insecurity be backstopped or reduced?

The answer to these questions is appropriate and more inclusive spatial planning. For the city of Lusaka and the surrounding districts (Mumbwa, Chilanga, Kafue, Chibombo, Chisamba, Chongwe and Shibuyunji), the CRFS can be a possible solution to environmental challenges instead of being part of the problem. A possible mechanism of human health, well-being, dignity, and livelihood.

Through the CRFS, cities can increase the sustainability of food systems to cartel food waste and deliver appropriate livelihood prospects for those living in unplanned areas, rural, peri-urban, and urban. Furthermore, CRFS encourages sustainable ways of food production, food processing, and food distribution. It also ensures food and nutrition sanctuary for all consumers and value chain players. However, for this to be attained, effective spatial planning must be implemented.

2.3.1.1 Lusaka City Region Food System

Despite the existence of the ideology of CRFS and championed by FAO, it has not been backed by a formal food system policy and planning. This has affected the region's capacity to provide food effectively and comprehensively for the city and ensure food security, especially for the informal settlements. As the name suggests, a 'system' refers to an interconnection of entities - in this case urban, peri-urban and the surrounding rural, including food producers. Food systems are the main connectors at both local and international levels of food accessibility,

availability, affordability, and stability - which culminates in food security. Achieving food security calls for a robust spatial planning criterion through land use planning; planning for food production; environmental management; planning for effective transportation and distribution; consideration of marketing in planning; planning for food consumption; and water management, especially in the informal settlements. Despite its potential to bolster local production, shorten distribution chains, and connect consumers directly, UA still is neglected in food system planning. This exclusion weakens spatial food security by overlooking localized solutions for accessibility, affordability, and sustainability.

The essence of adopting this theoretical approach for this study is best explained by FAO:

> *"A city region food system (CRFS) approach provides a critical lens for analysis while supporting the ground policy transformation and implementation. Working at the city region level can leverage the complexity of rural-urban linkages to a practical level by making food the common denominator. This implies that broader issues (i.e. human rights, climate change and resilience) can be addressed in a more focused manner. Improved city region food systems will help achieve better economic, social, and environmental conditions in both urban and nearby rural areas)*" *(FAO, 2018, p. 10).*

Incorporating the City Region Food System (CRFS) by FAO (2018:11) into spatial planning will ensure access to affordable and nutritious traded foods from local and regional producers to enhance consumer food security because spatial planning involves an integrated approach to urban and rural development. Spatial planning can designate zones for local and regional food production, ensuring access to markets and promoting alternative channels like farmers' markets. It helps the creation of local and regional food hubs, optimizing agricultural supply chains for efficiency and sustainability. The planning process can also encourage compact urban design, minimizing transportation distances and reducing food waste. Integrating measures for the restoration and reuse of water, nutrients, and energy in agricultural production enhances environmental sustainability. Additionally, spatial planning can foster participatory governance structures, engaging stakeholders from diverse sectors in urban and rural areas, ensuring a collaborative approach to shaping resilient, transparent, and nutrition-focused food systems.

Adopting the CRFS as recommended by FAO (2018:11) will ensure access to affordable and nutritious traded foods from local and regional producers. This will enhance consumer food security, nutrition and transparency in the food chain; access to markets and support to alternative markets (i.e. farmers' markets, community-supported agriculture). As such, it will

improve the livelihoods of both small-scale and larger-scale producers; the existence of local and regional food hubs and shorter value chains (more broadly, efficient and fully-functioning agricultural supply chains that link hinterland producers to market systems to contribute to sustainable diets, reduce food waste along the chain and stabilise livelihoods in the distribution, processing and manufacture of food and fibre products); enable the restoration, recovery and reuse of water, nutrients and energy in agricultural production; and develop participatory governance structures in consultation with key stakeholders from multiple sectors from the urban and rural areas.

The coverage of the LCRFS encompasses the urban and rural areas that are comprised of the seven immediate surrounding districts including Chilanga, Kafue, Chongwe, Chisamba, Chibombo, Shibuyunji, and Mumbwa. The region is the source of the food flows in the food system for food production, processing, and distribution. The food flows are aimed at meeting the regions' food basket desires, specifically as (a) food flows, sources, and production areas of the main food commodities consumed in the city; (b) administrative boundaries over the city's region which the city council and districts have jurisdiction and whose by-laws are applicable within the city region; (c) land cover and use such as hills, mountains, lakes, rivers, and forests.

Most of the food (60 per cent) consumed in Lusaka comes from the LCRFS. The LCRFS goes beyond Lusaka as a district and province. Province-wise, it covers part of the Central Province, specifically Mumbwa District, Shibuyunji District, Chibombo District, and Chisamba District. In Lusaka province, it covers Kafue, Chongwe, and Chilanga Districts, as indicated in Figure 1.

In comparison with other CRFS, the LCRFS consists of a multifaceted linkage of actors, processes, and relationships convoluted in food production, processing, and distribution in each geographical region (Kim et al, 2015). Due to its high population, Lusaka City creates a market for the food produced in the LCRFS. Apart from agricultural production, Lusaka also boasts of food-producing industries, either through manufacturing or processing. Furthermore, it conducts food distribution at formal and informal levels that complement each other. There is a presence of an underdeveloped forward and backward linkage in the LCRFS that ensures a constant supply of food. Chisamba, Chongwe, and Chibombo are particularly considered to be important sources of food for the city of Lusaka. Others are Chilanga and Kafue which were once one district. According to FAO (2019), the remaining 40 per cent of the food for the city

comes from beyond the LCRFS, other provinces, within Africa and all over the world. Among the foods that are imported from outside the LCRFS are fish, fruits, beef, milk, and maize (FAO, 2019).

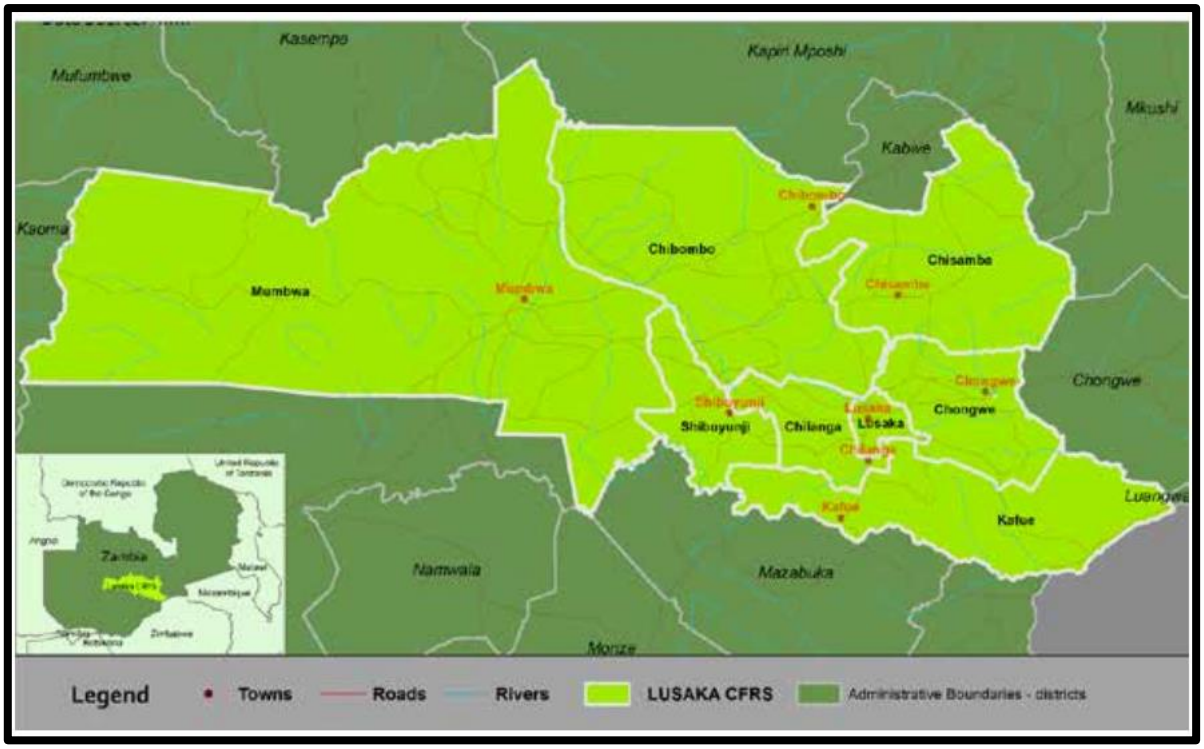

Figure 1: Lusaka CRFS
Source: FAO, 2019

If food security in the LCRFS is to be achieved, spatial planning will have to address the following: the lack of market information; linkages between the rural and urban areas through road networks; control of the expanding city (urbanization) which is taking up agricultural land; sort out policy inconsistencies found in Acts such as the Public Health Act and the URP Act that does not support urban agriculture; promote inclusive participation of key stakeholders; proper management of data; and the lack of adequate markets and storage.

Linking the city to its surrounding areas or its city region can guarantee sustainable urbanization. All players and stakeholders in the value chain such as smallholder farmers, consumers, research institutions, civil societies, and the government must be part of the decision-making process.

2.3.2 Normative Theories of Planning

There is a need to evaluate some of the planning theories that have helped revolutionize spatial planning. The normative theories of planning best fit this study because they took root after the fall of the 'rational scientific planning influenced by the growing disillusionment with modernist thinking and technocratic planning' in the West (Watson, 2002, p. 29). The thesis

focused on the three major normative theories of planning: the communicative theory, the just city theory, and the co-production theory. These theories helped explain the problems and situations that characterize urban areas like Lusaka. Normative theories of planning, including communicative, just city, and co-production theories, inform this research by providing frameworks to address urban challenges in Lusaka, particularly regarding the integration of local food systems into spatial planning.

2.3.2.1 The Communicative Theory

The communicative theory of planning was a response to the need for effective communication that guaranteed the achievement of democratic tenancies among citizens of a particular country. Drawing its roots from Habermas' 'liberalism', the communicative theory suggests that commonly acceptable solutions to various problems can be attained through rational consensus formation (Hillier, 2003). As the name suggests, the theory is premised on communication. Like Habermas' liberalism, the communicative theory looks at interaction, discussion, communication, and debate as key elements to finding solutions (Healy, 2003; Watson, 2002). Unlike the traditional rational planning theories, the communicative theory holds that a common position is arrived at through debate and consensus (Healy, 1999; Graham & Healey, 1999). The communicative theory is also supported by Innes who touts the 'communicative turn' as a 'new paradigm' in planning, with the potential to deliver improved planning as it was based on 'grounded theorizing' (Innes, 1995).

The communicative theory is not without its critics. Hillier (2003:38) criticizes the communicative theory on grounds of 'permanence of conflict, non-reciprocity and domination' amongst some players in the planning process. Huxley and Yiftachel (2000) criticize the communicative theory for the way it 'overstated' the achievement of consensus. They argue that although the communicative turn seems to assume a break from rigid rational planning, the reality revealed that to be not entirely true. Huxley (2000) refutes the assumption of argument as a basis for finding planning solutions. Not every fluent and influential person has the best ideas or solutions to problems. The communicative theory could prove useful in reflecting how planning occurs and should occur in areas like the global south and Sub-Saharan Africa, where the public is rarely consulted on planning matters and the democratic space remains constrained. The communicative theory informed this research by advocating for democratic engagement and consensus-building among citizens in spatial planning processes for Lusaka's local food systems. By prioritizing communication, discussion, and debate, this theory underscores the importance of involving diverse stakeholders to achieve commonly

acceptable solutions, addressing criticisms of exclusion and domination in planning processes while striving for inclusive and participatory decision-making.

2.3.2.2 The Just City Theory

Another strand of the normative theories that may be relevant to the interrogation of the appropriateness of current planning approaches of the global south cities is Fainsten's 'just city' theory. Her work is influenced by a concern for the 'distributive effects' of planning. "A theory of the just city values participation in decision-making by relatively powerless groups and equity of outcomes," (Fainstein, 2000:468). Like other normative strands, this theory arose from criticism of planners for being 'undemocratic by not consulting the people most directly affected by their planning initiatives' (Fainstein, 2005:123; Teitz, 1996; Hall, 1996). The theory was built on a 'post-Marxist political economy' with the assumption that the transformation of communities can be developed from the 'bottom-up' (Fainstein, 2005). Fainstein's 'Just City' has elements of and relates to Henri Lefebvre's 'Right to the City' which advocates for access to urban spaces for all citizens (Purcell, 2013). There are similarities between Lefebvre's and Fainstein's theories in that they both advocate for the right of every citizen to have access to urban spaces. While the former champions it directly, the latter calls for communication to achieve that right. The right to the city can only be meaningfully achieved when all concerned stakeholders actively participate in governance issues relating to spatial planning.

Fainstein uses the city of Amsterdam as a typical model demonstrating elements of a just city (Watson, 2002). Despite her belief in the power of communities to motivate their planning processes, Fainstein concedes that some 'marginalized' societies may require certain individuals to advocate on their behalf. Her departure from the mainstream communicative theory is her acceptance that just processes were not necessarily a panacea to just planning products (Fainstein, 2009 and 2010). Lusaka would be ideal for examining the effectiveness of this theory given the lack of inclusivity in the city's spatial planning. The theory would provide a perspective for evaluating the appropriateness of planning regulations for food production, food processing, and food distribution. An attempt to achieve a just city could be useful in influencing fair and inclusive planning in Lusaka.

2.3.2.3 The Co-Production Theory

One way to understand the way residents or citizens in a city engage with authorities and participate in its development is through the co-production theory. The co-production theory has its origins in the work of the homeless people's federations. Inherent in the co-production

theories is the sharing of space by bringing together different parties affected by planning. A common thread in this form of engagement is the avoidance of a radical approach rather than embracing incrementalism, adopting an 'evolutionary approach', and embracing 'social learning' (Watson, 2014). Scholars like Mitlin (2008) and Albrechts (2012) argue that co-production is advantageous as it helps prepare citizens for more effective and sustainable engagements with the state. Due to intended spatial planning upgrading and regularization plans, the adoption of the co-production strategic planning approaches offers hope as they address practical 'immediate needs' of communities, give a role to communities, and are geared towards 'solution generation' (Albrechts, 2013). These newer approaches to planning bring in two important dimensions: firstly, an acknowledgement that both authorities and citizens are important in achieving sustainable planning; and secondly, they bring together authorities and citizens in a gentle rather than a radical manner. This could prove more effective as it does not appear to threaten either party's position, hence more likely acceptable and beneficial.

The co-production theory advocates for collaborative engagement between citizens and authorities in planning processes. In the context of integrating local food systems into spatial planning for Lusaka, it emphasizes involving residents to address immediate community needs and generate sustainable solutions through shared decision-making. The approach offers a realistic mode of development for low-income groups like Lusaka which had 36 informal settlements. Figure 2 depicts the seven key principles of co-production.

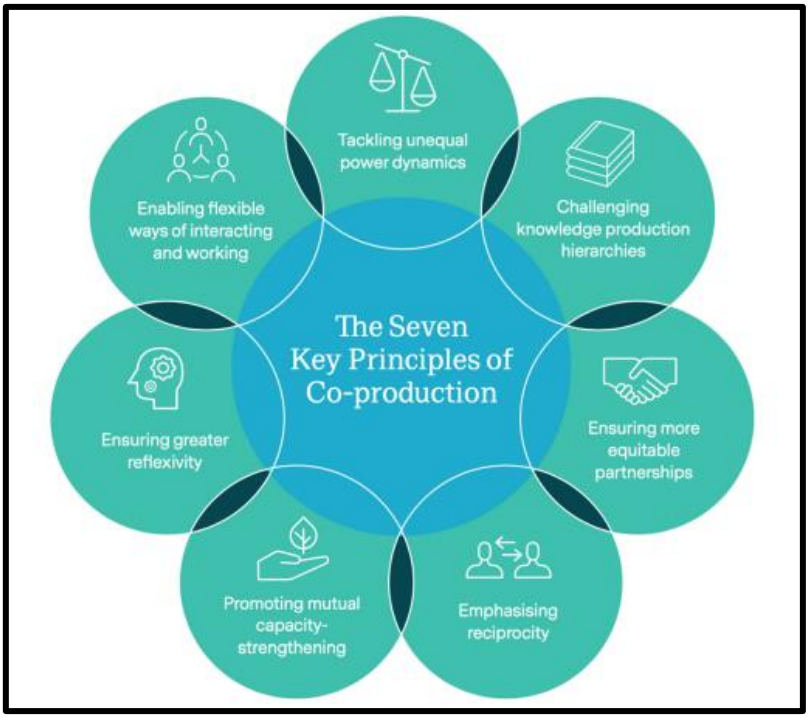

Figure 2: Seven Principles of Co-production.

Source: Lokot and Wake (2021:12)

2.3.3 Global South Planning Theory, a Must?

Like most planning policies and legislations, all the planning theories originate from the global north. However, just because the theories were successfully applied in the global north does not guarantee a similar outcome in the global south. This is because the needs of the global south were not considered when the normative theories were developed. Therefore, they cannot be expected to be effective. Critics of the theories have advanced the need to have planning theories that respond to the problems of the global south, with rationalities that motivate the positions and approaches of planners - which Watson (2003) refers to as a 'conflict of rationalities.' This study embraced the normative theories that call for the consideration of the views of the global south. The study accepts Watson's (2009b) view that a planned city 'sweeps the poor away', which means that planners must listen to the people whom they are planning for.

The Global South Planning Theory challenges the applicability of planning theories developed in the Global North to regions like Lusaka. It emphasizes the need for theories that reflect local contexts and address the needs of marginalized communities. This research on integrating local food systems into spatial planning for Lusaka aligns with this theory by advocating for planning approaches that prioritize the voices and needs of the city's residents, particularly regarding food security and fair access to resources.

2.3.4 Garden City Concept

This concept or theoretical perspective was developed by Sir Ebenezer Howard in 1898. The theory advocates for the inclusion of 'greenbelts' within the communities for effective urban planning. The theory is aimed at bringing country and urban together for mutual benefits. It is characterized by the need for an equal area coverage of residential areas, industries as well as agriculture areas. Ebenezer directs planners to focus on three key areas that he calls 'three magnets' and these are town, country, or town country. This study adopted the following principles of the Garden City Concept as proposed by the JICA Study Team (2009):

1. Co-operative holding of land to ensure that the advantages of appreciation of land values go to the community and not individuals. This especially applies to traditional land which is supposed to belong to the community but is now sold to the highest bidder.
2. Economic and social advantages of large-scale planning.
3. Establishment of cities of limited size, but at the same time possessing a balanced agricultural industrial economy.

4. Urban decentralization; and
5. The use of a surrounding green belt to serve as an agricultural recreational area (JICA Study Team, 2009).

The Garden City Concept underpins the research by advocating for cooperative land holding, balanced urban-rural economies, decentralization, and green belts, aligning with efforts to integrate local food systems into spatial planning for Lusaka.

Lusaka City was originally planned on the Garden City Concept by Professor Adshed in 1930 (Mulenga, 2016). JICA in partnership with GRZ under the Comprehensive Urban Development Plan (CUDP) for 2030 will use the same concept to drive planning for the city of Lusaka. The 2030 CUDP for Lusaka, echo Garden City, and green environmental protection has been adopted as follows:

> *The Echo Garden City will be achieved as a long-term goal through overall environmental creation and protection programs with the involvement of all stakeholders such as citizens and civic leaders. The water system in the city of Lusaka and its surroundings is environmentally vulnerable. Hence it requires careful planning and management to accomplish environmental protection and development in sustainable manner. Citizens' participation will be essential for achieving the goal of the ECHO Garden City. They will act as important partners in providing public services for the park's development and environmental protection program through continuous efforts (JICA Study Team, 2009).*

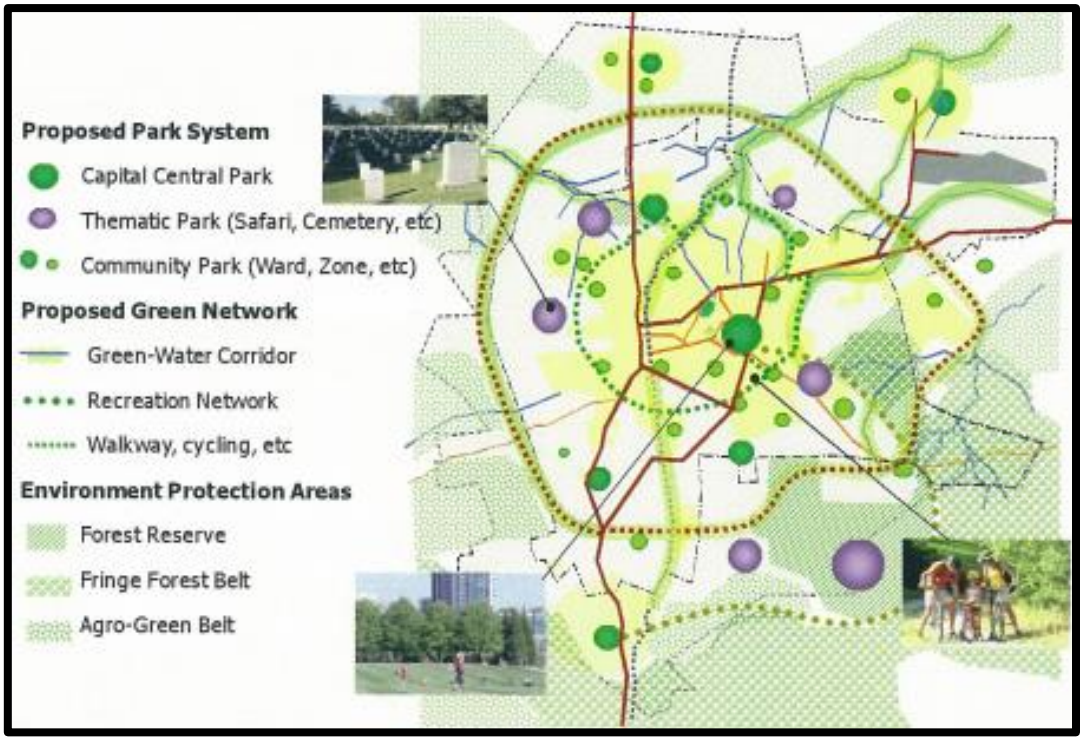

Figure 3: Plan of Green City Development and Environmental Protection
Source: JICA Study Team (2009:19)

The JICA Study Team formulated the plan based on principles of sustainable development and environmental protection. The plan includes a variety of green spaces, including:

1. Parks: These will provide recreation and leisure opportunities for residents, as well as help to improve air quality and reduce the urban heat island effect.
2. Thematic parks: These will include features such as a safari park and a cemetery. They will provide unique attractions for residents and visitors alike.
3. Community parks: These will be in different neighbourhoods throughout the city and will provide green space for residents to enjoy.
4. Green-water corridors: These will connect different parts of the city's green space network and will help to conserve water resources.
5. Recreation networks: These will include walkways, cycling paths, and other facilities that will encourage residents to get active and enjoy the outdoors.
6. Environment protection areas: These will help to conserve the city's natural heritage and protect biodiversity.

Figure 4 illustrates the intricate interplay among food systems, spatial planning, and food security. Food systems which encompass farms, processing facilities, distribution networks, and retailers, are responsible for providing sustenance to populations. Spatial planning, which regulates land use, plays a crucial role in optimizing these systems by strategically positioning farms closer to urban areas, thereby reducing transportation costs, food waste and environmental emissions. Consequently, efficient, and sustainable food systems, combined with equitable spatial planning practices, contribute to the attainment of food security – ensuring that everyone has access to safe, nutritious, and affordable food. The framework explores specific concepts such as CRFS (Complex Responsive Food Systems), UA (Urban Agriculture), Garden Cities, and various planning theories, emphasizing the importance of collaboration and communication among stakeholders for effective implementation.

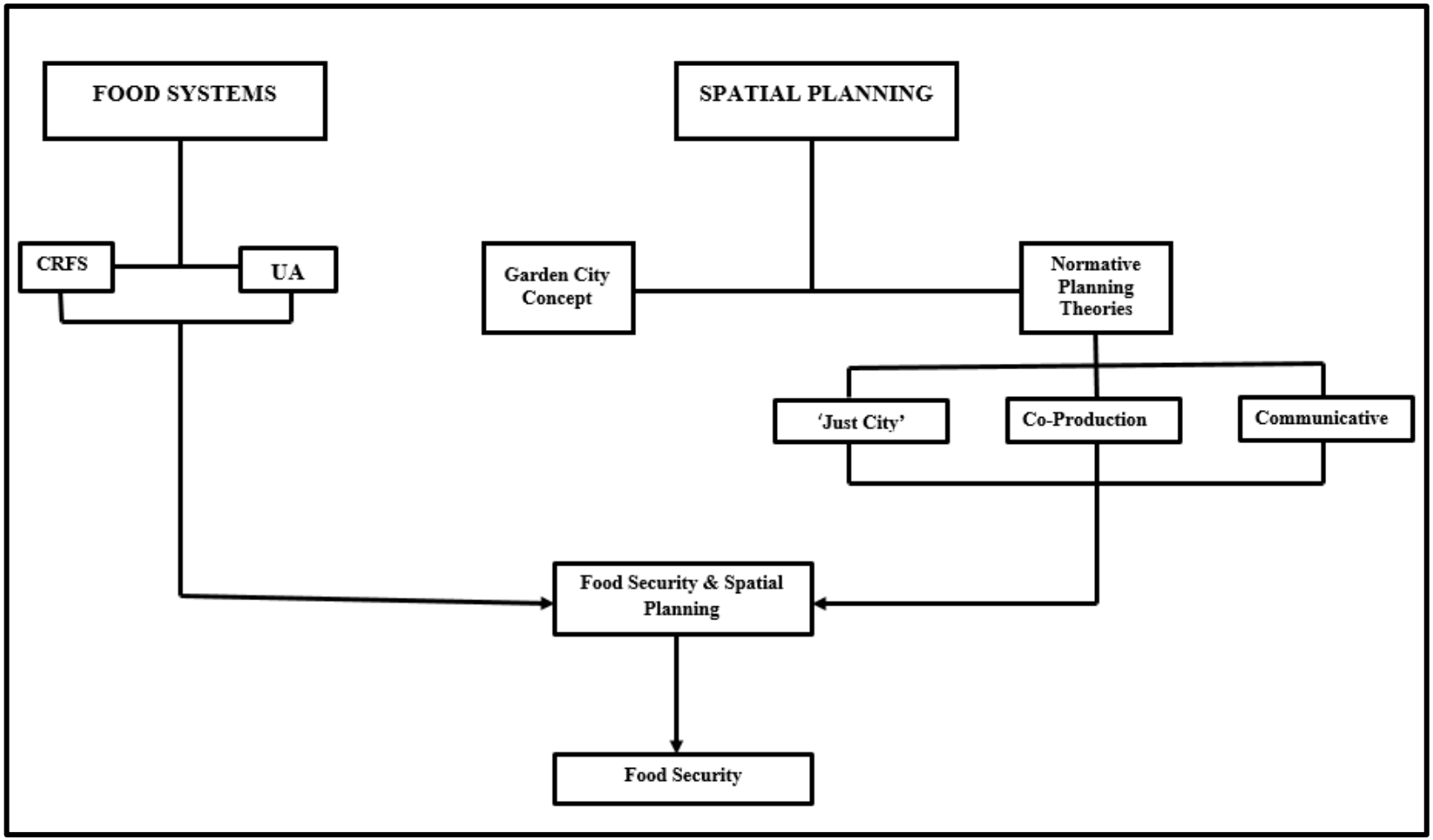

Figure 4: Schematic Diagram of Theoretical Framework

2.4 Conceptual Framework

This section addresses the various outputs upon which the study was modelled and how they are presented in the literature. It also amplifies the position that was taken by the study. The conceptual framework highlights key past and present debates on matters of food systems and spatial planning.

This thesis conceptualized planning for food systems as a mandate of spatial planners because food is a communal concern. Spatial planning and food systems were in the past looked at as separate entities (Pothukuchi & Kaufman, 2000). For instance, food production was classified as an activity for rural settings and not urban areas. Spatial planners were only concerned with planning for urban areas, without planning for food (Battersby, 2018). Recent developments however show that urban areas cannot do without food production within the areas themselves or in the immediate surrounding environment (Kaulule, et al., 2021). This means that spatial planners will have to include food production in planning for urban areas and city regions. This will safeguard the areas for food production amid rapid urban population growth that has contributed to the increase in informal settlements and is characterized by food insecurity and urban poverty. The current spatial planning overlooks the traditional approach to food systems which was rural-oriented, thereby neglecting the role of spatial planning in ensuring urban food security. Poverty and unemployment *vis-à-vis* food security shifts the way food systems are to be examined. Food systems and spatial planning are now conceptualized as being determined by other less recognizable dynamics predisposed to how this thesis concluded.

The conceptualization of spatial planning as the centre stage in influencing food security in the LCRFS meant promoting the inclusion and protection of food-producing regions - that is, areas within the urban space and the immediate surrounding areas. In addition to the research questions answered in this study, more questions are raised regarding the type of planning that must take place amidst rapid urbanization and population growth. Additionally, how should land be regulated and lastly whether practices and policies used work for cities of the global south? Planning guiding principles such as Master Plans, Urban and Regional Planning Acts, Local Development Plans, and strategic urban planning are used by spatial planners to manage Zambia's urban space. However, Watson (2013) and Chirisa (2008) have argued that most of these plans are either disconnected or fail to address their intended purpose of ensuring a well-planned response to the global south-lived experience. Being the main driver of urban growth and socio-economic inclusion, spatial planning is expected to take centre stage in solving the

problems brought about by urbanization and population growth today. The main problem in this regard is the dwindling food-producing areas that push food production to far places, thus bringing about economic, social, and environmental challenges, as well as increased food miles (Tibaijuka, 2006).

In Zambia, spatial planning is guided by planning tools, instruments, and legislation. Land-use planning is governed by the following: the Master Plan, which is typically enacted by the relevant authority, Integrated Development Plans (IDP), local area plans, and layout plans. Understanding the types of land functions such as ecosystems, land cover, and land use requires plan formulation (forward planning) and plan implementation (developmental control). It also requires the improvement of food systems by considering production, processing, distribution, and consumption to ensure food security in Lusaka and address the distribution of food within the CFS of Lusaka and beyond. These main arguments of the study are presented in schematic form in Figure 5. It is the approach that best presents a holistic understanding of the role of spatial planning in food security in the city of Lusaka.

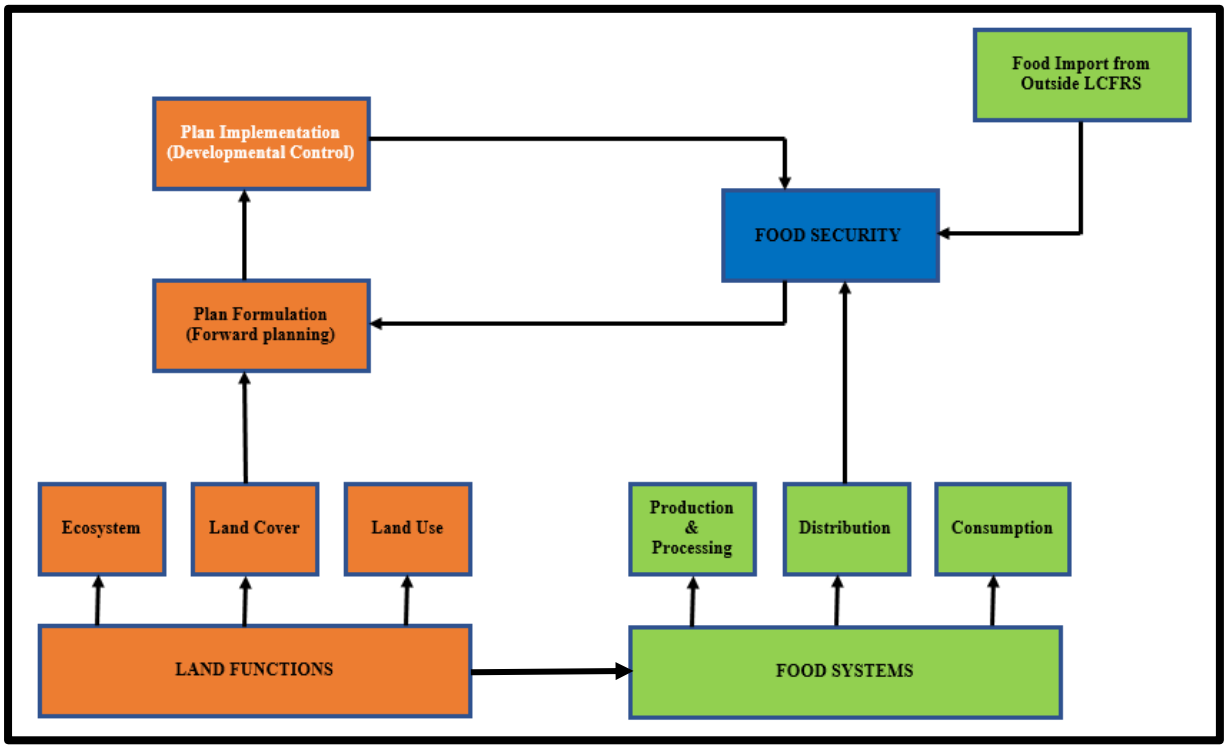

Figure 5: Conceptual Framework of the Study
Source: Author (2022)

Even though the Urban and Regional Planning Act No. 3 of 2015 (URP) (which repealed and replaced the Town and Country Planning Act) is the main planning legislation in the country,

many other planning clauses in other Acts of Parliament and policies that speak to the management of land and planning are used by spatial planners. Such Acts include the Lands Act; Public Health Act; Local Government Act No. 2 of 2019; Solid Waste Regulation and Management of 2018; and the Water Resources Management Act No. 21 of 2011. The Urban and Regional Planning Act No. 3 of 2015 serves as the primary legislation for planning, yet numerous other legal instruments play pivotal roles. Acts such as the Lands Act, Public Health Act, and Water Resources Management Act, along with policies like the Solid Waste Regulation and Management of 2018, provide complementary frameworks. Together, they address a wide spectrum of issues crucial for effective spatial planning, including land use, public health, waste management, and water resources. The major focus of Zambia's planning laws is in tandem with housing, industrial, recreational, transport, and other kinds of planning, excluding the food issue (Taylor & Thole, 2015). Given the existence of these Acts, an investigation into how food systems can be enhanced in spatial planning needs to be conducted. At best, the law mostly serves to either prohibit or regulate food systems of production, processing, and retail, especially among the small-scale farmers and the informal settlements in urban areas like Lusaka. No spatial planning legislation prohibits food systems; however, they do not explicitly support it either (Taylor & Thole, 2015).

Urban Agriculture has for a long time been a source of food in most urban centres in the global south (Battersby, 2018). With the inclusion of the broader aspect of CRFS, food security will be enhanced in cities in most sub-Saharan African countries like Zambia. This is the direction that the study undertook - with Lusaka as a case. Lusaka is broadly informal, with over 75 per cent of its population residing in informal settlements. An informal settlement refers to a densely populated area where housing is constructed without legal sanction or formal planning. These settlements often lack basic amenities such as sanitation, electricity, and proper infrastructure. These informal settlements lack land for food production, thus making adjacent areas (not far from individual residences) the alternative for food production. Lusaka presents a good case for the CRFS approach given that its original planning was based on the Garden City Concept (it allows bringing country and urban together. In so doing, the CRFS approach works perfectly in line with the Garden City Concept) - although much of that interface has been lost over time, traits of it remain and would serve as a starting point for the preservation of food-producing areas. Apart from the theory of CRFS and the Garden City Concept, other planning theories were adopted in this study due to their relevance in understanding the links between food in cities and other urban locations are the 'communicative theory' - which

encourages communication as an advanced way to encompass communities in their identifiable planning. The ‘just city theory’ - is similar to communicative theory but mostly emphasizes the application of distributive justice in planning. The ‘co-production theory’ - also provides for the formation of roles for authorities and communities by bringing together regulatory authorities and those affected by planning. All these theories are relevant to food systems planning and management.

2.5 Disadvantages of the City Region Food System

Like any other approach, the CRFS approach is not without problems. Battersby and Watson (2019) have pointed out and cautioned against the risk of falling into the "local trap" (Born & Purcell, 2006), which ignores broader contextual differences that enable cities to be perceived as "hubs, drivers, and nodes" of change (Battersby & Watson, 2019, p. 515). This danger lurks behind attempts to align city regions with spatially constrained definitions of food production. Their criticism mirrors that of Jennings et al. (2015), who argued that food localization has its limitations and cannot, by itself, promote the development of CRFSs. They contend that to create city regions that can improve food security, local food production must be integrated into global value chains. We may contend that the players and agendas (driven by social interactions) in a particular place, as well as the methods and the extent to which local (and, implicitly, city-regional) food systems are linked to the conventional food system, determine all food system outcomes. These discussions are especially relevant to the growth of circular food economies in city regions, as the interaction between state authority and regional innovation (Agnew, 1994) determines how the CE develops over time (van den Berghe et al., 2020). The biggest challenge with the Lusaka CRFS is the limited farming (production) space of the city as most of its food supplies are from external sources. This brings in another challenge of reduced food availability and resilience.

The Lusaka CRFS relies on complex and interconnected supply chains that can be vulnerable to disruptions. The city region has limited agricultural land, as stated earlier, and thus relies heavily on food imports from outside the city region. This dependence on external sources can make the CRFS susceptible to price volatility, trade restrictions, and other external factors that can affect food security. For instance, as noted in the earlier sections, Lusaka city’s many food supplies are external such as Chongwe, Chilanga, Kafue, Mumbwa, Shibuyunji, Chisamba, and Chibombo. If there are any disruptions in terms of transportation, distribution, or production there could be significant impacts on the availability and accessibility of food within the city

region. This was the case during the COVID-19 pandemic. The COVID-19 pandemic restricted the movement of both people and foodstuff thereby disrupting urban food systems worldwide, affecting the food security and nutrition of urban populations.

As of 2020, up to 70 per cent of the global food supply was destined for urban consumption, the disruption of urban food systems had affected the food distribution and the food retail sectors globally (FAO, 2020). A study (Millard et al., 2022) compared the income-loss households and non-income-loss households. The results of the study showed that in terms of food consumed, income-loss households reported increased intake more than non-income-loss households, and the scenario was expected to continue after the pandemic. The Lusaka city region was not spared of these restrictions. There was a restriction on movements including the suppliers of foods into the city. This saw a relative decrease in the supply of food and a corresponding increase in food prices. This was worsened by the inadequate transportation and storage facilities which are a major challenge in Zambia's CRFS. The cholera pandemic is another issue that has restricted the movement of food into the city region. Thus, these unforeseen eventualities must be factored into the CRFS during the planning stage so that the food supply chain is not disrupted. This is the more reason planning must be integrated into the CRFS at all levels.

The other issue that is often not addressed as far as CRFS is concerned is the vulnerability of the food system to climate change. In many regions of the world, climate change is an unavoidable process that has detrimental effects on food systems and agriculture, especially in Sub-Saharan African nations. Global temperature and precipitation changes are a result of climate change. The food systems, ecosystems, and supply chains are all significantly affected by the environmental changes brought about by climate change. Along the food value chain, these modifications have an impact on food production, storage, processing, marketing, availability, promotion, cost, and quality. As a result, the impact of climate change on global food security and wealth inequality is most noticeable in poor nations, where the prevailing practice of rain-fed agriculture leaves food systems very vulnerable to fluctuations in temperature and rainfall (Tumwesigye et al., 2019). Zambia's agricultural sector is susceptible to climate change impacts such as droughts, floods, and erratic rainfall patterns (Muchanga, 2013; Sichingabula, 1998; Sichoongwe et al., 2014). These climate-related risks can disrupt food production and affect the stability and resilience of the CRFS. Thus, integrate planning into the CRFS so that climate variations are considered a crucial step in the CRFS. This will

ensure a reduction in the losses of foodstuff due to climate-related events such as drought, floods, etc.; thereby ensuring a sustainable CRFS.

2.6 City Region Food Systems in Other Countries: Lessons for Zambia

To support resilient and sustainable food systems, some nations have included city region food systems (CRFS) in their planning frameworks. This was accomplished via RUAF and FAO programs, which started in 2015 to purposefully promote better integrated, sustainable food systems in city regions (Dubbeling et al., 2017). It was able to detect CRFS through the initiatives that had developed naturally or spontaneously before the start of formal CRFS approach treatments. Rosario, Argentina, is one of the piloted nations that offers an example of an established CRFS. Toronto, Bristol, Belo Horizonte and other cities are some instances where this is also the case. RUAF and FAO implemented the targeted CRFS method interventions in eight city regions: Toronto, Canada; Kitwe and Lusaka, Zambia; Dakar, Senegal; Quito, Ecuador; Medellin, Colombia; Utrecht, The Netherlands; and Colombo, Sri Lanka. These advance our knowledge of the difficulties and potential problems associated with using the CRFS technique in the future.

Researchers and decision-makers may evaluate and develop CRFS as a planning and information-based decision-making technique and tool by using the CRFS pilot research. In these situations, intentional interventions were made, such as defining sustainability visions by stakeholders at the beginning of each pilot project to establish shared, aspirational project guidelines. It offers recommendations on how to prioritize strategies, policies, and investments to increase the sustainability and resilience of food systems (Blay-Palmer et al., 2018; Dubbeling et al., 2016). Rio de Janeiro and Belo Horizonte are two Brazilian cities that have adopted CRFS methods. These cities have prioritized developing farmers' markets and boosting regional food production. Brazil's experience may be used to learn about the value of political leadership and dedication, including stakeholders and local communities, putting supporting laws and regulations into place and incorporating food system concerns into urban development and planning. Other lessons Zambia may learn from these nations' experiences integrating CRFS into planning include: creating a policy climate that is supportive and acknowledges the significance of CRFS and incorporates it into planning frameworks; including a variety of stakeholders in the planning process, such as communities, farmers, local government, and civil society groups; promoting fair access to land for food production and resolving issues with land ownership; encouraging and rewarding local food production, urban agriculture, and short supply chains; and incorporating CRFS concerns into more

comprehensive urban planning and development plans, emphasizing problems such as land use, zoning, transportation, and infrastructure development.

2.7 Summary

This chapter examined the various literature on the study topic and presented the theoretical standpoint. The major outcome from the literature was that there are studies on food systems, urban planning, UA, and food security across the globe, in Africa and Zambia. What is missing however the connection between spatial planning and food systems, and how that connection can be enhanced for greater impact. In cases where it is present, the linkage is weak. The CRFS is poised as the best solution to the crisis of food insecurity. They are the answer to the quest for food security in the city of Lusaka and its surrounding areas. The inclusion of the Garden City Concept in planning will enhance the quest for solutions to food insecurity for the rural and urban areas of Lusaka. This chapter also demonstrated how normative planning theories like the communicative approach to planning, 'just city', and co-production to planning are the cornerstones of this study. Furthermore, the Lusaka City Region Food System (CRFS) operates through intricate and interconnected supply chains that are susceptible to disruptions. Due to limited agricultural land within the region, Lusaka heavily relies on food imports from areas outside its boundaries. This dependency on external sources exposes the CRFS to risks such as price fluctuations, trade barriers, and other external factors that can impact food security. For instance, various areas like Chongwe, Chilanga, Kafue, Mumbwa, Shibuyunji, Chisamba, and Chibombo supply a significant portion of food to Lusaka City. Any disruptions in transportation, distribution, or production in these areas can have significant consequences on the availability and accessibility of food within the city region, as was seen during the COVID-19 pandemic. The pandemic's restrictions on movement, both of people and goods, led to disruptions in urban food systems globally, affecting the food security and nutrition of urban populations, including those in Lusaka. The next chapter discusses the research methodology.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter discusses the research methods used to collect the data that informed this study. It reports on the fieldwork conducted and the subsequent analysis of data gathered from discovery in response to the set objectives identified in the previous chapter. The study adopted an exploratory approach to obtain a well-informed outcome that adequately addresses the problem statement, especially considering that the nexus of spatial planning and food systems is a relatively new concept. Thus, the research was characterized by direct conversations and discussions with various planners, farmers, residents of informal settlements, policymakers, as well as various stakeholders from both the government and non-governmental organizations.

The chapter first gives a philosophical guide to the research methodology, followed by an in-depth discussion of the methods used for data collection and analysis.

3.1 Philosophical Perspective

Research needs to have a philosophical standpoint – which is the classification of beliefs and assumptions about the improvement of knowledge (Saunders et al., 2016). In other words, the goal of the research should be to produce new knowledge. This can be done through many assumptions that are either about human knowledge as epistemological assumptions or realities encountered in research as ontological assumptions; or indeed about assumptions in one's values as axiological assumptions (Burrell & Morgan, 1979). To this effect, Maree, and Van der Westhuizen (2010:10) postulate that:

> *"Research is about understanding the world, and one's understanding is informed by how one views the world, what one views understanding to be as well as the purpose of understanding"* (Maree et al., 2010, P.10).

3.1.1 Pragmatism Philosophical Standpoint

This study adopted a pragmatism philosophy. This is so because the pragmatism philosophical standpoint allows for an embedded mixed method approach with the quantitative and qualitative (Creswell & Plano Clark, 2017). The study used all available approaches to understanding the problem. Because the study drew experiences from social, historical, and political contexts, pragmatism was the most suitable approach.

Pragmatism enables the use of multiple methods, different philosophical assumptions, and various ways of data collection and analysis. Thus, the ontological assumption of the study was

based on the flux of processes, experiences, and practices while the epistemological assumptions focused on the problems, practices, and relevance to practical contexts. The axiological assumption was based on the value-driven based on the experience of the researcher in Lusaka's food systems. The study benefited from the Pragmatism philosophy through the following aspects which not only postulated academic knowledge but also contributed to the real-world situation:

1. **Problem-solving orientation:** The research focused on real-world issues in the quest to solve practical problems which the findings addressed.

2. **Interdisciplinary perspectives:** In the quest to reach a broader audience, the study was able to draw from various disciplines and integrate diverse perspectives to address the complexity of real-world issues. The two most notable disciplines which the study heavily drew from are that of planning and food systems.

3. **Empirical grounding:** The study was grounded in empirical data through a case study. This has also strengthened the validity and applicability of the study findings.

4. **Flexibility and adaptability:** Pragmatism encourages flexibility in theories and methods. This allowed the study to adopt multiple theories both from the food systems and planning disciplines.

5. **Focus on outcomes:** Pragmatism suggests that the value of ideas and actions lies in their consequences. As such the study has formulated a proposed framework.

6. **Engagement with stakeholders:** Various stakeholders were involved in the study at all levels.

7. **Relevance and applicability:** The adoption of pragmatism ensured that this research was not only academically oriented but also brought out practical aspects by clearly articulating the applicability of findings in real-world contexts and contributing to the advancement of knowledge or the resolution of practical problems.

8. **Iterative approach:** Throughout this research, a constant revisit and refining of the ideas, methods, and conclusions based on feedback and new insights gained during the research process was equally done.

3.2 Further Methodological Scope

The study examined how local food systems can be integrated into spatial planning through policy and practice. It developed a framework that enhances this integration for Lusaka. The methods of inquiry used included: the review of document and Acts analysis; key informant interviews; household surveys; as well as identification, counting, and mapping of points of food production within the CRFS. For the retailing and transportation component, interviews were done in the major markets in the city among transporters and local farmers within the CRFS.

Various documents used in the planning guidance of the city of Lusaka and the URP Act of 2015 were used to understand the extent to which food systems are considered in spatial planning for the city of Lusaka. Other sources of information included the director of planning, the director of public health, and the director of engineering as the key informants from the LCC. Other key informants included civil societies and other sectors as outlined in table 2. The goal was to gain insight into planning in the city from a practical perspective. The primary data was collected from household surveys in the improvement areas. This was done to determine the food security status of the residents and their practice in UA. Farmers were also interviewed to understand the food system from production to distribution.

Table 2: The Logic Informing the Objectives-Methodology Linkage

Objective(s)	Research Question(s)	Methods	Data sources	Research Instrument
To review the spatial planning landscape of Lusaka	What is the spatial Planning Landscape of Lusaka?	Document review, Key informant interview	Developmental plans, Acts, Plans Local knowledge experts, Directors, and planners at LCC and the DPOs in the CRFS	Interview Guide
To assess food systems and food security in Lusaka	What food systems exist in Lusaka and what is the food security status of Lusaka?	Document review, Key informant interview, Local farmers interview, Household survey, traders' interview.	Fieldwork (CURP data), NGOs, traders, residents, planners, farmers, transporters	Interview Guide, Checklist, Questionnaire
To examine the nexus between spatial planning and the food system in Lusaka	How has food security been integrated into spatial planning in Lusaka?	Document review, Key informant interview, Local farmers interview, Household survey, traders' interview.	Fieldwork (CURP data), NGOs, traders, residents, planners, farmers, transporters	Interview Guide, Checklist, Questionnaire
To develop an integrated framework for spatial planning and food systems in Lusaka	How can the relationship between spatial planning and food security be enhanced in Lusaka?	Stakeholder engagement through workshops	Civil societies, MOA, LCC, UNZA, Objectives 1, 2 and 3	FGD, Learning labs, Checklist

3.3 Research Design: Case Study

Research design is the general plan of the entire research. It is the architecture or Master Plan for the entire research. It gives perspective on the different methods to be used for collecting pertinent data (Kothari, 2004). Also included under the research design are the samples used, measurements incorporated, and the tools used in addressing the aim, objectives, and research questions of the study.

This study employed the case study research design (the city of Lusaka being the case in point). Case studies are research methods for acquiring knowledge from the intensive exploration of a single case. They are applied for several purposes such as studies on organizations to improve their functions (Baran, 2010). This approach was chosen because it provides 'rich insights' into the subject matter using various data sources.

Zambia has five cities: Kitwe, Ndola, Livingstone, Chipata and Lusaka. If not for the case study approach, it would have been difficult, time-consuming, and expensive to study all five cities. Compared to other options, the adoption of the case study was effective and efficient. Furthermore, Lusaka was also chosen because of its high rate of urbanization and high population growth rate as compared to the other four cities in Zambia.

3.4 Research Paradigm: Embedded Mixed Methods

The study used the embedded mixed methods research paradigm. The use of an embedded mixed methods approach helps to ensure complementary between the qualitative and quantitative data collection methods. The study embedded quantitative data in qualitative data as it was the most suitable way of obtaining data that best responded to the problem statement. For example, some quantitative questions were included in the process of data collection within the broader qualitative questions. This provided a better perspective in obtaining the best results.

The main aim of the study was to explore the enhanced integration of local food systems into spatial planning in the city of Lusaka. This required a qualitative process. However, to answer the research questions satisfactorily, quantitative elements were embedded.

The study was more inclined towards qualitative because the enhancement of food systems in spatial planning dictates subjectivity, examination, and explanation at the expense of quantification and calculations. In reviewing the spatial planning landscape of Lusaka, interviews (planners) and content analysis of documents were used to produce qualitative data.

To assess the food systems and food security situation in Lusaka, questionnaires for households and farmers and checklists for traders were administered to produce quantitative data. To understand the nexus between spatial planning and food systems, a combination of tools such as key stakeholders' interviews, an analysis of legislation, developmental plans, public documents, and interview schedule was utilized to produce qualitative data. That data was analysed through another qualitative method of content analysis. Finally, to develop an integrated framework for spatial planning and food security in Lusaka, a framework technique of the data collected was used from objective one through to objective three. The framework technique is qualitative and uses content analysis. To that effect, the help of learning labs, focus group discussions and stakeholder workshops were conducted.

The basis of this study was content analysis, as evidenced in objectives one, three and four. Content analysis determines the presence of themes or concepts within given qualitative data. It allows for the in-depth analysis of the data for concrete results. The study used a deductive approach to content analysis with the notion that "with the inclusion of food in spatial planning, cities would be food secure." It is systematic in that it uses inferences by 'interpreting and coding' textual material. In so doing, it combines qualitative and quantitative methodologies and is especially relevant for inquiries in the areas of law, policy, practice, and stakeholder perceptions (Duriau, et al., 2007). Variables such as word frequency in a document or interview were useful in assessing the importance attached to it or pointed to a change of emphasis or thinking. This was employed in the evaluation of texts and analysis of interviews. To get the views of those who interpreted and implemented the laws, policies, and plans, key informant interviews were conducted with relevant officials and professionals. This process generated qualitative data that was analysed using content analysis.

The quantitative methodology was especially relevant for objective two. Quantitative data was obtained through household surveys using questionnaires to determine the food security status of Lusaka residents; interviews with farmers in the broader LCRFS, UA, technical know-how on laws, and regulations governing food production in the city and residential areas. Additionally, surveys of traders' views on sources and the quantities of the food that comes into the city were conducted.

3.5 Population

The study drew its population from Lusaka which currently has a population of 3, 093,615 (ZamStats, 2022). However, Lusaka had a population of about 2,906,000 in 2021 a 4.76 percent

increase from 2020. The metro area population of Lusaka in 2020 stood at 2,774,000 - a 4.8 per cent increase from 2019 which stood at 2,647,000. This translated to a 4.87 per cent increase from 2018 when it was 2,524,000, a 4.9 per cent increase from 2017 (United Nations, 2021).

3.6 Sample and Sampling Procedure

A spatial planning landscape of the city of Lusaka was produced through a time series review of Google Earth maps. This was augmented by key informant interviews of five snowball-sampled persons known to have historical and practical knowledge of the evolution of Lusaka over time. The sampling technique used was a non-probability one as it gave a better perspective of Lusaka's history on its physical expansion and socio-economic growth as enshrined in objective one. This provided an understanding of the factors behind food insecurity despite the city being planned under the sanatorium of the Garden City Concept. Among the literature reviewed were various planning Acts that have existed since independence and the 2019 FAO report (Assessing and Planning the CRFS), as shown in chapter two.

Apart from the non-probability sampling technique, the study also used probability sampling. The choice of probability sampling was motivated by two factors. Firstly, the sample was representative of the population and reflected its variations. As such, every member of the population had an equal chance of being selected for inclusion in the sample (Quinlan, 2011). Secondly, bias was minimized in the selection of the sample to make generalizations and inferences (Van der Walt & Van Rensburg, 2010). The probability sampling used in this study was the systematic sampling technique. It was employed in the selection of households to determine the food security of the residents in the selected residential areas and UA, and their knowledge of spatial planning for food in the city as outlined in objective two. The same sampling method was used in interviewing the various farmers in the LCRFS.

In as much as there are three formal and one informal housing categories in Lusaka (High Cost, Medium Cost, Low Cost, and Informal Settlement/improvement areas), the study only concentrated on the informal settlements. The actual residential areas which were randomly selected were Kalikiliki, Chazanga and Mtendere East. These settlements were randomly picked from a total of 36 other informal settlements through a rotary. A proportional allocation strategy was used to determine the sample size in each housing category in proportion to the size of the category. Systematic sampling was then used to select the participants from each of

the four informal settlements. Households were targeted to obtain the sample size per residential area. Raosoft Sample Size Calculator was used to calculate the sample size for each of the three informal settlements. The calculation was based on the following parameters: margin of error at five per cent, confidence level at 95 per cent and expected response distribution at 50 per cent. Due to financial constraints, a further 35 per cent of the calculated sample size was obtained as the final sample for the study. Table 3 gives a summary of the outcome. House numbers were used in the selection of households to be interviewed. The following equation was used to determine the interval ratio of interview respondents.

$$K = \frac{N}{N} = K = \frac{Size\ of\ Population}{Size\ of\ Sample}$$

$$K = \frac{1070}{375} = 2.9.$$

∴ K was rounded off to 3; K was the interval ratio. As such every 3rd house was interviewed.

Table 3: Residents Sample Size Selection Using Raosoft Sample Size Calculator

Residential Area	Total Household Population	Calculated Sample Size	35 per cent of Calculated Sample
Kalikiliki	4396	354	**124**
Mtendere East	4555	355	**124**
Chazanga	5906	361	**126**
TOTAL	**14857**	**1070**	**375**

Source: Own Construction

The Dietary Diversity Score (DDS) was determined for each of the sampled households in the three sampled areas. The study used a 24-hour and 7 days recall of the food that the individual households had consumed in each duration. The reason for using this method was to determine the food security levels of each household by using food groups as opposed to using types of foods which might not constitute the needed nutrients needed to be consumed to constitute a balanced diet.

Non-probability sampling was also used for purposively sampling the 75 traders (15 per market) of local foods such as cereals, vegetables, meat, poultry, offals, fish, milk, milk products, pulses, legumes, nuts, roots, tubers, fruits, eggs, and oils. This was done in the five major local markets namely, Chazanga Market, Mtendere Market, Kaunda Square Stage One Market, Bauleni Market and Soweto Market. The aim of the exercise was in line with objective two which set out to assess food systems in Lusaka. The markets were particularly selected for their strategic position as major food entry points into Lusaka around the selected residential areas.

Purposive sampling was also used when conducting interviews with key informants attached to the third objective which sought to examine the nexus between spatial planning and food systems. The purposive sampling technique is a type of non-probability sampling that is most effective for studying tendencies of a sphere with well-informed specialists within a particular field of interest. Purposive sampling may also be used with both qualitative and quantitative research techniques. The inherent bias of the method contributes to its efficiency and the method stays robust even when tested against random probability sampling (Bernard, 2002). The informants were the Soweto market manager (1), the Ward Development Committee (WDC) (1 from each residential area), the City Planning Department, the surrounding district planning departments, and the District Agricultural Office. Others were representatives from international organizations that deal with food security such as HIVOS, PAM, Self Help Africa, Harvest Fund, IAPRI, PPHPZ and FAO. Also interviewed were five transporters of commodities to the markets and 1500 farmers from the LCRFS. The farmers were interviewed with the help of the AfricitiesFood project under the Urban and Regional Planning Centre at the University of Zambia in the Department of Geography and Environmental Studies. The total apriori sample reached was 1,980, indicated in Tables 4, 5 and 6.

In developing the framework (objective four of the study), outputs from the first objective (Planning landscape), second objective (food security status and food systems map for Lusaka) and third objective (spatial planning and food systems nexus) were used. Three learning labs which involved stakeholder engagement were held at Mika Lodge, FAO offices and Sarovar Hotel in Lusaka. These were necessitated by AfricitiesFood and FAO through CURP as part of this research. The essence of the learning labs was to consolidate the framework development and provide a validation of the outcomes from the various stakeholders that were part of the data collection process.

Table 4: Sample Size Summary

Actor Category	Sample Size
Institution Actors	21
Local Knowledge Experts	5
Traders	75
Soweto Market Manager	1
Farmers	1500
Residents	375
WDCs	3
TOTAL	**1980**

Source: Own Construction (2022)

Table 5: Local Actor Interviews and How the Typology Served the Data Collection Exercise

Actor Category	Type of Interview	Settlement/Market/Farm location	No of Personal Interviews	No of Focus Group Discussion	No of Focus Group Participants	Key Issues Discussed
Local Knowledge Experts	Personal		5			General information on the historical and practical knowledge of how Lusaka has evolved over time.
Ward Development Committee	Personal	Mtendere East	1			**Food Security Status** The purpose of the interviews was to gain insights on the food security status in the three informal settlements from the leadership at the grassroots level. This served to expose the amount of land included for food systems in spatial planning.
		Chazanga	1			
		Kalikiliki	1			
Household Interviews	Personal	Mtendere East	124			**Food Security Status** The purpose of the interviews was to gain insights on the food security status in the three informal settlements from the residents themselves. This served to expose the amount of land included for food systems in spatial planning.
		Chazanga	126			
		Kalikiliki	124			
Traders	Focus Group	Soweto Market		1	15	**Food System** It was done to assess food systems in Lusaka. To determine where they buy the food from, how they transport the food to the market as well as the affordability of the food.
	Personal	Mtendere East Market	15			
		Bauleni Market	15			
		Chazanga Market	15			
		Kaunda Square Stage 1	15			
Market Manager	Personal	Soweto Market	1			**Food System** The main purpose of the interview was to gain insights into the general operations of Zambia's biggest food market in the quest to ensure that food systems are not compromised and maintained to have food security in the city.
Farmers in the LCRFS	Personal	LCRFS (Lusaka, Chongwe, Kanakantapa, Palabana, Kafue, Chilanga, Shibuyunji, Chibombo)	1500			**Food System** The aim was to engage the farmers on how much they produce, how much reaches the market, and how much is sold and wasted. Further, it was to establish if the produce is sufficient for the city population. And, to show how much they receive help from spatial planning.

Table 6: Institutional actor groups and how the typology served the data collection exercise.

Institution	Selection Rationale	Participant
Lusaka city Council (LCC)	Lusaka City Council (LCC) is a planning authority for Lusaka City which prepares urban structure plans and implements planning-related issues. The council also mediates on the issues of public health, markets, and engineering issues like maintenance of roads and bridges to ensure accessibility. These attributes made the Lusaka City Council an important institution for engaging in the research.	Director Planning, Director Engineering, Director Public Health, Director Peri-Urban in Charge of Markets and Bus Stations, Planner Peri-Urban. Also included as Director Planning Kabwe who worked at LCC for over 10 years as a physical planner and District Planning Officer.
Planning Councils in the LCFR	The surrounding districts in Lusaka that constitute the LCFR are not influenced by planning decisions made by LCC. They plan for their affairs that influence their districts. Their input was thus cardinal to this study on food systems and spatial planning. These districts are the most affected by the change of land use into residential.	District Planning Officers from Lusaka, Chongwe, Chilanga, Kafue, Shibuyunji, Chisamba, and Chibombo.
HIVOS	HIVOS has been one of the civil societies working on food systems in Lusaka. They were key in providing input on the food situation in Lusaka.	Project Manager Healthy Foods Africa
Food Agriculture Organization (FAO)	This is an international organization of the United Nations that looks at food. They conducted a study in 2016 that looked at the LCRFS. Their findings informed an essential component of the study. They are currently doing a study on Shocks in the LCRFS which the researcher is part of.	Project Manager
Indaba Agricultural Policy Research Institute (IAPRI)	This is a civil society organization that deals with agricultural policy. It provided perspective on policy and food production.	Research and Outlook Director.
Self-Help Africa	The organization deals with agriculture and livelihood development, as well as diversification and sustainable intensification of agricultural production. They also look at practical action research projects on farming systems.	Program Advisor-Agriculture
Harvest Fund	The organization is a nonprofit social enterprise working to empower women farmers through microfinance and	Co-Founder and Technical Director

	training in sustainable and climate-smart agriculture. It was an important addition to the study as it touched on both food production and people's livelihood.	
Kasisi Farms	Kasisi Farm is a Catholic farm that deals in production, processing, and distribution. It is found in Chongwe near the Kenneth Kaunda International Airport. The farm provides land, inputs, and water to small-scale farmers right on the farm. The institution's input informed the food systems component of the study.	Production Manager
People's Process on Housing and Poverty in Zambia (PPHPZ)	It is a Non-Governmental Organization (NGO) that works in Informal settlements of Lusaka and supports federated networks of rural and urban poor to address governance issues at local and national levels. It was key in addressing matters relating to engagement with the informal settlements.	Project Manager
Program Against Malnutrition (PAM)	It is an NGO whose mission is to eradicate malnutrition. Its core aim is to improve food security, security and income which resonated well with this study.	Project Manager
Ministry of Agriculture	The mandate of the Ministry of Agriculture is to ensure that agricultural produce is available. The ministry was important to this study through the various representatives.	DACO, SAO

Source: Own Construction (2022)

3.7 Mapping: Bringing Out the Spatial Dimension

An analysis of the different food system parameters in existence such as production points (sources of food), transportation routes, storage, and distribution points was mapped using spatial data (GPS points). The GIS maps produced showed the spatial character of the LFS.

3.8 Data Collection

Data collection consists of specific procedures, tools, and techniques used to gather and analyse data. In this study, both primary and secondary data sources were used. The data from primary sources was collected using structured questionnaires and interviews with key informants. Data from secondary sources was collected from maps, key laws, plans, by-laws, policies on food production and planning, as well as documentary sources. Figure 6 shows the methods of data collection used for the different objectives of the study.

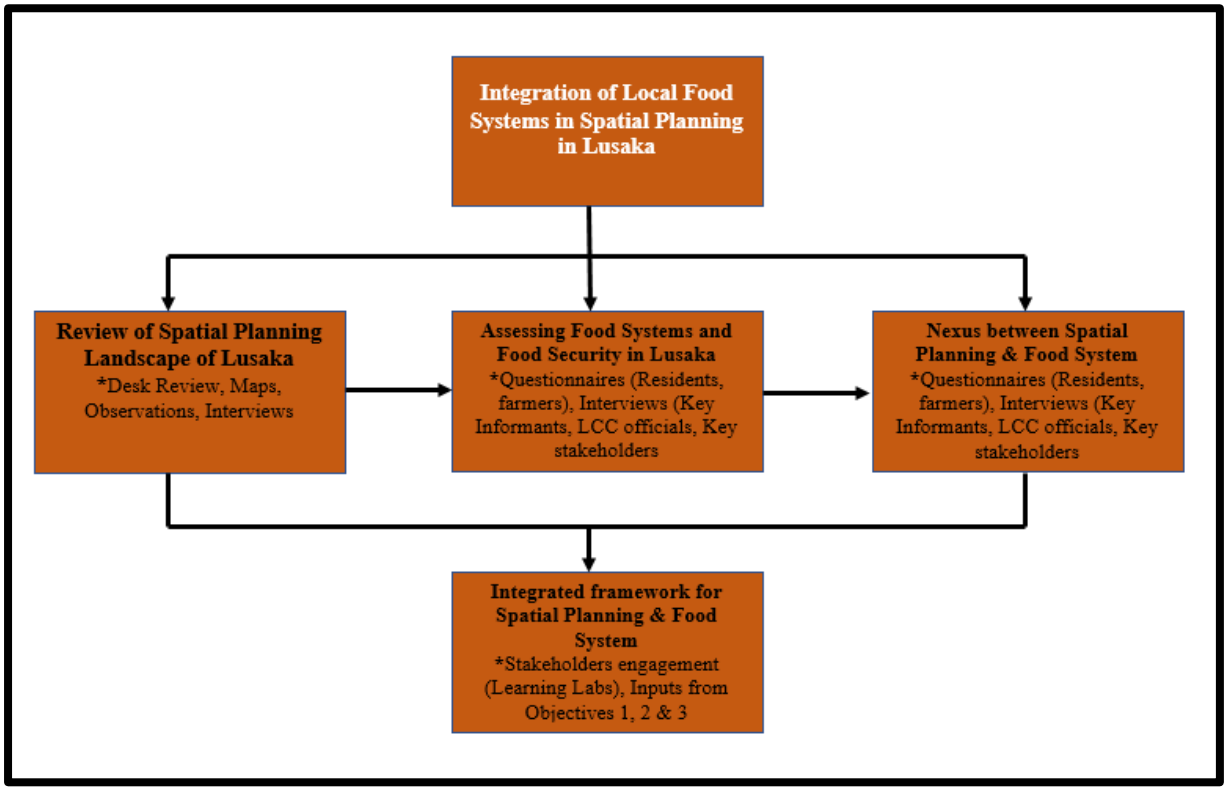

Figure 6: Data Collection Methods Used in the Study
Source: Own Construction

3.8.1 Semi-Structured Questionnaires

Semi-structured questionnaires were utilized to obtain both qualitative and quantitative information from residents of all three informal settlements under review. A semi-structured questionnaire combines some structured questions to obtain basic information with others that permit more flexible answers to convey ideas and perceptions in an open-ended manner (Desai

& Potter, 2006). Semi-structured questionnaires were handed over to individual households to obtain information on the food security status and the views of the residents on spatial planning and food production in the city. The questionnaires were handed to the respondents to complete them. However, in instances where the respondents could neither read nor write, the researcher sat down with them and interviewed in a language that they understood. The questions were simple, clear, and easy to understand. Open-ended and closed-ended questions were administered to allow the respondents to express themselves in more detail in certain instances. The questionnaires were also administered to farmers in the LCRFS (See Appendix Six).

3.8.2 Interview Guide

This is the second form of data collection method used in the study (See Appendix Seven). Interviews were held with the following key informants: the personnel from the local authority; traders; transporters; farmers; personnel from the civil service, line ministries and departments; and organizations such as the Lusaka District Agricultural office, livestock and fisheries, and the National Nutrition Commission.

3.8.2.1 Pretesting the Questionnaire and Interview Guide

Questionnaires and interview guides are not always perfect on first try. It is thus recommended to pretest them by administering them to a limited number of potential respondents to identify inherent problems and design flaws. Through pretesting, ambiguity in questions, problems of redundancy, question-sequencing issues, use of incorrect or difficult words, unanswerable questions, problems in skip patterns, and an estimate of the time it takes to complete the questionnaires were identified and worked on. The feedback received from pretesting led to the adjustment of the questionnaire and interview guide.

The questionnaire was first pretested on thirty respondents in a section of Mtendere East that was not part of the sample. This was done a month before the actual data collection was done. The findings from this pretesting led to the amendment of the questionnaires. The local authority interview guide was administered to the director of planning from the Kabwe municipal council who had previously served in Lusaka as a physical planner. Five traders at the Obama market were interviewed as pilots. The pretesting revealed that some questions were ambiguous and that the interview was too long. Thus, the interview guide was restructured to address those concerns. The questionnaire to the farmers was pretested at Kasisi Farm where more than 20 farmers were interviewed. This was done after a two-day familiarization workshop on the research tools for the data collectors.

3.8.3 Document Sources

The documentary method is a technique used to 'categorize, investigate, and interpret', as well as identify the limitations of physical sources (Payne & Payne, 2004). This method was ideal for the study because it allowed the researcher to systematically examine documents cost effectively and non-obtrusive; is effective for comparing or contrasting different sets of data; and most importantly, it addressed all four objectives.

The study used public documents from government departments such as the National Statistical Office (NSO), Ministry of Local Government and Housing, Ministry of Agriculture, Ministry of Lands, Acts of Parliament, by-laws, plans, and policies governing planning and regulating food production have been used for content analysis. Public documents are those documents prepared by the government, its ministries, departments and related entities and they come in the form of Acts of Parliament, policies, plans, by-laws, and other public records (Payne & Payne, 2004). These documents were extensively used as they are accepted as reliable and authentic sources of data. Other documents used were maps, the Lusaka Master Plan, and the URP Act, among others.

3.9 Data Analysis

Data analysis involves the arrangement, reduction, and synthesis of raw data to tell a meaningful story (Grbich, 2007). Due to the mixed method approach used in this study, several approaches were used for different types of data. Bar graphs and pie charts were used for descriptive statistic computations such as data on the food security status of Lusaka and responses from farmers and traders on the quantities and sources of foods that come into Lusaka. This provided a statistical explanation of the findings. Like pretesting of the research instruments before data collection, the data collected was inspected and cleaned for irregularities before data analysis. The qualitative data was analysed using content analysis and thematic analysis. The quantitative data was analysed using univalent analysis. Net mapping was used to analyse the characteristics of spatial planning and food security for developing the LFS map.

3.9.1 Reliability, validity, and trustworthiness

Reliability, validity, and trustworthiness of the data an important aspects in the success of any research conducted (Golafshani, 2003). The reliability of a particular method used is determined by its ability to produce the same results if used repeatedly. Validity on the other hand entails the extent of 'how truthful' results can be (Joppe, 2000; Kirk & Miller, 1986). The quantitative component of this study used these methods because they have been tested time

and time again and have proven their reliability and validity. Trustworthiness of the qualitative findings was assured through an inquiry audit where an independent outside person reviewed and examined the research process, discussions done and data analysis to ensure that the findings are consistent and dependable. Concerning the data collected from farmers, a workshop was held with various stakeholders to critically scrutinize the data set and identify the gaps. Thereafter, gap-filling data collection was conducted (Blimpo, et al., 2012).
Problems Encountered During the Research Process?

3.10 Problems and Limitations

The study had encountered some problems and limitations. The major problems and limitations to the study included:

1. **Data Availability:** Accessing comprehensive and up-to-date data on local food systems, spatial planning policies, and related socio-economic factors in Lusaka was challenging. As such limited data did restrict the depth and accuracy of the analysis.
2. **Stakeholder Engagement:** Engaging with various stakeholders such as government agencies, local communities, NGOs, and businesses is crucial for understanding perspectives and gaining support. However, conflicting interests, lack of cooperation, and difficulty in accessing key stakeholders was a challenge.
3. **Resource Constraints:** Conducting fieldwork, surveys, interviews, and implementing pilot projects required a huge funding which was not available.
4. **Complexity of Systems:** Local food systems and spatial planning are intricate, multifaceted systems influenced by diverse factors such as geography, culture, economics, and politics. Analyzing these interconnections comprehensively was challenge and required interdisciplinary collaboration.
5. **Policy and Regulatory Challenges:** Understanding the existing policies, regulations, and governance structures related to food systems and spatial planning in Zambia was essential. However, navigating complex policy frameworks, bureaucratic processes, and dealing with policy gaps posed obstacles.

3.11 Ethical, Legal and Administrative Consideration

Ethical clearance was obtained from the University of Zambia ethical committee. In as much as the study did not embroil collecting sensitive information that had the potential of going against people's rights and values, significant care was given throughout the process. The data collected was mainly for verifying whether planning systems, processes and the law recognize, support, or constrain city food production, transportation, and distribution. However, there

were areas where data on the food security status of households, including those in the informal sector was collected. This can be a sensitive matter as it concerns people's livelihoods. Care was therefore taken to safeguard the information obtained and ensure confidentiality so as not to risk the livelihoods of the residents.

The essence of ethical considerations is to protect the rights of all the participants taking part in the research (Orb, et al., 2001). Researchers must ensure that ethics are upheld from the inception of the research to the conclusion. To ensure professionalism on the part of the researcher for this study, the following under-listed ethical responsibilities guided by Welfel (1998:294) were adhered to:

1. Developing scientifically acceptable research instruments
2. Protecting the rights of the participants in the research process
3. Reporting of results fairly and accurately
4. And cooperating with colleagues and sharing research data

Other issues considered were obtaining ethical clearance for the study and upholding the general ethical principles such as informed consent, avoiding harm, confidentiality, and the use of data purely for academic purposes. Another ethical issue considered was originality – which called for the citation of all secondary data material used to avoid plagiarism, and manipulation of data collected. Permission was sought in cases that required the use of photography (Welfel, 1998).

3.12 Summary

This chapter discussed the methodology used for collecting data for the study. It revealed that a case study approach was adopted for the in-depth examination of Lusaka due to its conditions that allow for a thorough representation of the global South context. Because the enhancement of food systems in spatial planning is prone to subjectivity, examination and explanation at the expense of quantification and calculations, an embedded mixed methods approach was used since the study was more inclined towards qualitative The other component of the study however involved a quantitative examination such as assessing food systems and the food security situation in Lusaka among residents and determining the sources and quantities of food into Lusaka among the farmers and traders.

CHAPTER FOUR: RESEARCH SETTING

4.0 Introduction

The chapter gives a brief description of the research site which is Lusaka and highlights its linkage to the municipal boundaries of Lusaka and the Greater City of Lusaka. The description of the city is done from the trends of spatial planning both from the pre-independence and post-independence point of view.

4.1 Lusaka, Zambia

The study was undertaken in Lusaka, the capital city of Zambia. The city of Lusaka is more urban than any other city in Zambia. Lusaka's population density from 1980 to 2021 increased as follows: from 31.6 in 1980 to 45.1 in 1990; to 63.5 in 2000 and 100.4 persons per square kilometre in 2021(Central Statistical Office, 2013; UN, 2021). From the 2022 population census, the population density of Lusaka has increased to 140.1 persons per square kilometre making it the highest in the country which is followed by Copperbelt at 88 per square kilometre as indicated in figure 7 (ZamStats, 2022). Planning for Lusaka has been inadequate due to insufficient resources at the LCC (UN-Habitat, 2007). Some of the major problems in the city are a lack of serviced land; speculation on land; complex procedures and poor record keeping regarding land ownership and land use; inadequate human resources; the slow pace in issuing security of land tenure; the failure of master planning; an increase in illegal settlements; and political interference in land allocation (UN-Habitat, 2007, p. 6).

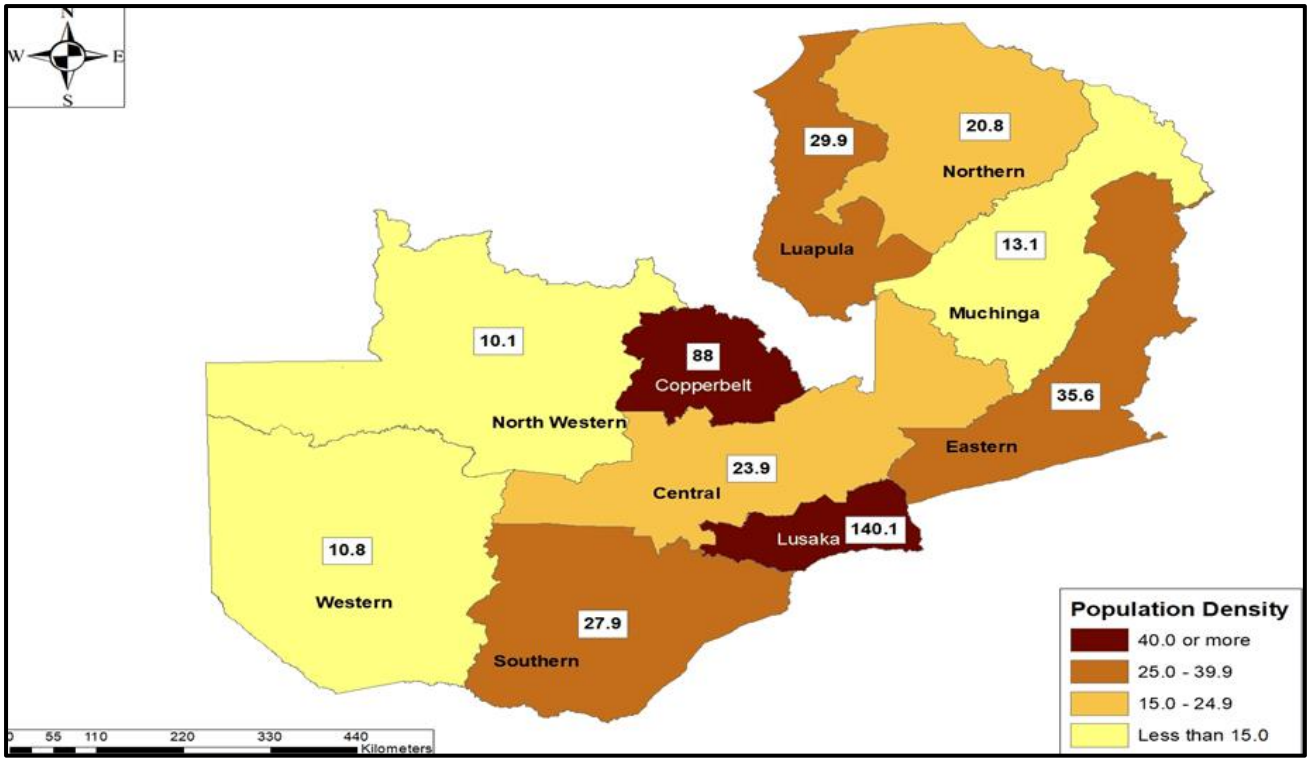

Figure 7: Population Density by Province, Zambia 2022
Source: ZamStats (2022)

Lusaka was originally planned by Professor Adshead's 1933 Garden City Plan. However, a lack of funding impeded Adshead's ambition to fully model a 'garden city' as originally prescribed and intended. Therefore, his plan was not formally adopted as a statutory plan under the Town Planning Ordinance of 1929 (Robert, 2013). Consequently, the city of Lusaka was planned as an administrative centre only – without regard for other economic activities as well as domestic and menial services. The Garden City model plan was limited to the landscaped central area around the Ridgeway habited by white colonial masters (Robert, 2013). This meant that industrial development, food production and population increase were not anticipated in Lusaka (Collins, 1969; Chileshe, 2010). Industrial activities were later included in the Lusaka Development Plan after modifying the original Garden City Plan (Chileshe, 2010).

After Zambia's independence in 1964, the Greek planning firm, Doxiadis was mandated to write Master Plans for at least 40 major urban areas across the country. They wrote only two for Lusaka and Kafue (Mata, 2019). Due to inadequate urban planners to assist with planning in Zambia during the first republic (the First Republic in Zambia was between 1964 after independence and 1991 when Dr Kaunda the first Zambian president left office), the plans were not put into effect (Siame, 2011). The Town and Country Planning Act of 1962 later provided a planning framework for Zambia, until it was repealed and replaced by the Urban and Region Planning Act No. 3 of 2015. After the Doxiadis plans, V3 - a South African company was

engaged to develop Integrated Development Plans (IDP) for the City of Lusaka. Currently, the city of Lusaka uses JICA's Master Plan.

Lusaka is situated at an approximate height of 1280 meters above sea level. The area is predominately flat with 375 km² of state land coverage. Lusaka's central location, in addition to its capital city status, gives it strategic importance as it is easily accessible from all parts of the country. Lusaka is experiencing typical urban problems associated with development such as population growth; high levels of urbanization and unemployment; lack of services; inadequate waste management; and increasing urban sprawl into agricultural land (Mulenga, 2016). Some of the notable agricultural land into which the city has sprawled includes sitting on both traditional and customary land such as into Chibombo district on the north, Lusaka west into Chilanga-Mwembeshi area, Chongwe on the east and Chilanga-Kafue on the south.

4.1.1 Trends in Tenure and Spatial Planning Landscape of Lusaka

4.1.1.1 Pre-Independence

To understand the trends in the tenure and spatial planning landscape of Lusaka, it is imperative to look at Zambia because Lusaka did not develop in isolation. Zambia's tenure has largely been influenced by her interaction with the British South African Company (BSAC) from 1899 to 1900 (Mulenga, 2016). Before this interaction, many of the territories that constitute Zambia were under the control of different tribal groupings such as the Lozi in the west, the Bemba in the north, Tonga in the south and the Ngoni in the east - among the other 72 tribal groupings. Following the tribal wars and slave trading that existed at the time, it was difficult for the indigenous Zambians to set up permanent urban centres. Thus, the land tenure system that existed was that of traditional/customary tenure in which each tribal grouping had a way of administering their land based on the traditional and cultural norms of their people.

The introduction of European colonial rule and the subsequent discovery of copper retrograded an already weakened country that was shaken by the slave trade and lacked major urban centres. This allowed the colonial government to easily push the local communities from prime land which they turned into state land - giving rise to a dual tenures in the country. This is why Zambian cities and towns date back only to the early 1930s. The country's urbanisation has largely resulted from the copper mining industry. This transformed the economy from a stagnant one driven by labour migration to the South African and Southern Rhodesian mines and farms in the early years of colonial rule to a vibrant economy based on a growing mining industry in the post second world war period (Gann, 1964; Hall, 1965). During that time, spatial

planning was governed by the Country and Planning Ordinance and the concept of Ebenezer Howard's Garden City by Professor Adshead. The Carden City Concept sought to bring country and urban together in the quest to make cities self-sustaining in food security (Williams, 1984). This led to the preservation of 15 hectares around the city for food production. Furthermore, Adshead planned Lusaka city as an administrative centre only, which meant that the original plan of Lusaka overlooked other economic-related activities, and industrial development, and did not account for a large African population (Collins, 1969; Williams, 1984).

Food production through industrial inclusion in the city was later introduced as part of the Lusaka Development Plan (LDP). The government planner then - J. T. Bowling who was tasked with planning the city adjusted Adshead's original plan by providing for both light and heavy industrial areas in the city. These included the areas between the current Church Road, the railway line and the Great East Road which were zoned as the light industrial area. The heavy industrial area was located on the western side of the Central Business District (CBD). The decision to place heavy industrial areas on the western side of the Central Business District shows a deliberate effort to separate industrial activities from commercial and administrative functions. It is important to note that spatial organization helps mitigate the potential negative impacts of heavy industries, such as noise, pollution, and traffic congestion, on the more central and economically vital parts of the city. The CBD was designated to be on the hilly and more attractive side of the city, which was the well-drained land, southeast of the railway line. Placing the CBD on the hilly and attractive side of the city suggests an emphasis on creating an aesthetically pleasing and economically vibrant centre. The CBD's location on well-drained land signifies a focus on infrastructure stability and resilience, crucial for the central hub of business and commerce. Figure 8 shows the historical land divisions in Zambia.

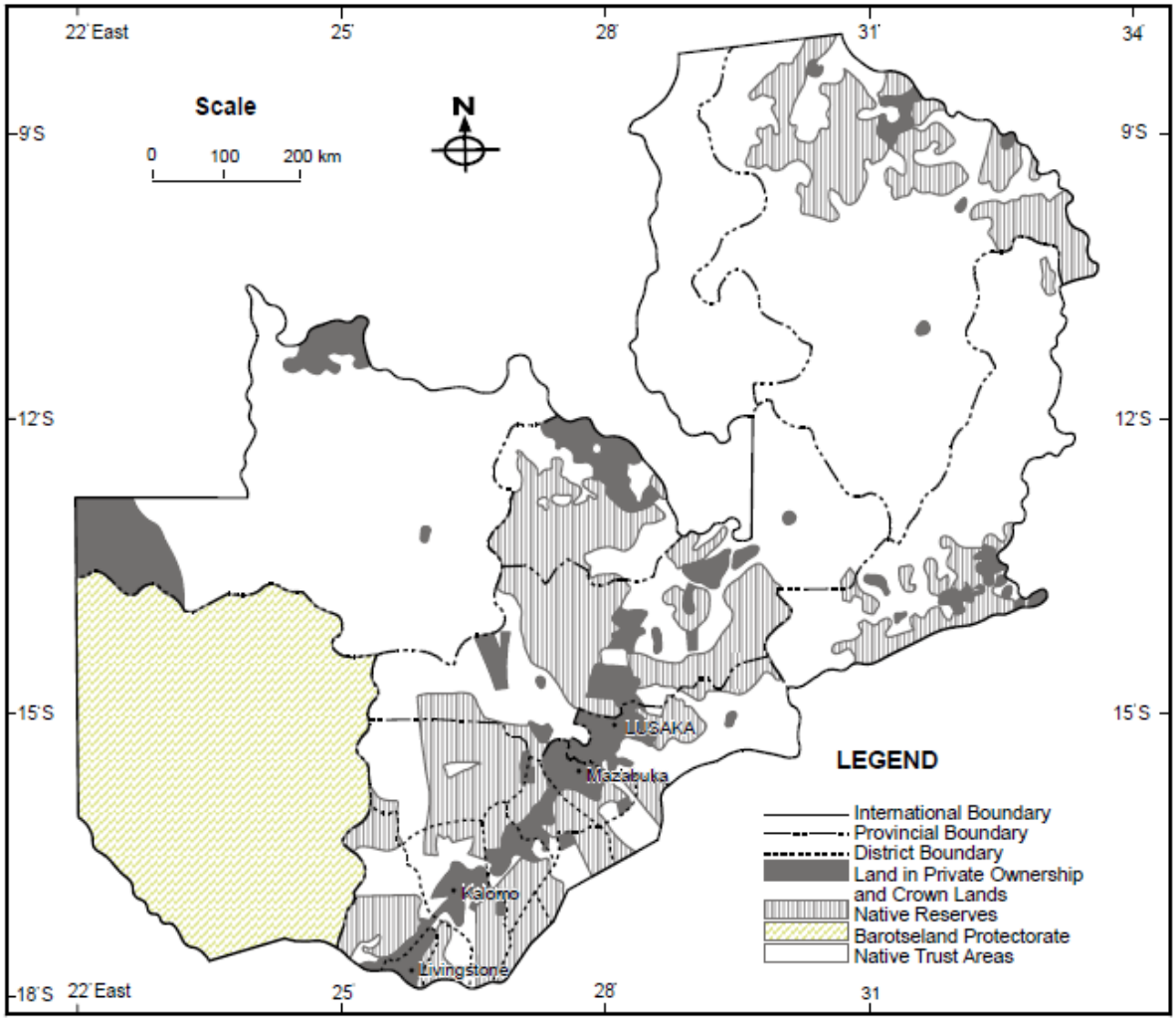

Figure 8: Historical Land Division in Zambia
Source: Davies (1972)

4.1.1.1.1 Establishment of Lusaka and the Early Food System: Adaptions from William G. J

The selection of Lusaka's location was not arbitrary but rather a result of strategic considerations deeply intertwined with the development of infrastructure and economic interests during the early 20th century. The imperative to establish sidings at 20-mile intervals along the single-track railway initially intended to connect the Copperbelt via the Hook of Kafue, played a pivotal role in determining Lusaka's placement. However, the presence of the Broken Hill mine near present-day Kabwe redirected this plan towards a more easterly route, thereby significantly influencing Lusaka's emergence (William, 1986).

Furthermore, the endorsement by the Administrator of North-Western Rhodesia, who highlighted the fertile farmland potential of the tableland near the escarpment, added weight to the decision-making process. It was in this context that a siding was developed at a location known as 'Lusaaka's', named after a minor Lenje headman named Lusaaka, whose modest

village, comprised of a few huts, stood by a small stream—now traversed by the Great East Road—a short distance from the current railway crossing (William, 1986).

Thus, the confluence of railway infrastructure necessities, economic imperatives, and favourable geographic assessments culminated in the establishment of Lusaka, a decision grounded in practicality and foresight, ultimately shaping the city's trajectory and significance in the region's history.

The genesis of Lusaka's food systems can be traced back to the early 1900s, a period characterized by the convergence of European settlers and agricultural endeavours in the region. Among these pioneers was Father Torrend, a Jesuit priest, who in 1906 established the Kasisi Mission northeast of Lusaka. This mission, which endures to this day, stands as a testament to early agricultural activity in the area and remains one of the principal agricultural producers in contemporary Lusaka (William, 1986).

Simultaneously, the first farm settler in Lusaka, situated in the Chilongolo area—now known as Makeni—marked the onset of agricultural settlement in the region. Noteworthy individuals such as G. B. Marrapodi, an Italian contractor, were pivotal in this early phase, receiving extensive land grants north and northeast of the siding, thereby contributing to the agricultural landscape's expansion. Additionally, the Dutch community's establishment in what is now Villa Elisabetta further enriched the agricultural tapestry of Lusaka during this formative period (William, 1986).

Figure 9 provides a visual representation of the farm boundaries that delineated the landscape at that time, illustrating the spatial organization and distribution of agricultural activities. Figure 10 shows the original extent of farmland. These early farm settlements not only laid the groundwork for Lusaka's agricultural heritage but also exerted a formative influence on the town's developmental trajectory, underscoring the intrinsic relationship between agricultural enterprise and urban evolution in the region.

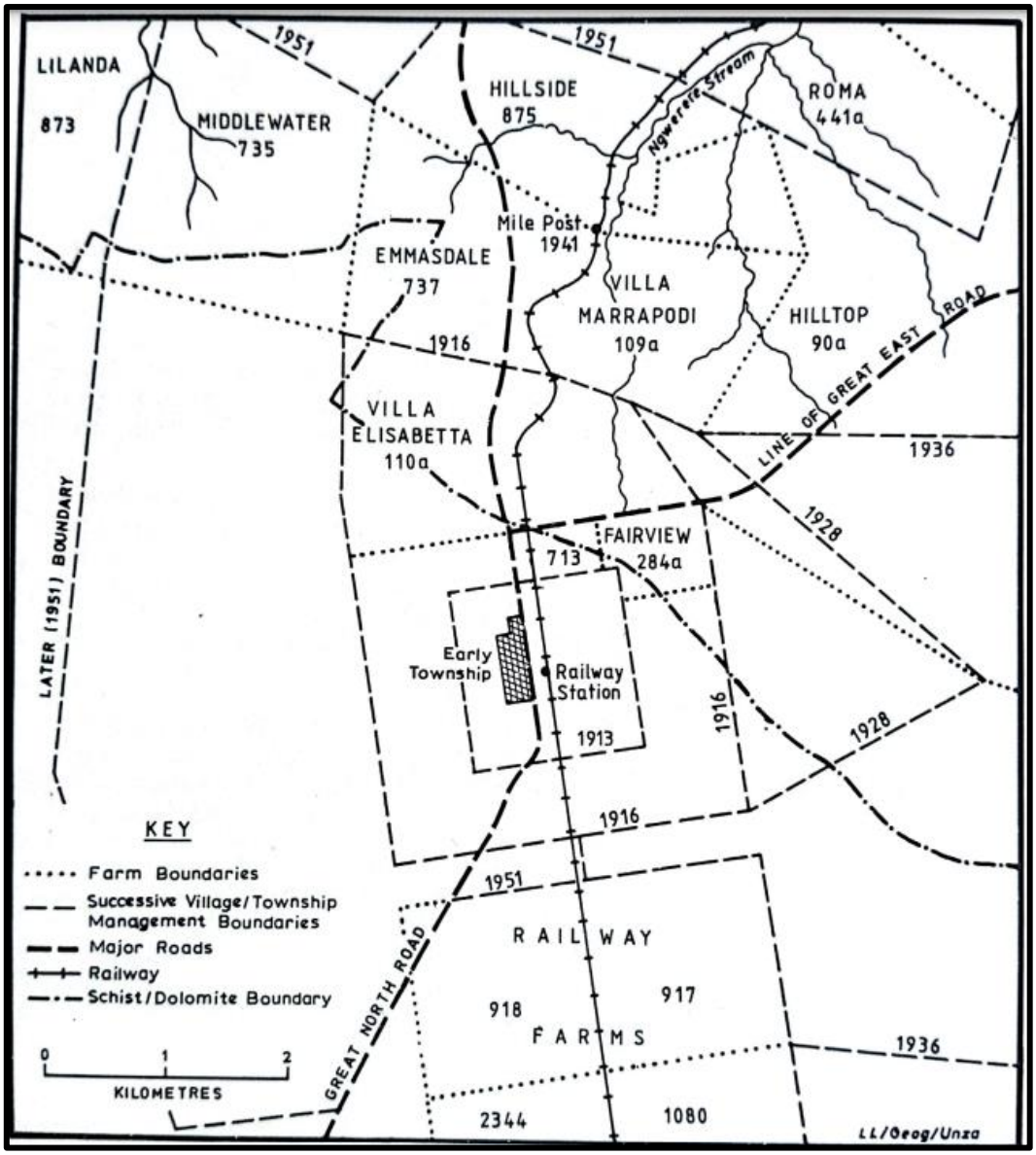

Figure 9: Farm Boundaries, Successive Administrative Controlling The Early Development of Lusaka
Source: William (1986)

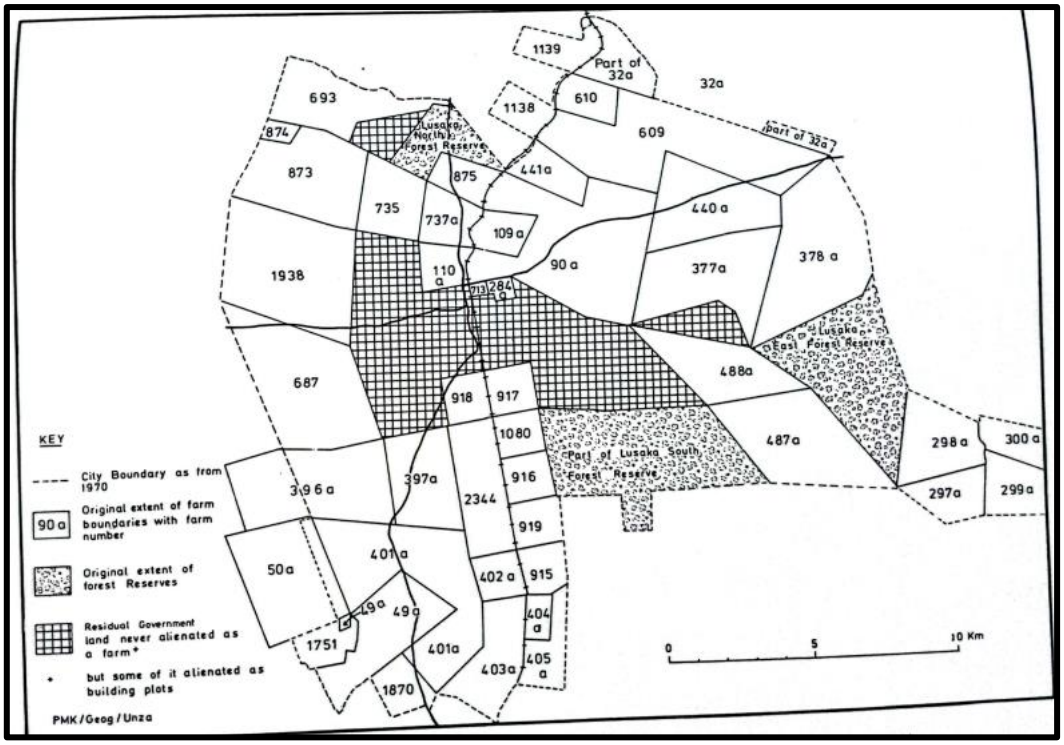

Figure 10: Original Extent of Farms and Residual Government Land within the City Boundary
Source: William (1986:97)

4.1.1.2 Post-Independence

In the post-independence period, Lusaka was one of the fastest-growing cities, not only in Zambia but in entire sub-Saharan Africa. Several factors contributed to this, among them the free movement post-independence; Lusaka's status as the capital which allowed it to retain the administrative functions governing the newly independent Zambia; and its strategic position as an international mediator for other countries that were not yet independent. Lusaka became the activity centre, hosting international conferences such as the Summit for the Heads of State of the Non-Aligned Movement held in Lusaka in 1970, which was followed by the Commonwealth Heads of State Summit in 1979 (Chileshe, 2010). These developments presented a housing problem which in turn affected food security. The housing units within Lusaka city could not accommodate the ever-growing population and thus led to the creation of informal settlements, coupled with weak legislation. Weakness in the legal framework, particularly the Statutory and Improvement Areas ACT of 1974 (since repealed and replaced by the Urban and Regional Planning ACT No. 3 of 2015) is a major contributor to informal settlements. Approximately, over 37 unplanned settlements have been regularised as "Improvement Areas", but the challenges remain enormous.

4.1.1.2.1 Spatial Landscape of Informal Settlements

Informality has a direct linkage to food insecurity in informal settlements. This is because most of the residents are not planned, thus posing challenges such as limited access to water and sanitation and other basic amenities; dilapidated or inadequate housing units; lack of proper health facilities; poor waste management; and limited land for UA. These conditions make the residents of unplanned urban settlements vulnerable to epidemics (Hampwaye & Mweemba, 2012). All these issues can be linked to spatial planning and land tenure. Presently, Lusaka alone has about 37 informal settlements dotted around the city. Some of the land that informal settlements are flood-prone, near to factories as well as some areas which were originally meant for agricultural purposes. In other words, informal settlements are in areas less desirable for residential occupation.

The informal settlements are home to approximately 75 per cent of the entire population of Lusaka - which translates to about 2,250,000 people (Mulenga, 2016). These settlements keep expanding at a faster rate than the rest of the city. To facilitate redevelopment and investment programmes in Lusaka, secure tenure for the residents of regularised unplanned settlements must be provided. Figure 11 depicts the location of both the formal and informal settlements in Lusaka.

Lusaka city is growing through urban sprawl into the hinterlands which are generally on traditional land that is exempt from planning intervention from the local authority. Through collaborative planning, the Urban and Regional Planning Act No. 3 of 2015 local councils and traditional leaders can plan together on traditional land. According to the findings, the continuous rise of informal settlements has compromised the spatial planning landscape of Lusaka as a district, city, and province. The findings point to the lack of political will in all successive governments since independence; the weakness in the legal and institutional frameworks such as the Town and country planning Act that previously governed all planning in the country; the Statutory and Improvement Areas Act; and a lack of enforcement of the laws and regulations by various stakeholders including the LCC, Chibombo council and Chongwe council as being responsible for the current state of affairs. These policies, legislation, and local councils are supposed to ensure that informal settlements do not develop in the manner and direction that they have, almost transforming Lusaka's landscape into a '*big slum'*.

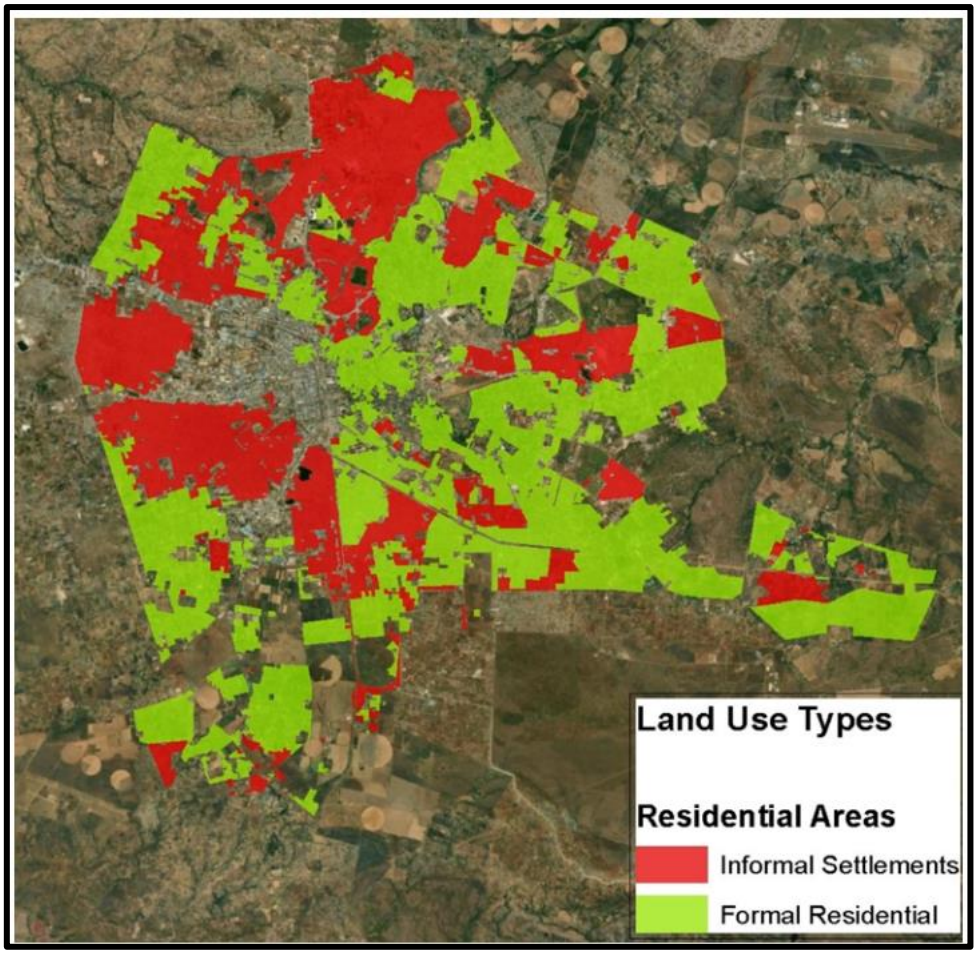

Figure 11: Location of Formal and Informal Settlements in Lusaka City
Source: Chiwele (2022)

4.1.1.1.2 Spatial Planning Legislation in Post-Independence Era

Historically, Zambia's planning framework was mainly composed of the British institutional and statutory frameworks which sought to redress urban development inequalities created before independence. When the planning legislation was reviewed in 1975, only minor changes were made by the Zambian government (Chitengi, 2015).

Guided by the leadership of His Excellency David Kaunda in 1964 after independence, Zambia adopted the Town and Country Planning Act (TCPA) (CAP 283 of the Laws of Zambia which has since been repealed and replaced by the URP of 2015) which was from the global north (specifically, the United Kingdom). This law was not adaptive to the global south scenario and as such, had implementation issues. To address those issues, Zambia introduced a significant change in the law governing planning by introducing the Statutory and Improvements Areas Act of 1976 (CAP 194 of the Laws of Zambia). The introduction of this law meant that parts of towns and cities would be expunged from adhering to the TCPA and that a more rudimentary planning system would be activated to accommodate the urban poor residing in informal

settlements. Furthermore, Zambia's adoption of a dual tenure system of land administration meant that the TCPA would only apply to state land, thereby excluding informal settlements. The application of laws governing planning, land use and development in Zambia was divided into three categories, namely, the TCPA to be applied on State land (which included areas within the boundaries of local authorities and privately held rural land); Housing (Statutory and Improvement Areas) ACT - which applied to areas declared as such, all of which are contained within urban areas and in which planning and land development are governed by the provisions of that Act; and Customary land, which forms most of the country and in which the powers of chiefs and traditional leaders to administer land use and development is enshrined in the 1995 Lands Act (the Republican President holds all land in perpetuity for and on behalf of the people of Zambia (section 3 (1) of the Lands Act of 1995)) (Berrisford, 2011).

However, Zambia changed its spatial planning framework in 2015 to one that focused on Integrated Development Planning (IDP). This change was because of the TCPA that was heavily based on a global north planning perspective that it failed to meet the needs of towns and cities of the global south. It was outdated and limiting, and therefore inoperable. There was a need for newer and more practical planning legislation that would cover the rural and urban areas. The result was the birth of the Urban and Regional Planning Act No. 3 of 2015 (URP). This new framework is based on three concepts, namely planning, regional planning and integrated development planning. The URP Act defines planning as:

> *'The initiation and management of change in the built, socioeconomic, and natural environment in, and across, a spectrum of sectors and urban and rural areas' (URP Act, 2015).*

It is, therefore, synonymous with town and country planning, 'physical' or 'land use' planning. On the other hand, 'regional planning' concerns the planning of:

> *'Two or more districts, two or more provinces or parts of different provinces for coordinating and facilitating the synergy of transportation and the institutional, environmental, infrastructural and socioeconomic activities for the attainment of sustainable development'.*

Integrated Development Planning (IDP) is defined as:

> *'A principal planning instrument to guide and inform all planning and development in the local authority and all planning decisions of a planning authority or a principal instrument*

that guides and inform all planning and development in a defined area and all planning authorities. The integrated development plans provide a basis for improved planning, land management and infrastructure as well as service provision' (GRZ, 2020).

Unfortunately, even with this new planning legislation, food production in cities or urban areas has been neglected. There is a lacuna in addressing food insecurity. The only other addition that somewhat allows for food production is the joint planning on both traditional and state land - in which case if well managed, traditional land has the possibility of being reserved for food production.

Apart from the Garden City, TCPA and URP, the other planning blueprint of Lusaka city was Constantino's Doxiadis. Doxiadis of 1979 replaced the original Garden City Concept. In this plan, an Ekistics (Name that derives from the ancient Greek term *oikizo* meaning "creating a settlement") (Nina, 2002) approach was adopted but later replaced with the Integrated Development Plan which was done by V3 Consulting Engineers of South Africa in the year 2000. However, this plan was never implemented. Through the Japanese International Cooperation Agency (JICA), the Japanese came up with the JICA's Master Plan in 2009, a plan Lusaka uses to this day. However, the LCC are developing their IDP which is still in draft form (Officer, 2022).

4.2 Residential Study Setting

The study focused on three informal settlements situated within the vicinity of Lusaka, namely Mtendere East, Kalikiliki, and Chazanga. Mtendere East (see Figure 12) is positioned on the eastern periphery of Lusaka, approximately 12 kilometres from the city centre. Encompassing an approximate area of 5 square kilometres, it constitutes a significant residential area within the region.

Kalikiliki (see Figure 13), situated in the southeastern part of Lusaka, is bordered by Ibex to the south, Mtendere to the north and west, and Mtendere East to the east. It serves as a pivotal residential enclave within the city, characterized by its strategic location and urban dynamics.

Chazanga, positioned in the northern precincts of Lusaka along the eastern stretch of the Great North Road, has evolved from its agrarian roots into a burgeoning residential settlement over time. Notably, the area exhibits a progressive increase in building density, particularly towards the southern direction, converging towards Lusaka's central business district, as well as along the Great North Road corridor.

The delineation of these three informal settlements underscores their unique geographical positioning and urbanization trajectories within the broader landscape of Lusaka, thereby having served as focal points for the study's investigative scope.

Figure 12: Mtendere East
Source: Open Street Maps (2023)

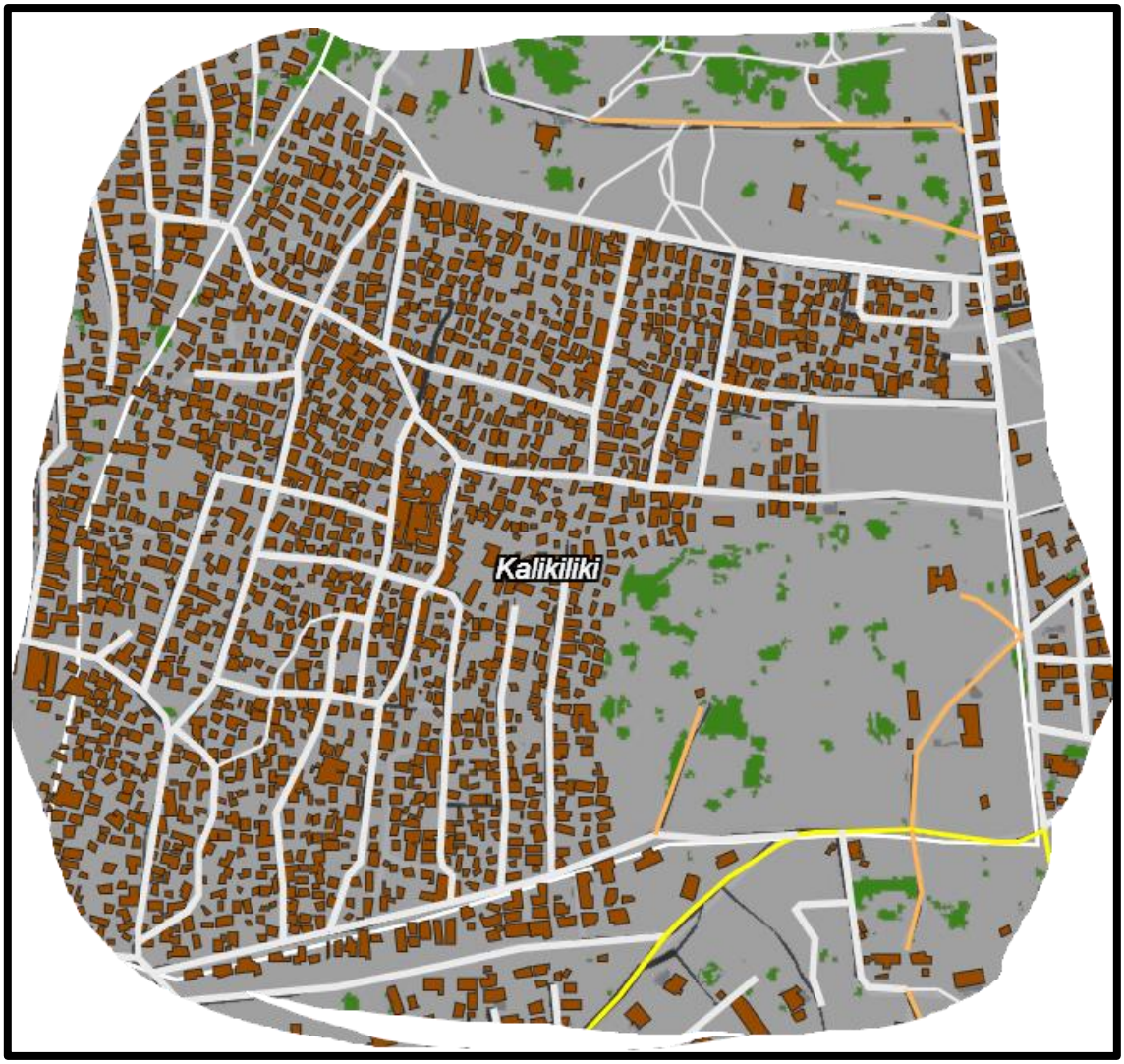

Figure 13: Kalikiliki Compound
Source: Open Street Maps (2023)

4.3 Summary

This chapter has highlighted the major characteristics of Lusaka City as the study area. In particular, it has examined the location of Lusaka, Population density, trends in tenure and spatial planning landscapes as well as the residential settings of the study. In this connection, the chapter has provided an understanding of the evolution, planning and growth of Lusaka from a 'garden city' to a metropolitan and the obtaining living conditions. In this regard, the chapter has shown town planning and design of land use principles, which date back to the colonial era influence the planning approach towards settlement formation.

CHAPTER FIVE: CONTEXTUALIZATION OF SPATIAL PLANNING LANDSCAPE OF LUSAKA

5.0 Introduction

This chapter gives an in-depth analysis of the spatial planning landscape of Lusaka, and it focuses on the first objective of the study. It discusses the following issues: Demographic trends of Lusaka, spatial planning in Lusaka Province, overview of Zambia's economy, constraints and supporting legislation to spatial planning; urban growth and physical land cover of Lusaka's informal settlements; strategic urban planning informing the spatial planning landscape of Lusaka; governance, politics and power relations shaping spatial planning in Lusaka; a summary of the spatial planning landscape of LCRFS; and finally, a summary of the chapter itself.

5.1 Demographic Trends of Lusaka

Although the census data for Lusaka date back to 1921, they are unreliable, because they only covered the European population comprehensively (William, 1986). The first population census that covered all racial groups was undertaken in 1931, the year when Lusaka was designated the new capital of Northern Rhodesia. The total population was 2,433 (William, 1986). Unfortunately, subsequent censuses excluded large proportions of the African population and only comprehensively covered the European population. As a result, the available population statistics on the city before 1963 when the African population was covered comprehensively for the first time ought to be treated as mere estimates. By 1946 the population of Lusaka had risen to 18,909 (Wood et al. 1986). The population was growing at an annual growth rate of 15 per cent. The African population in the city grew most rapidly after legislating the African Housing Ordinance in 1948. This ordinance granted the African population the right to reside in towns with their families. Before 1948 Africans were treated as temporary residents in urban areas. They were, therefore, only granted short-term employment contracts and urban residence permits, as they were expected to return to their rural homes at the end of their short employment contracts (Wood et al. 1986). African women and children were not allowed to accompany their husbands and fathers to urban centres. Despite the restrictions that were placed on the residence of Africans in urban centres, an urbanised African population emerged and Lusaka like other Zambian towns has always been predominantly an African city. In this regard, it is generally believed that Africans have always accounted for at least 80 per

cent of the population, while the European population has never at any time exceeded 20 per cent of the population (Wood et al., 1986).

In terms of urbanization, Lusaka city and towns on the Copperbelt like Kitwe and Ndola are the most urbanized in the country and have the highest population as indicated in Table 7 and Figure 14. However, Lusaka is by far the most populated town in Zambia in both population size and population density. Figure 15 and Table 8 depict Lusaka's population projection and growth rate, while Figure 16 depicts the population density (Lusaka City Council, 2022). The projection of Lusaka's population exceeding 4,000,000 people by 2030, indicates a substantial growth trajectory. This growth is driven by factors such as in-migration for employment opportunities and natural population increase. Such rapid growth poses challenges and opportunities for urban planners and policymakers. Urbanization in Lusaka is associated with increased economic activities, employment opportunities, and better access to services, making Lusaka an attractive destination for migrants.

Table 7: Lusaka's Population in Comparison with Other Cities 2022

Other Cities in Zambia	
City Name	**Population**
Lusaka	3, 093,615
Kitwe	735,000
Ndola	571,000
Livingstone	177,393
Chipata	327,059

Source: United Nations (2022)

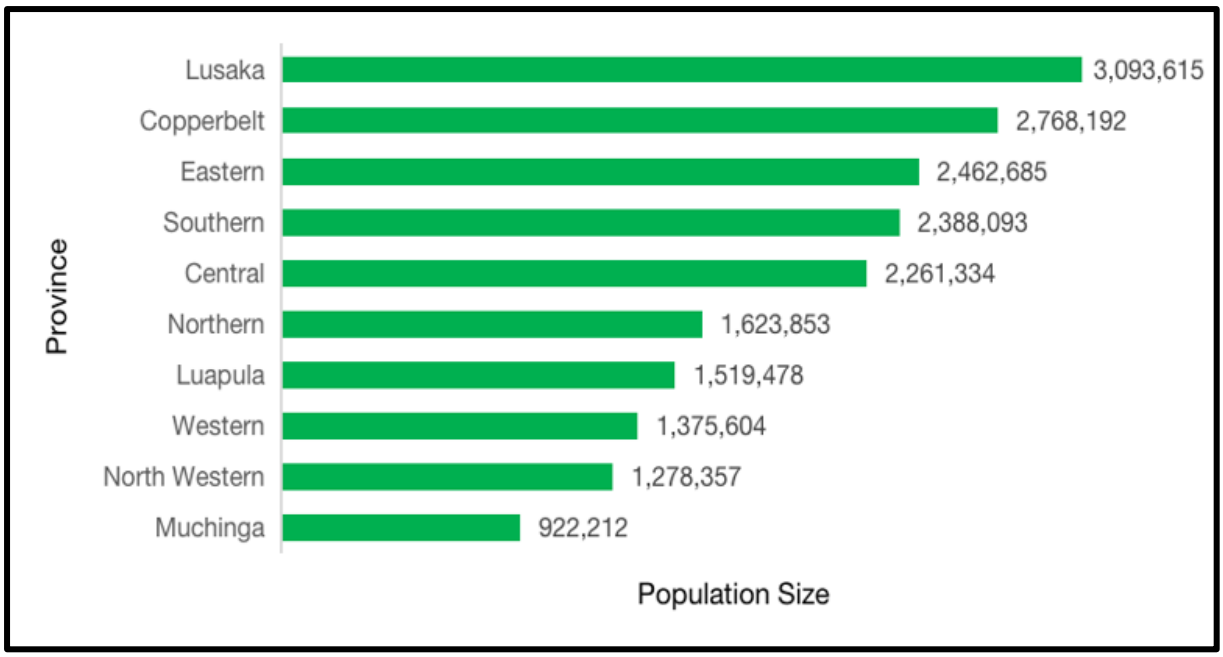

Figure 14: Population Size by Province 2022 Census
Source: ZamStats (2022)

Lusaka stands out not only as the most urbanized but also as the most populous town in Zambia. The high population density, as depicted in Table 8, underscores the concentration of people within a limited geographical area. This density places demands on land, infrastructure, housing, and services. When we zero down to land, the projection that Lusaka's population will spill over into nearby districts suggests potential urbanization trends beyond the city's administrative boundaries. Certainly, this may result in the growth of satellite towns or the transformation of peri-urban areas, which to some extent has begun. As such there is a need to strengthen coordinated planning at a regional level to manage such expansion effectively. Even as the population continues to increase, ensuring sustainable urban development is paramount. Spatial planners and policymakers must continue emphasizing factors such as environmental sustainability, social inclusivity, and economic resilience. Furthermore, balancing the aspirations of a growing urban population with the need for sustainable development is key for the long-term well-being of Lusaka and ensuring the production of food in proximity is paramount.

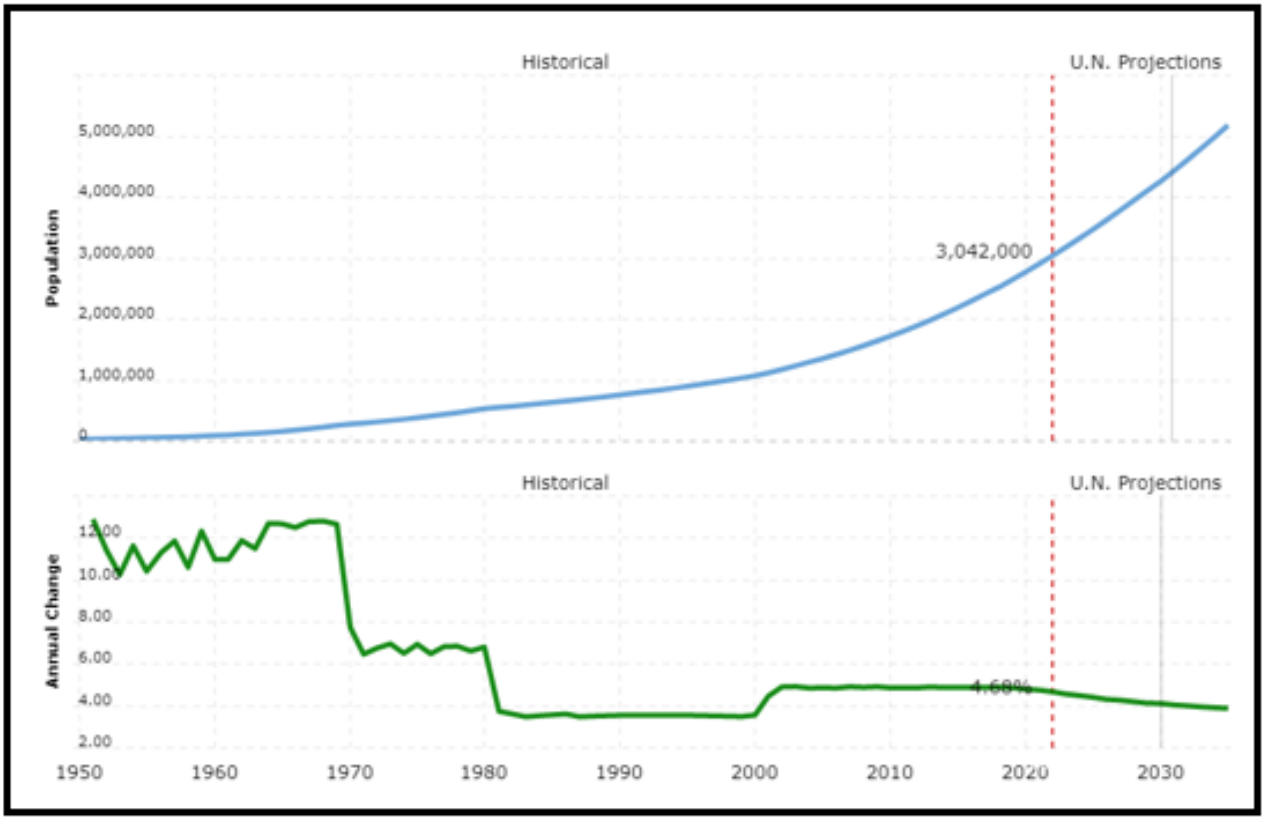

Figure 15: Population Projection and Annual Population Change for Lusaka City
Source: United Nations Population Projection (<ahref='https://www.macrotrends.net/cities/23277/lusaka/population'>Source) (2022)

Table 8: Historical Population and Growth Rate of Lusaka

Lusaka-Historical Population Data		
Year	**Population**	**Growth Rate (per cent)**
2022	3,042,000	4.68
2021	2,906,000	4.76
2020	2,774,000	4.80
2019	2,647,000	4.87
2018	2,524,000	4.90
2017	2,406,000	4.88
2016	2,294,000	4.89
2015	2,187,000	4.89
2014	2,085,000	4.88
2013	1,988,000	4.91
2012	1,895,000	4.87
2011	1,807,000	4.88

2010	1,723,000	4.87

Source: United Nations (2022)

5.1.1 Effects of Population Growth on Spatial Planning Landscape of Lusaka

The surges in the population of Lusaka have compelled significant changes to the outlook and functioning of the city's spatial planning landscape. Needless to say, this impact has been both positive and negative. Some of the notable contributions include:

1. **Urban Expansion:** As the population of Lusaka grows, there has been a continuous need for additional housing and infrastructure. This has resulted in the expansion of the city's urban footprint, leading to the development of new residential areas, commercial zones, and industrial districts such as the current Lusaka South Multi Facility Economic Zone (MFEZ).

2. **Infrastructure Development:** the expansion of Lusaka has necessitated the construction of roads, bridges, public transportation systems, water supply networks, and sanitation facilities. However, some of the newly commissioned residential areas such as Chalala, Obama, Madido, and Ranchdale, among others have been left out when it comes to water supply networks and sanitation as such resulting in sinking of boreholes and septic tanks which in some cases have been a health hazard. As such there is need for Spatial planning to adapt and accommodate these infrastructure developments efficiently.

3. **Zoning and Land Use Changes:** as aforementioned, the changing demographics in Lusaka have led to shifts in land use patterns. Zoning regulations have both formally and informally revised to accommodate the demand for diverse types of land use, such as residential, commercial, and recreational spaces with agricultural land been the most affected. This has been particularly relevant as the city expands and new areas are developed.

4. **Densification in Core Areas:** In response to population growth, informal settlements have experienced densification. This has been through construction activities in areas that have been idle for several reasons such as mixed-use developments.

5. Others are economic hubs and employment centres; social infrastructure and services; environmental considerations; and transport planning.

5.2 Spatial Planning in Lusaka Province

The trends of spatial planning in Lusaka province which have largely influenced the city can be from two broad time frames: before independence and after independence. Before independence, spatial planning in Lusaka and the country at large was determined by the lifestyle, legislation, and policies of the colonisers, whereas after independence, several changes occurred as observed in different government eras from the first republic up to the current republic.

5.2.1 Overview of Lusaka Province

Lusaka's evolution from a small town in 1913 to its current urbanized state represents a significant transformation shaped by various factors including urbanization trends, demographic shifts, and socio-economic dynamics. The expansion of Lusaka from its original size of 5 km in length and 1.5 km in width to its current coverage of 375 km² underscores the magnitude of urban growth experienced over the years (William, 1986). This historical progression of Lusaka's urbanization can be attributed to several key factors. Firstly, as the capital city of Zambia, Lusaka has served as a focal point for administrative, political, and economic activities, attracting people from across the country. This influx of population has been driven by rural-to-urban migration, as individuals and families seek better economic opportunities, access to services, and improved living standards.

Furthermore, Lusaka's strategic location and development as a transportation hub have contributed to its urban growth. The city's connectivity via road, rail, and air networks has facilitated trade, commerce, and investment, further fueling its expansion (JICA Study Team, 2009). Additionally, government policies and urban planning initiatives have played a crucial role in shaping Lusaka's growth trajectory, albeit with varying degrees of success and challenges. The increase in urbanization has been accompanied by a rise in population density, reaching 100 people per square kilometre as of 2010 and currently as of the 2022 census 140.1 people per square kilometre (as indicated in Chapter four). This high density underscores the concentration of people within Lusaka's urban area, resulting in pressure on infrastructure, housing, and public services. The challenges associated with rapid urbanization include informal settlements, inadequate housing, traffic congestion, environmental degradation, and socio-economic disparities. Above all the dwindling of agricultural land due to the city's expansion into land that was previously preserved for food production. Efforts to address these challenges have involved urban planning interventions, infrastructure development, provision of basic services, and initiatives aimed at promoting sustainable urban growth (Chiwele, et al.,

2022). However, effective urban management remains an ongoing concern, requiring coordinated efforts from government authorities, urban planners, civil society, and the private sector.

The city's diverse functions, including administration, manufacturing, and agriculture, illustrate its multi-functional role in the country. As the capital city, Lusaka is not only a political and administrative hub but also a centre for economic activities. The presence of manufacturing and agricultural activities emphasizes its contribution to the country's economic landscape. The mention of Lusaka as a major route connecting every part of the country underscores its importance as a transportation hub. This connectivity is crucial for trade, commerce, and the movement of people and goods across Zambia (Zulu, 2022). The provincial capital and district centre status further solidify its administrative and regional significance. The concentration of people in Lusaka reflects its attractiveness as a centre for opportunities, services, and employment. The city's growth and functions necessitate the development of infrastructure, including roads, utilities, and social amenities. The need for such infrastructure is particularly crucial given Lusaka's role as a provincial capital and district centre, where administrative functions and services are concentrated (Phiri, 2022).

While urbanization and growth bring opportunities, they also pose challenges, including issues related to infrastructure development, housing, and the management of population density. Sustainable spatial planning becomes crucial to address these challenges and ensure the well-being of the city’s residents. Considerations for sustainable urban development, infrastructure expansion, and addressing the diverse needs of the growing population will be essential for the city's continued success.

As indicated in Chapter Four, the existence of Lusaka at its current location was due to its position as a railway siding back in 1905. Lusaka was later turned into the capital of Northern Rhodesia in 1931 and maintained its status after independence. The city’s development dates to the mid-1930s, with its main function being a colonial administration. The city was also characterized by heavy industries and low-cost housing estates for African workers but with limited movements into Lusaka for the indigenous people. This kept the city’s population growth before 1964 modest. However, right after independence in 1964, Lusaka experienced an influx of local migrants, leading to a boom in construction. More unskilled and semi-skilled Africans migrated to the city, thereby causing a shortage of affordable housing (Mulenga, 2013; Zulu, 2022; Phiri, 2022).

5.2.2 Urban Growth and Physical Land Cover of Lusaka Informing Spatial Planning Landscape

As aforementioned in 5.2.1, when Lusaka was first established as a settlement in 1913 (before it became the capital city), the area was controlled by the Village Management Board under the dimensions of 5 Km long and 1.5 Km wide. The area was concentrated along the new line of rail (Mulenga, 2016). However, Lusaka as a town started growing when it became the capital city after Livingstone, thus fully utilizing its comparative advantage of a central position. Comparing the spatial planning landscape of Lusaka when it was first made a settlement to the current 373 Km², it has grown tremendously despite it still being one of the smallest districts and provinces. Figure 16 shows the expansion of the city boundaries from 1928 to 1968.

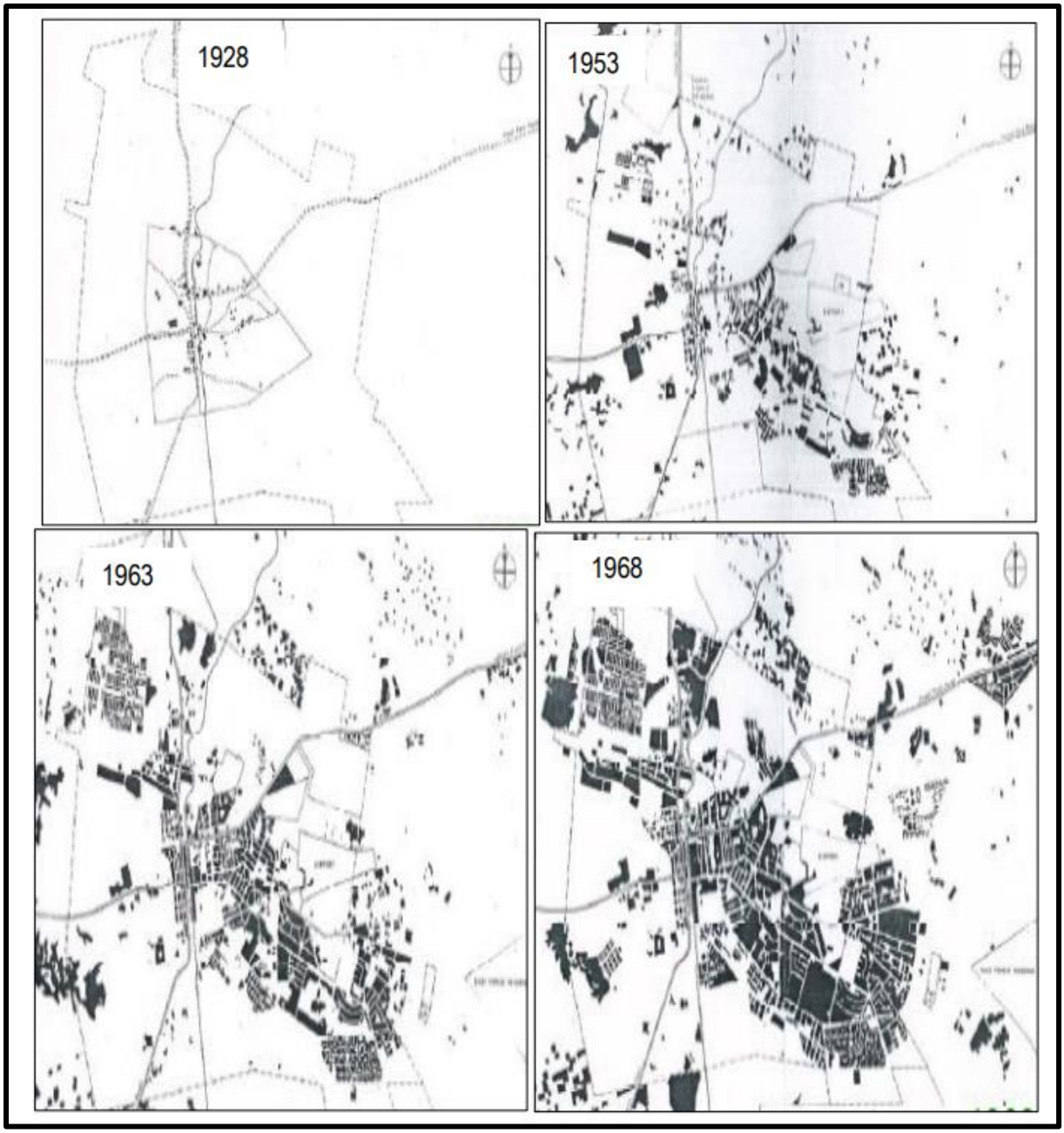

Figure 16: Spatial Planning Landscape of Lusaka between 1928 and 1968
Source: Shima (2010)

From the initial physical landscape, Lusaka was developed to be an administrative centre, modelled after Ebenezer Howards' Garden City Concept. The city was to accommodate only white settlers with limited movements from the Africans to prevent rural-urban migration and control the population and physical boundary. Figure 17 depicts the actual layout plan of Lusaka based on the Garden City Concept. Current trends of the city's appearance in terms of design, vegetative covers such as trees and grid pattern alignment of the old residential areas like Kabulonga are representative of the Garden City design.

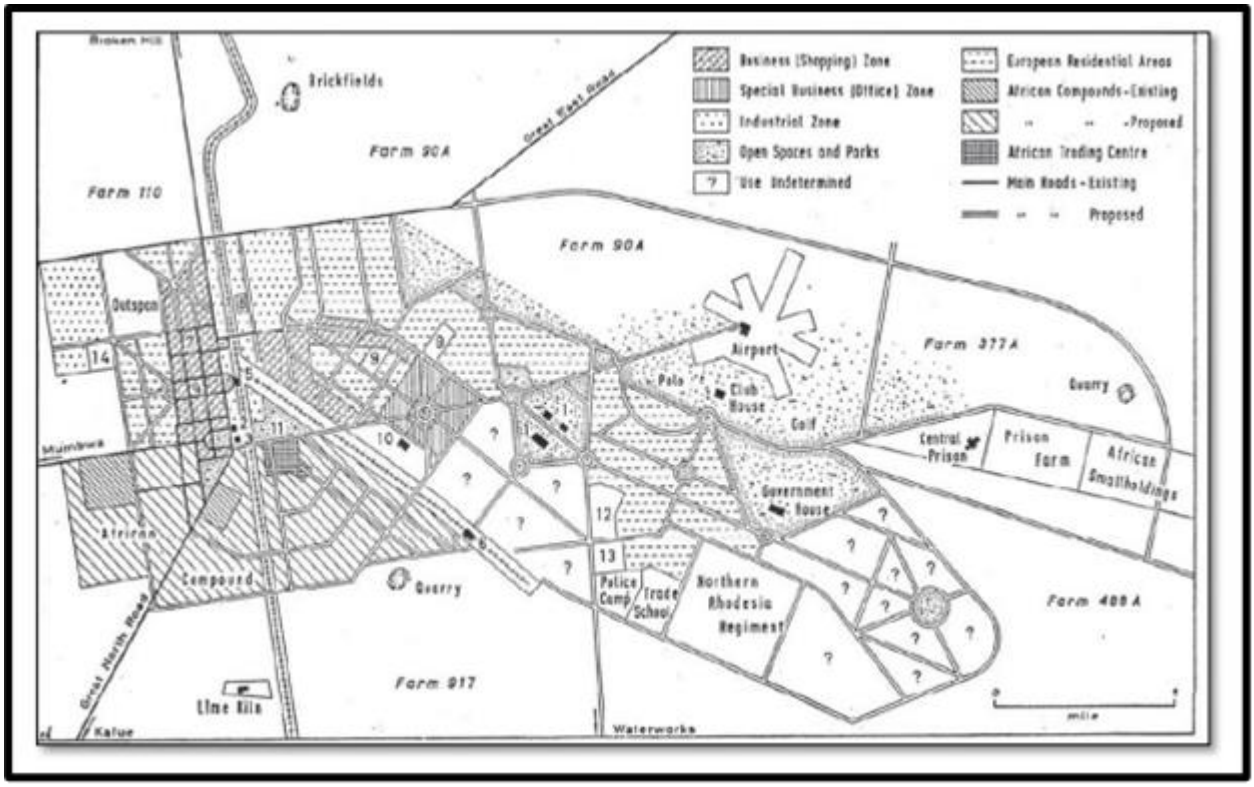

Figure 17: Original Layout Plan of Lusaka Designed on the Principals of Garden City
Source: Shima (2010)

Currently, the city is expanding outwards into the hinterlands which constitute the LCRFS. Using time series analysis of satellite imageries, the city has grown by 1,080 per cent from 1986 to 2014 (Phiri & Nyirenda, 2015). This increase has led to a decrease of cropland by 60 per cent and forest land by 92 per cent. From 2015 to date, the city has continued to expand outwardly into Chongwe on the east, Lusaka west, Chibombo on the north, and Kafue on the south despite the official boundary remaining the same.

> *"This status quo continues to present a problem as spatial planning is proving to be a problem due to overlaps among districts and between two different tenure types of Land customary and state land…" (Kamanga, 2022)*

The outwards growth of the city has seen built-up areas increase in size. On the western side, the built-up area has increased due to the presence of industries that inadvertently made it easy for industrial workers to build and reside near the industries. On the eastern and northeastern into Chongwe South and further west into Mwembeshi, most traditional land has been bought and turned into residential areas. In some cases, small holdings have been preserved for agriculture. Table 9 presents the Lusaka city land conversion matrix from 1986 to 2014, highlighting how that build-up area has increased by 1080.49 per cent while cropland has

reduced to -60.31 per cent. Figures 18 and 19 give a comparison of Lusaka city land cover distribution between 1986 and 2014. From 2014 to date, the built-up area has continued to increase further into traditional land surrounding the city which makes up the LCRFS.

Table 9: Lusaka City Land Cover Conversion Matrix, From 1986 to 2014

		Lusaka Area (Hectares)							
		Water	**Built-up**	**Cropland**	**Forest**	**Grassland**	**Savannas**	**Shrubs**	**Total**
	Water	**34.56**	1.98	0.63	0.36	13.05	0.54	27.09	**78.21**
	Built-up	7.29	**1,308.24**	57.06	0.27	12.87	0.81	58.77	**1,445.31**
	Cropland	27.09	10,737.09	**3,013.83**	36.27	3,518.91	209.25	2,878.92	**20,421.36**
	Forest	23.49	99.54	240.66	**32.76**	225.99	444.06	579.96	**1,646.46**
	Grassland	18.18	1,473.57	1,177.74	24.84	**2,070.99**	392.22	2,915.55	**8,073.09**
	Savannas	80.55	963.18	866.52	22.68	649.62	**913.59**	2,551.05	**6,047.19**
	Shrubs	14.58	2,478.15	2,748.15	12.96	851.04	49.14	**1,079.37**	**7,233.39**
	Total	**205.74**	**17,061.75**	**8,104.59**	**130.14**	**7,342.47**	**2,009.61**	**10,090.71**	**44,945.01**
	Growth	**163.06%**	**1080.49%**	**-60.31%**	**-92.1%**	**-9.05%**	**-66.77%**	**39.50%**	

Source: Adapted from Phiri and Nyambe (2015)

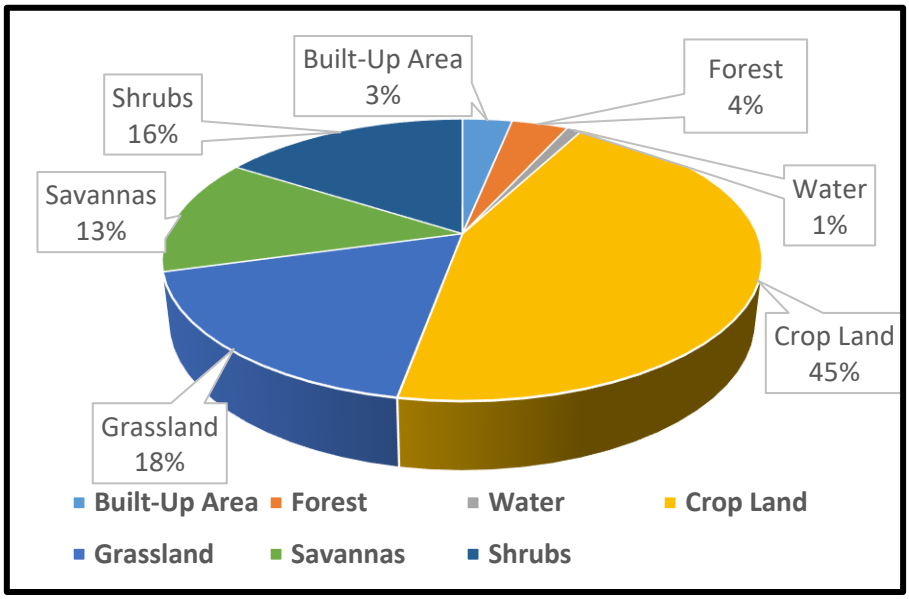

Figure 18: 1986 Lusaka City Land Cover Distribution

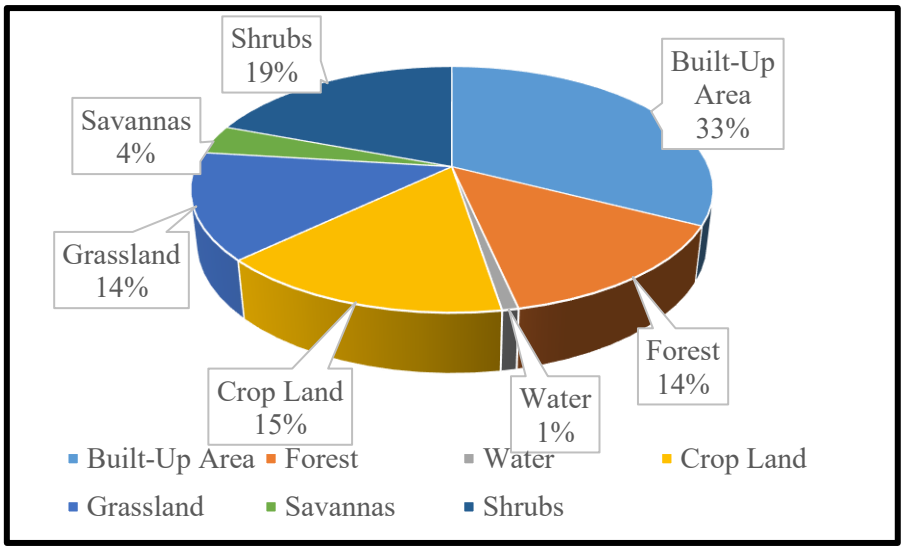

Figure 19: 2014 Lusaka City Land Cover Distribution

The changes in land use and land cover in Lusaka reflect a complex interplay of socio-economic, political, and environmental factors, as well as evolving policies and planning initiatives. The introduction of the Urban and Regional Planning (URP) regulations in 2015 marked a significant shift in land use management, allowing for the conversion of land from agricultural to commercial or residential purposes, albeit with certain restrictions such as limitations on agricultural conversion unless the land exceeds a certain size threshold. An example of a change of use notice is shown in figure 20. One notable consequence of these changes which were enhanced by the Statutory and Improvement Areas Act, is the proliferation of informal settlements, which now cover a substantial portion of Lusaka's built-up area. The high coverage of informal settlements, constituting around 30 per cent of the city's built-up area, underscores the challenges of informal urbanization and the prevalence of inadequate housing and infrastructure (Roy, 2005). This situation indicates a lack of comprehensive spatial planning and highlights the need for effective urban management strategies to address issues of housing, land tenure, and service provision in these informal areas.

Furthermore, the increase in commercial and industrial land use has led to the emergence of low-cost residential landscapes, as demand for housing in proximity to economic activities grows. This phenomenon reflects the dynamic nature of urban development, where land use patterns respond to market forces, policy interventions, and demographic trends. The spatial planning landscape of Lusaka, as depicted in Figure 21, illustrates the heterogeneous nature of land use across the city, characterized by a mix of formal and informal settlements, commercial and industrial zones, as well as green spaces and infrastructure networks. The highly unplanned

nature of the city, with 40 per cent classified as such, underscores the challenges of managing urban growth and ensuring sustainable development (Mulenga, 2016).

It is important to recognize that the land use dynamics of Lusaka are subject to continuous change, influenced by factors such as population growth, economic development, technological advancements and shifts in policy priorities. As such, effective land use planning and management mechanisms are essential for promoting orderly urban development, addressing social inequities, protecting environmental resources and enhancing the overall livability and resilience of the city. Furthermore, the evolving land use and land cover patterns in Lusaka reflect the complexities and challenges of urbanization in a rapidly growing African city. Addressing these challenges requires integrated approaches that balance economic development with social equity and environmental sustainability, while also ensuring the effective implementation of urban planning policies and regulations.

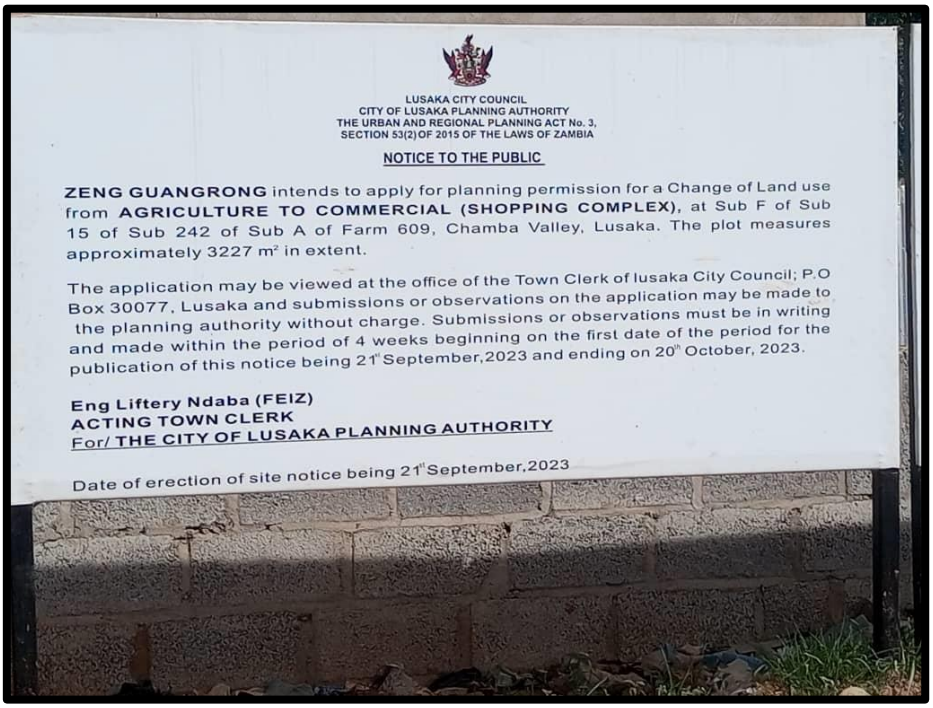

Figure 20: Change of Use Notice from Agriculture to Commercial in Chamba Valley
Source: Field Data (2023)

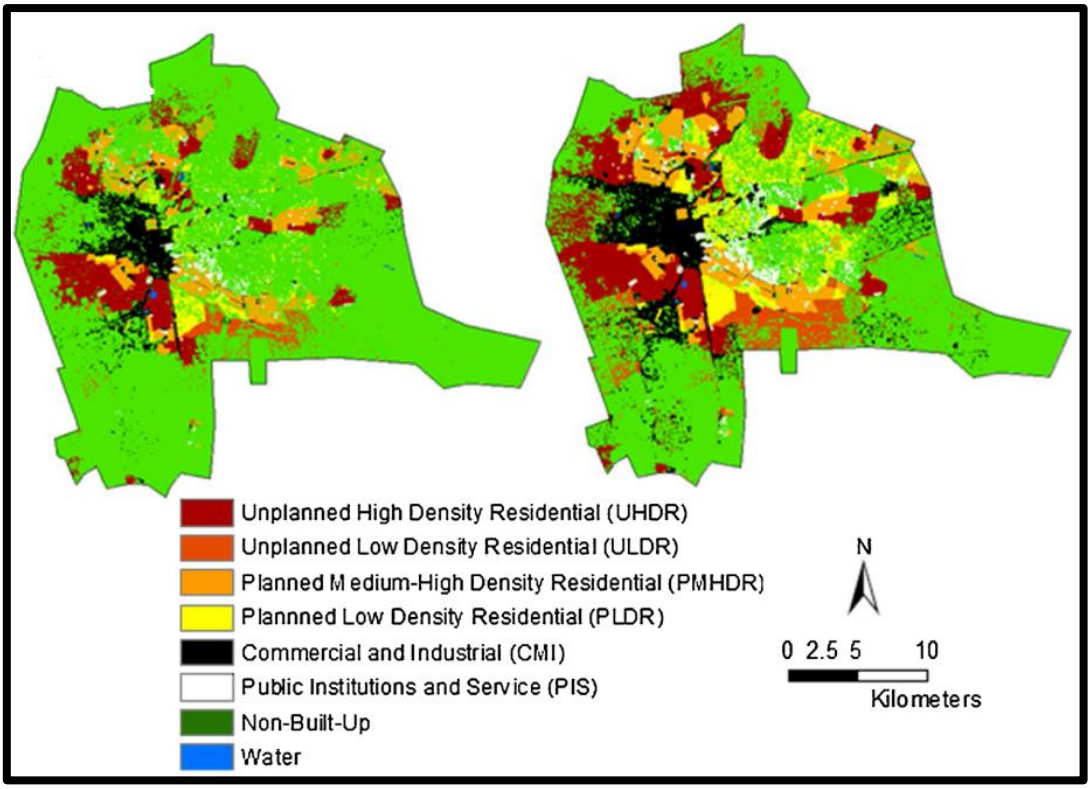

Figure 21: Spatial Planning Landscape of Lusaka 2005 (left) and 2022 (right)
Source: Adapted from LCC (2022)

It can further be noted that Lusaka's elevation at approximately 1280 meters above sea level and its central location in Zambia make it a significant hub. The central location enhances accessibility from all parts of the country, contributing to its prominence as the capital city. Lusaka, like many sub-Saharan African cities, faces urban shocks, including the spread of pandemics such as Cholera and Covid-19. The concentration of people in urban areas, coupled with challenges in sanitation and healthcare infrastructure, has contributed to the rapid spread of infectious diseases such as cholera. Furthermore, Lusaka is characterised by high rates of unemployment which is a clear indication of economic challenges. As such, addressing unemployment is crucial for the city's social and economic well-being. Strategies related to job creation, skills development, and economic diversification may be essential to mitigate this challenge.

The other characteristic that’s worth noting is the aspect of inadequate access to services. Access to basic services, including water, sanitation, and garbage collection, is an issue in Lusaka. Inadequate infrastructure and service provision has led to public health concerns and impacts the quality of life for residents especially those of informal settlements. Improving these services is vital for sustainable urban development. Furthermore, the continued growth

of informal settlements is a challenge in Lusaka. These settlements often lack proper infrastructure and services, leading to issues such as poor sanitation and inadequate housing. Addressing the needs of informal settlement residents is critical for inclusive urban development which is a mandate of the spatial planners among other players.

The environment of Lusaka city is characterised by uncontrolled quarrying which occurs closer to residential areas and areas meant for food production such as the western end of the city. This has led to the dilapidation of locations, loss of fertile land, and environmental degradation. The key drivers increasing illegal quarrying include lack of meaningful employment hence the high levels of poverty, high levels of construction that create a readily available market for the quarry, and a lack of planning and political will among the two local authorities in Lusaka and Chilanga districts.

Furthermore, it should be noted that the water utility company for Lusaka (Lusaka Water Supply and Sanitation Company - LWSC) province has failed to deliver on its mandate to provide water, especially in the new residential areas that are not connected to their water reticulation system. This gives rise to unprecedented levels of borehole drilling, giving access to unsafe drinking water, especially in informal settlements and other high-density residential areas where sanitation facilities and boreholes are in proximity. Additionally, the city is characterised by water stagnation, leading to the spread or transmission of water-related diseases such as cholera and malaria. It should also be noted that due to the UA's use of chemical fertilizers that cause environmental pollution, the well-being of the citizenry is negatively affected (Mwamba & Peng, 2020; Zulu, 2022).

Road networks are another aspect that influences the spatial planning landscape of Lusaka. Given its status as the urban destination centre for commerce, Lusaka has many roads that connect it to different parts of the country. The city's road network has both tarred roads (with high-grade bituminous) and all-weather gravel roads. Other transportation routes in the city are air and railway. The fact that major routes have not changed since 2006 suggests a certain stability in the overall road network layout. This stability has had implications for urban planning and development strategies over the years. However, parts of the city have undergone improvements and upgrades. These developments include road widening, surface improvements, and the introduction of modern traffic management systems. A notable aspect is that of the opening of the ring road and the decongested project that has seen several roads widened and in small cases flyover bridges created. This status quo has helped ease the traffic

flow within the city and has thus reduced the cost of doing business. However, despite these improvements to the roads in the city, some of them are already in a deplorable state such as the ring road.

5.3 Overview of the Zambia's Economy

Zambia's economy has over the years faced a combination of both challenges and opportunities. Just like the economy of the world over, the Zambian economy has been changing over the years due to several factors that are either locally or globally influenced. However, Zambia's economy is largely dependent on copper mining. Copper exports traditionally account for a huge part of the country's export earnings and government revenue. The mining sector plays a crucial role in driving economic activity and employment. Over the years this sector has since seen both problems and prospects. Zambia is one of the world's largest producers of copper. The country is so dependent on copper that fluctuations in global copper prices directly change the country's economic performance. This dependence is also seen in the changes in copper prices influencing government revenue, export earnings, and overall economic stability (Aluga & Kabwe, 2009).

Apart from copper mining the second contributor to the Zambian economy is the agriculture sector. Agriculture is an important sector in Zambia, employing a substantial part of the population. The country produces crops such as maize, tobacco, and sugarcane. Agriculture also contributes to both domestic consumption and exports. Due to Zambia's central location and being a land linked country, it has a huge market of agricultural produce in the entire region in countries such as Congo, Angola, Malawi, and Zimbabwe, among others (Chirisa & Matamanda, 2016).

It is also worth noting that Zambia has faced economic challenges, including fiscal deficits, important levels of public debt, and external pressures over the years. The country's debt situation has been a concern, leading to negotiations with international creditors and discussions about debt sustainability and restructuring. This high rate of debt has also contributed to rise in poverty and inequality (Chirisa, 2008). As a country, Zambia continues to face issues of poverty and income inequality. However, certain economic development efforts have been put in place to try and address issues of poverty and inequality including infrastructure development which has been a focus for Zambia. This is through investments in various areas such as transportation, energy, and telecommunications. Improving infrastructure is crucial for economic growth and attracting foreign investment. The other effort is that of

diversifying the economy. There have been efforts to diversify the economy beyond copper mining to reduce vulnerability to fluctuations in commodity prices. Diversification strategies often involve promoting sectors such as agriculture, manufacturing, and tourism (Duminy, 2018).

Other efforts to reduce poverty and inequality can be seen through foreign aid. The country has received support from international donors and financial institutions to address economic challenges. Foreign aid and investment play a role in supporting infrastructure projects, economic reforms, and poverty reduction initiatives. Furthermore, the country has experienced political transitions, and economic reforms have been implemented to address challenges and promote sustainable economic development. Policy decisions, governance structures, and regulatory frameworks which are critical aspects of these reforms (FAO, 2019).

Through regional integration, the country has also sustained its economy. Zambia is part of regional economic groupings such as the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA). Regional integration efforts aim to enhance economic cooperation and trade.

5.3.1 Economic Characteristics of Lusaka

Lusaka Province ranks second in terms of economic productivity. The first is the Copperbelt Province - although debatable given the yearly fiscal performance of the provinces. Lusaka has several processing and manufacturing industries which makes it a hub for the provision of goods and services. Due to its high population, Lusaka has a readily available market for various commodities such as agricultural products from other parts of the country, including Central and Southern Provinces and the country at large. The city's most important industries are manufacturing, financial, transport, and retail businesses. As of 2016-17, approximately less than 10 per cent of the total population of Lusaka was in a formal type of employment. This was primarily due to the fewer job opportunities against the huge population. In line with the liberalization of the economy in the second republic, the private sector stepped up to fill this gap (UN-HABITAT, 2007).

The role of Lusaka as a link between rural and urban centres in Zambia is crucial, primarily driven by its status as the capital city. This linkage has created a significant market for agricultural produce and other goods and services, turning Lusaka into a prominent trading centre. However, the impact of urbanization and spatial planning on agriculture, particularly urban agriculture (UA), presents both opportunities and challenges. Lusaka has also enhanced

the linkages between rural and urban centres, for instance, Lusaka has provided a farm market produce particularly those from rural areas (UN-Habitat, 2007). This may have been observed through Lusaka facilitating the creation of a substantial market for farm produce. Furthermore, it has been observed that rural farmers benefit from the urban demand, contributing to increased economic activities in both rural and urban areas especially the immediate surrounding eight districts. Apart from providing a market, Lusaka has also created trading centres and employment. It can be noted that Lusaka's role as a trading centre is a key driver of employment, with many residents engaged in various aspects of trade and commerce. The economic significance of the city is highlighted by its ranking as the second-largest employer, trailing only the government.

The performance of the construction sector, on the other hand, has mirrored the performance of the overall economy. The construction sector has, therefore, performed sturdily when the national economy has been buoyant and declined during the years of economic stagnation and decline (Mulenga, 2016). Although the statistics are not available, the construction sector in Lusaka performed relatively well in the late 1990s. It was helped by the rehabilitation of the major roads and the construction of new housing estates and conference facilities (GRZ 2002). The primary economic activities, especially agricultural and mining activities have been on the decline, as more of the city’s land has become built up. The financial and commercial sectors, on the other hand, are large and account for most of the financial and commercial activities in the country.

Although the economy of the City of Lusaka is somewhat more diversified than the national economy, like the national economy, it only provides formal employment to a small proportion of its labour force. The Integrated Development Plan for Lusaka, for example, set the number of people in formal employment in Lusaka at 120,233 or 35 per cent of the labour force (V3 Consulting Engineers, 2000). The majority (65 per cent) 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. The bulk of the informal economic activities are, however, essentially in trading. The low proportion of the labour force working in the formal sector has a bearing on the welfare of the residents of the city and will be discussed in the second section of the paper, which analyses slums and welfare (Mulenga, 2016).

The economic characteristic of Lusaka has also been influenced by the dwindling hope for food production. This has been worsened by the challenges that UA has undergone. Some of the challenges include the reduction of land for agriculture due to grey development, and the competition for limited space between residential, commercial, and industrial developments. This has thus impacted the status of food security. Hence the notion that urbanization reduces available land for agriculture and impacts the city's ability to sustain its food needs through local production has led to an increase in the dependence on external sources for food. This comes at the expense of Lusaka being a signatory of the Milan Urban Food policy pack which encourages cities to produce food for themselves. It is equally important then to ensure a balance between development and agriculture. This can be achieved through urban planning strategies striking a balance between urban development and the preservation of land for agriculture as well as ensuring that policies that promote sustainable land use are championed. It would also be important to incentivize urban agriculture as well as CRFS through community gardens, rooftop farming, and other innovative approaches.

Lusaka's role as a bridge between rural and urban centres has undoubtedly fueled economic activities and employment opportunities. However, the encroachment of grey development on agricultural land raises concerns about the sustainability of local food production. Addressing these needs careful urban planning considers the importance of agriculture, both in terms of economic contributions and food security. Balancing urban development with the preservation of agricultural spaces is essential for the long-term sustainability of Lusaka as a thriving and self-sufficient urban centre.

Finally, the city’s cost of living is expensive for most residents. An assessment of the food basket consisting of the major foods that a family of five living in Lusaka in March 2022 stood at K9,411.50 (JCTR, 2022). Low-income households who are the majority buy mealie meals (Zambia’s staple food) in 0.4kg packs instead of 25kg sacks. This increases the price per kilo by 31 per cent. It is the same for other necessities such as soap, sugar, cooking oil and salt (JCTR, 2022).

5.3.1.1 Current Interventions to the Restoration of Lusaka

The urban environment of Lusaka is in dire need of protection considering that it is home to a large population and abundant natural resources. It is important that the initial planning framework of the “Garden City Lusaka” be implemented. The literature revealed that the

MLGH (2009) identified the strategies for urban environmental protection and green network development, and these are:

1. To deliver an urban environment protection and a green management program to formulate strategic interferences for environmental protection.
2. To establish a sustainable urban design that protects the natural reserve forest and prevents damage to natural habitats and biodiversity.
3. To formulate a "green belt zone" maintaining mainly agricultural land and other natural green spaces, functioning as a buffer for urban sprawl and environmental and recreational networks.
4. To formulate a spatial network for an urban green environment (river green, street green, open space, and suburban agricultural belt) and recreational activities (parks and walkways or cycling lanes); and
5. To empower local communities' activities in a participatory manner for environmental improvement, especially for waste management and energy (charcoal) issues. There is an emphasis on giving a listening ear to residents of improvement areas by listening to their needs when developing the strategies for settlement development.

5.4 Constraints and Supporting Legislation to Spatial Planning Landscape of Lusaka

Zambia ranks among the most urbanised countries in Africa with about 45.76 per cent of the urban population (ZamStats, 2022). About 16 percent of these reside and will continue residing in Lusaka. As with any developmental function, planning in Zambia and Lusaka to be specific has often faced several constraints such as:

1. Inadequate financial resources to collect data and engage community representatives and key stakeholders.
2. Inadequate technical staff at both the artisan or technician level, physical, environmental, or socio-economic level.
3. Lack of a transfer system where members of staff are related to different councils regularly.
4. Limited infrastructure, tools, and data storage facilities to promote institutional memory.
5. Missing spatial, socio-economic, and environmental data and information that could facilitate efficient decision-making. This is because some of the districts are newly created (post-2011) and have only been operationalized in the last five years. This issue

also relates to the first and second constraints about financial and technical inadequacies to facilitate regular data collection and updates.

The local authorities who are the custodians of the city are supported by several legislatures in undertaking planning functions. Some of these legislations are:

1. The Local Government Act No. 2 of 2019 empowers local governments to undertake many functions that affect urban development.
2. The Public Health Act Cap 295 provides "… for the prevention and suppression of diseases and generally to regulate all matters connected with public health in Zambia".
3. The Environmental Management Act No. 12 of 2011 provides for integrated environmental management and the protection and conservation of the environment.
4. The Rating Act and the Rental Act also affect housing development and ownership.
5. The Disability Act of 2012 among other things is meant to "ensure accessibility by persons with disabilities to the physical, social, economic and cultural environment".
6. The Planning and Budgeting Acts which give clear mandates and responsibilities in a decentralised approach to planning for development.
7. Other legal instrumentation such as the Water Supply Policy of 2010.
8. The Sanitation Act; and
9. The Equalisation Fund which facilitates the retention of planning staff and planning processes such as IDP and local area planning process.

These govern and provide the framework within which service and land provision are rendered. It is from these legislations that local foods can either be enhanced or further ignored in spatial planning.

5.5 Strategic Urban Planning Informing Spatial Planning Landscape of Lusaka

From a global perspective, strategic urban planning was first pioneered around the 1970s and 1980s in the global north. The essence of strategic planning was to create a framework aimed at providing panaceas in the distribution of resources. This was in tandem with the comparative advantage of the cities based on what or where the opportunities and threats at both national and international levels were (Bryson & Roering, 1987). Lusaka City's current plan is based on both master planning and some form of strategic planning through the URP. However, it should be noted that strategic urban planning has a more robust aspect to it than the Master Plan, specifically regarding land use regulation and infrastructure requirements. These are the

factors that can ensure that food systems are a part of the entire CRFS. With strategic planning, collaborative planning is emphasised as a means of meeting desired goals of cities like Lusaka (Albrechts, et al., 2017).

Before the adoption of the URP of 2015, Lusaka still used the colonial legacy of modernist planning inherited from the British town and country planning tradition through the TCPA that governed planning until 2015. A semblance of that colonial legacy is the physical planning approach which has the zoning feature of the physical space. Zoning has created spatial segregation which has led to the continued growth of informal settlements - especially in the city's hinterlands which should be reserved for food production as indicated in the initial Garden City concept. Similarly, the use of a dual land tenure system has immensely contributed to the spatial segregation that grows stronger each day (Taylor, et al., 2021). This has been done in so many ways including through Social Inequality where different groups within the broader LCRFS have had access to and control over land through separate systems. This has thus led to social inequality, as one group may have more rights, privileges, or opportunities related to land than another especially where women are concerned. Economic Disparities are another aspect that dual land tenure has brought about. This is observed through one system providing better access to resources, infrastructure, or economic activities, it has led to economic disparities between the areas governed by different land tenure systems.

The spatial planning landscape of Lusaka city is also influenced by the formulation of the Integrated Development Plans (IDP) which are mandated by the URP of 2015. At the time of this study, the Director of Planning for Lusaka stated that Lusaka's IDP was still in draft form as a result they were still using the JICA Master Planning. However, before the URP Act, the notable strategic plan that guided the landscape of Lusaka was the 1999-2004 strategic plan which was later replaced by the 2010-2015 strategic plan. Currently, decentralisation has been championed as a way of empowering the local authorities in matters relating to decision-making and finances. The creation of the Constituency Development Fund (CDF) was intended to address these needs. The expectation is that all the ministries, including the Ministry of Agriculture, will be represented at the local level. This means that the budget lines will be drawn for these departments at the local level. This promises a collective agreement and involvement in decision-making for the enhancement of food systems in spatial planning. However, decentralization has so far proved to be more of a theory than practice. The devolution of power to the local authorities is still inadequate. It is hoped that once

decentralization comes into effect, different line ministries and departments will enhance their collaboration to lessen their working in silos in the quest to improve food security.

5.6 Governance, Politics and Power Relations Shaping Spatial Planning Landscape of Lusaka

Governance, politics, power relations, and in the very recent past (2011-2021) '*carderism*' have equally shaped the spatial planning landscape of Lusaka. The term *carderism* is a derivative of Cadre which means a person who aligns himself/herself with a political party to perform functions (usually unlawful) on behalf of or in the name of the party. Cadres have existed in all successful governments right from independence. Cadres have transformed the political landscape of Zambia and in turn, the dynamics of land allocation. Given their political backing, cadres overzealously allocated land to themselves and their associates without adherence to procedure or regard for the legal owners of the land. Land that was reserved for agricultural or institutional use was turned into residential land. Among the notable land unlawfully obtained by cadres is the National Resources Development College (NRDC) farm and the University of Zambia Liempe Farm, both located in the Chongwe district of Lusaka (Phiri, 2022). These pieces of land were initially farms for the two institutions but were encroached on by cadres and later sold by the institutions as residential plots. This scenario shows a lack of good governance and the extent to which politics influence land allocation and the landscape of planning in Lusaka. *Carderism* posed a great threat to the work of spatial planners, not just with its disregard for processes and procedures, but sometimes with their lives if they challenged the cadres. *Carderism* in land allocation was ended in 2021 after the New Dawn Government of the United Party for National Development (UPND) took office. Currently, various key stakeholders in spatial planning, especially the local authorities can do their work effectively (see Appendix Three).

5.7 Summary of the Spatial Planning Landscape of Lusaka City Region Food System (LCRFS)

As previously stated, the LCRFS is shaped by land functions such as land cover, and land use in the spatial planning ecosystem (depicted in Figure 22). Other factors that have shaped the landscape of the LCRFS include land use; plan formulation and plan implementation; planning; developmental control; governance; and politics - particularly with the allocation of land governed by both legislative frameworks and unofficial allocation of land through land-grabbing. The legislative frameworks, laws, policies, and plans include the URP, Land Act,

Land Policy, TCPA, Statutory and Improvement Areas Act, Garden City Concept, master planning, LDP, and the land tenure system.

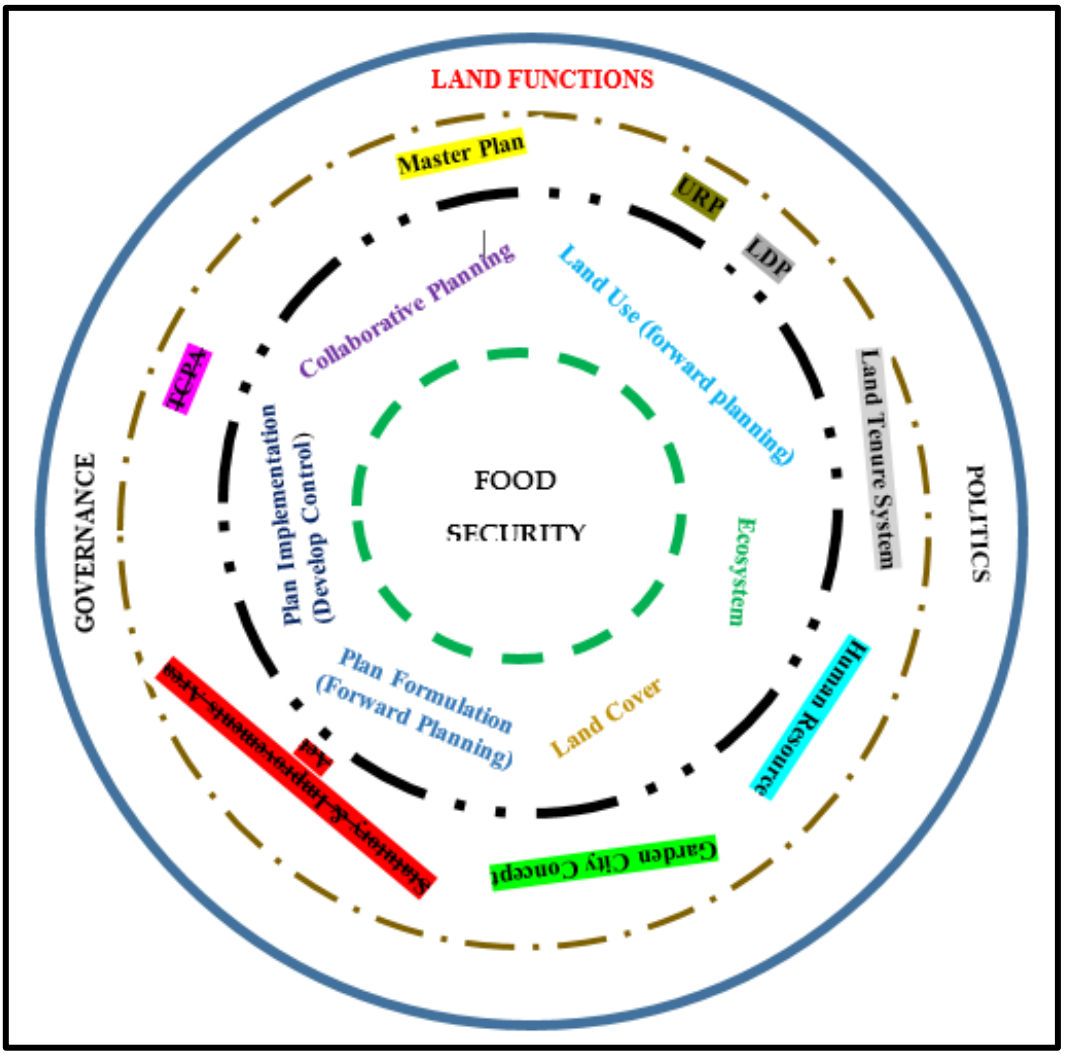

Figure 22: Schematic Representation of the Spatial Planning Land Scape of LCRFS
Source: Authors Construction (2022)

5.8 Summary

The spatial planning landscape of Lusaka, the capital city of Zambia, has undergone significant changes and challenges, particularly during the colonial era and subsequent years. It is indicative that just like many African cities, Lusaka, underwent transformations influenced by colonial policies. These policies often prioritized urban development, infrastructure, and administration centres for the colonial powers. This has contributed greatly to the reshaping of Lusaka's spatial layout, focusing on the needs and priorities of the colonial administration. However, when the colonial era came to an end, there was continued transformation over the years. This implies that the spatial changes in Lusaka did not end with the colonial period but have continued over the years. This status quo has been due to factors such as continuation of

the colonial legislations, policies and plans, rapid urbanization, population growth, and other socio-economic changes. Urbanization has driven the expansion of urban areas into previously designated agricultural zones. Furthermore, lacunas in Spatial Planning legislations, policies, plans and practices have allowed for the loss of land originally reserved for agricultural use. The reasons for this include weak regulatory frameworks, inadequate enforcement mechanisms, and outdated planning policies that did not adequately address the evolving needs of the city. This shift of land use from agricultural to urban purposes has been driven by various challenges, including the need for space to accommodate the growing urban population, infrastructure development, and the impacts of lawlessness. The lack of stringent regulations or enforcement mechanisms has contributed to the encroachment on agricultural land. With more people moving into Lusaka, urbanization and population growth have led to increased demand for residential and commercial spaces, putting pressure on existing land reserves. This, prompted unplanned expansion and the conversion of agricultural land for urban use amid lawlessness. The lack of compliance with zoning laws or land use regulations has contributed to haphazard development, further exacerbating spatial challenges, and leading to the loss of designated agricultural land.

In summary, the chapter highlights the historical and ongoing transformation of Lusaka's spatial planning landscape, with a particular emphasis on challenges stemming from urbanization, population growth, and deficiencies in planning legislation. Addressing these issues may require comprehensive urban planning reforms, updated regulations, and effective enforcement mechanisms to balance urban development with the need for preserving agricultural land and maintaining a sustainable urban environment.

CHAPTER SIX: FOOD SYSTEM AND FOOD SECURITY IN LUSAKA

6.0 Introduction

This chapter also forms part of the findings. It focuses on the second objective of the study based on the Lusaka Food System (LFS) and food security. Part of this chapter has already been published as a book chapter in "*Informality and Inequality in Urban Africa: Imperatives for Research, Policy and Practice.*" The book chapter is titled "*Food Security in Informal Settlements of Lusaka: Spatial Planning as the Missing Link*." The Lusaka Food System was delimited through a multi-stakeholder engagement workshop held in 2015 which was supported by additional evidence gathered during the situation analysis phase. The Lusaka Food System extends to surrounding districts, both urban and rural. The chapter brings out the concept of food systems, the Lusaka Food System, food security, and legislative guidance to food security, and concludes with a summary.

6.1 Concept of Food System

Contemporary societies are increasingly turning to intricate agroecological and trading systems to fulfil the imperative requirement of supplying food for burgeoning urban settlements. The effectiveness of this system depends on so many factors, including good spatial planning practices. The proximity between points of production and consumption of food also plays a key role in demonstrating the contribution of food systems to food security. This is why the concept of City Food Region (CFR) is considered one of the panaceas to food insecurity. As earlier indicated in Chapter One, FAO (2018: 22) defines a food system as:

> *…an inclusion of the different range stakeholders and their interlaced value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded (Figure 20).*

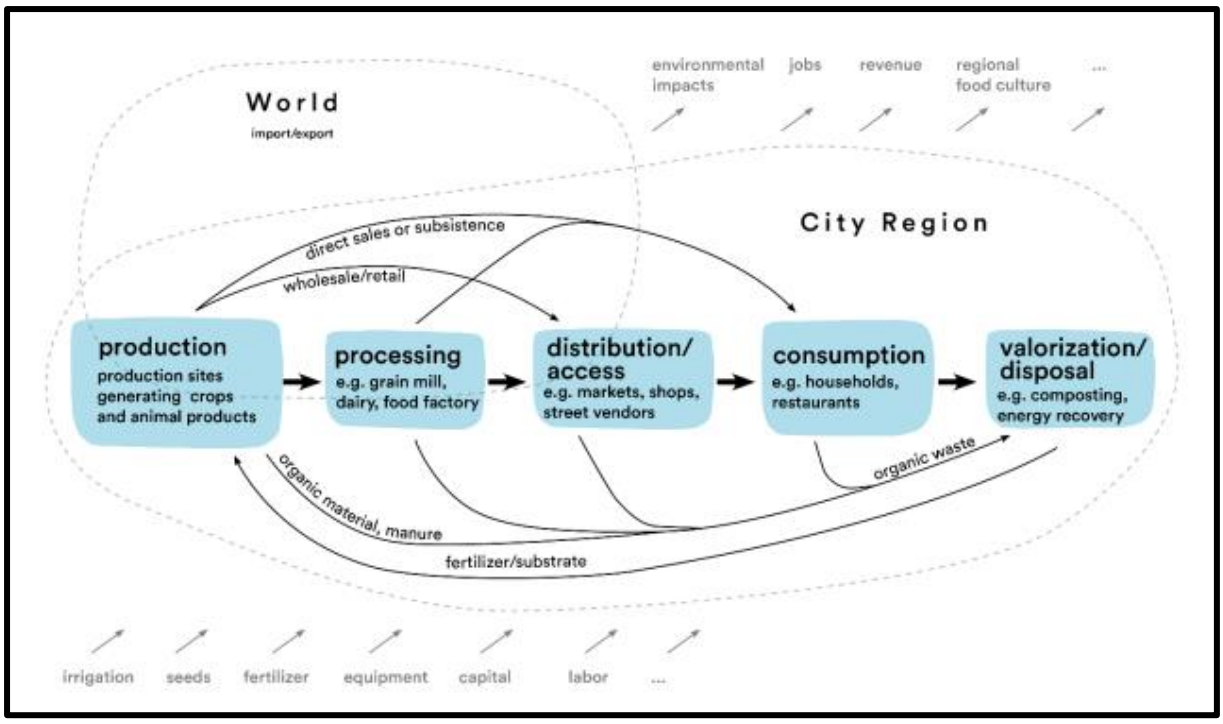

Figure 23: Description of Food Systems
Source: Lindschhilte & Giseke (2017:23)

The food system is composed of sub-systems such as the farming system, waste management system, and input supply system. The system further constitutes an interaction with other key systems such as the energy, trade, health, and transport systems. Therefore, a structural change in the food system might originate from a change in another system. For example, a policy promoting more biofuel in the energy system will have a significant impact on the food system. Another example is that of an increase in the cost of transportation resulting from an increase in fuel pump prices, thereby triggering a chain effect on the food system. Food systems hinge on other societal and environmental issues such as a functioning global market, open trade routes, affordable energy, and stable weather conditions that allow crops to flourish. A negative change in any of these will make the food system vulnerable.

6.2 Lusaka Food System

Chapter four already established that Lusaka has a huge population against a small land parcel. This has caused the city to lack a constant supply of food to meet the needs of a continuously growing population despite the city also producing its food and providing a market for farm produce from across the country and the region. The growing number of industries in Lusaka also need materials from agricultural produce. Some of these materials are also needed by both retailers and wholesalers in their distribution of various commodities. With most of Lusaka's population residing in informal settlements, informal retailing has dominated the city in a bid

to provide a steady supply of food (Chapoto, et al., 2016). This statement was also confirmed by a staffer from Soweto Market (Soweto Market is Zambia's biggest market that receives agricultural produce from all parts of the country. It is situated in Lusaka's main central business district):

"In the market, we receive anything that can be sold if people buy - even if the food or produce does not meet the standards. We have instances where rotten meat, chickens, and small animals such as cattle that have died from whatever cause find themselves in our market - including vegetables that have gone bad. These products sell like hot cake because they come cheap. It is difficult for us to monitor because we operate in an open-air market. Besides, the traders and consumers protect themselves" (Soweto Staff, 2022).

Relating to the above statement, Mulenga (2013) pointed out that the role of informal markets cannot be emphasised especially in cities that are characterised by informal settlements. Informal markets have their place in providing avoidable food, supporting local producers, ensuring flexibility and adaptability, as centres of social interactions, job creation, convenience and ensuring food security.

The findings indicated that the rate at which food is produced through agriculture in Lusaka was way below the average needed to meet the minimum demand of dairy foods such as fresh horticultural, meat and aquaculture products. This has been necessitated by the expansion of the city into agricultural land which was previously producing food for the cities. Such a status quo can be noted in cities such as Cagayan de Ore (CDO) City of the Philippines (Horacio & Francis, 2022). CDO agriculture area decreased from 91.5 per cent to 81.89 per cent, and this was attributed to urbanization. This urbanization affected the farmer in terms of displacement, income source decreased economic status, and negative motivation for agriculture. As such urbanization in CDO which brought progressive economic development had negatively affected the lives of some small farmers (Horacio & Francis, 2022). Regarding the staple food mealie meal, the maize used is mostly sourced outside Lusaka and the LCRFS (Consumer Unit Trust Society Lusaka, 2020). The LFS comprises a multifaceted system of actors, processes and relationships involved in food production, processing, marketing, and consumption in each geographical region of the country and beyond.

Furthermore, as observed by a Soweto Market Staffer, it is worth noting that the LFS exists formally and informally. For instance, according to the findings, food accessibility and distribution in the city are influenced by the formal, informal, as well as semi-formal markets

which can be found on the streets, in designated marketplaces in neighbourhoods or in central locations like Soweto. A 2017 study conducted by the Consumer Unit Trust Society (CUTS) Lusaka revealed that more than 60 per cent of households in low-income residential areas that host 79 per cent of the Lusaka population rely on these markets for their daily food needs (Consumer Unity & Trust Society, 2020). Large, medium size and small-scale food producers and handlers sell their produce at these markets.

6.2.1 Sources of Local Foods in the Lusaka Food Systems Chain

To address the theoretical concept of the study that seeks to establish where the local food (agricultural food produced within the LCRFS) in Lusaka comes from and how much comes into the city from within the LCRFS, a total of 1500 farmers were interviewed. A two days workshop was held which comprised stakeholders from the Ministry of Agriculture (MOA), the Indaba Agriculture Policy Research Institute (IAPRI), the Program against Malnutrition (PAM), the Director of Planning (LCC), the Director of Peri-urban in charge of markets and bus stops (LCC), a Peri-urban planner, Hivos, a farmer and distributor at Kasisi Farms. This was done with the help of the AfricitiesFood project. Furthermore, 20 various stakeholders in the food and planning value chain were interviewed. A focused group discussion (FGD) was held with the help of the FAO to look at some of the shocks that influenced the LCRFS in the past five years and to understand their resilience. The FGD participants included the Lusaka District Agriculture Coordinator (DACO), SAO, a nutritional specialist at MOA, PPHPZ, and a farmer from Kasisi Farms. To consolidate this approach, a rounded picture of the sources of local foods for the whole of Lusaka and the study area was obtained through market surveys, household surveys, as well as surveys done on local kiosks commonly known as *'tuntemba'*. Data obtained from the traders at Mtendere market revealed that most of the local food consumed in Lusaka for both formal and informal settlements comes from the same locations. Some of these sources are the districts of Lusaka, Chongwe, Mumbwa, Shibuyunji, Chisamba, Chilanga, Kafue and Chibombo. Collectively, these districts constitute the LCFR which spans 4.3 million hectares.

Furthermore, based on the data collected, the sources of food inflow into Lusaka city which constitute the LRFS per type of food consumed in the city included the following: maize, vegetables, meat/poultry/offals, fish, milk, fruits, roots, and tubers.

6.2.1.1 Maize

According to the information gathered from traders in the local markets (the local markets are represented by the Soweto market, Bauleni market, Kaunda Square market, Chazanga market

and Mtendere East market) and residents, 27 per cent of the maize consumed in the area comes from outside the LCFR. This is followed by 25 per cent that comes from Chisamba District, 20 per cent from Chibombo District, 18 per cent from Mumbwa District, four per cent from Chongwe District and the remaining four per cent from within Lusaka District (Figure 24).

The cumulative percentage of maize produced within the LCRF is 73 per cent - indicating that LCRF was the major supplier of maize for these traders into the city, compared to 27 per cent from outside the region.

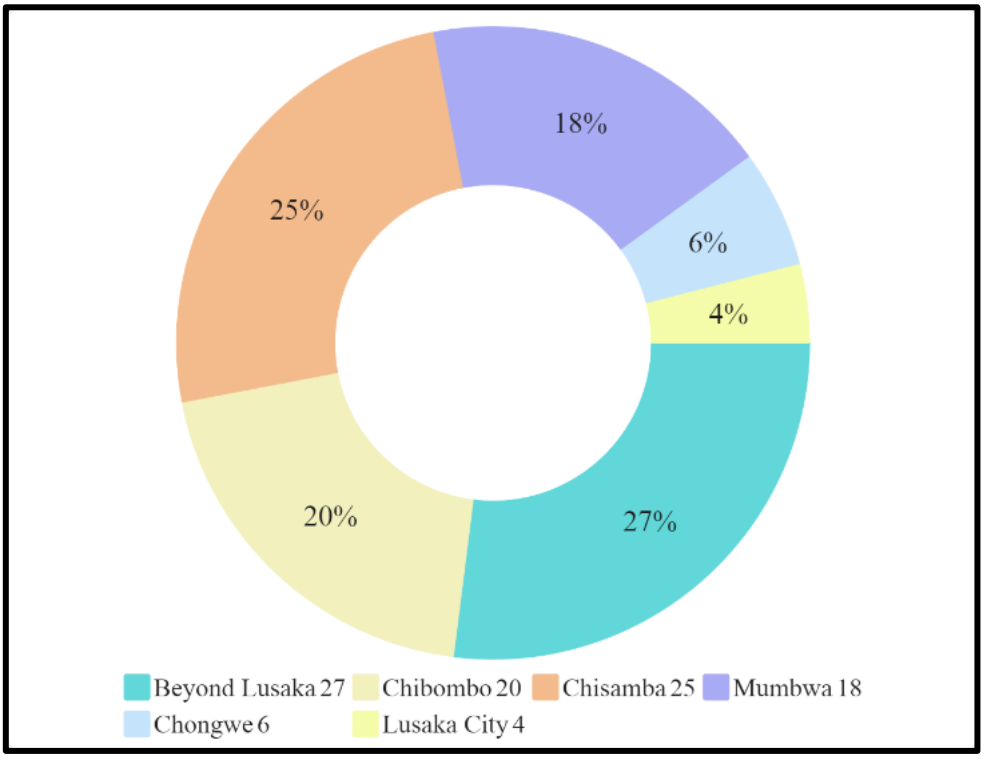

Figure 24: Sources of Maize in Selected Markets
Source: Field Data (2021)

From the 1500 farmers, it was established that on average, 4257.22 kg of maize was produced per farmer per year and only 4177.5 kg reached the market of each farmer's produce. This gave 1.7 per cent as either sold or consumed at the farm/loss of the produce from harvest to distribution. Numerous reasons were provided to explain this loss, but the ones that stood out the most were transportation, storage, and proximity to the market. It is evident from these findings that if Lusaka City and the surrounding areas are to meet the ever-growing demand for grain, they will need to source it from other regions. The bone of contention with this recommendation would be that Lusaka and the surrounding areas already source much of their grain used to make mealie meal outside the LCRFS. In as much as this is true, the findings indicate that various factors influence the production, supply, and demand of a commodity

locally. It is not enough that a product is available locally or that it empowers people's livelihoods. What matters the most is whether the locals can afford that product or not. Figure 25 shows quantities of maize produced and consumed in the LCRFS.

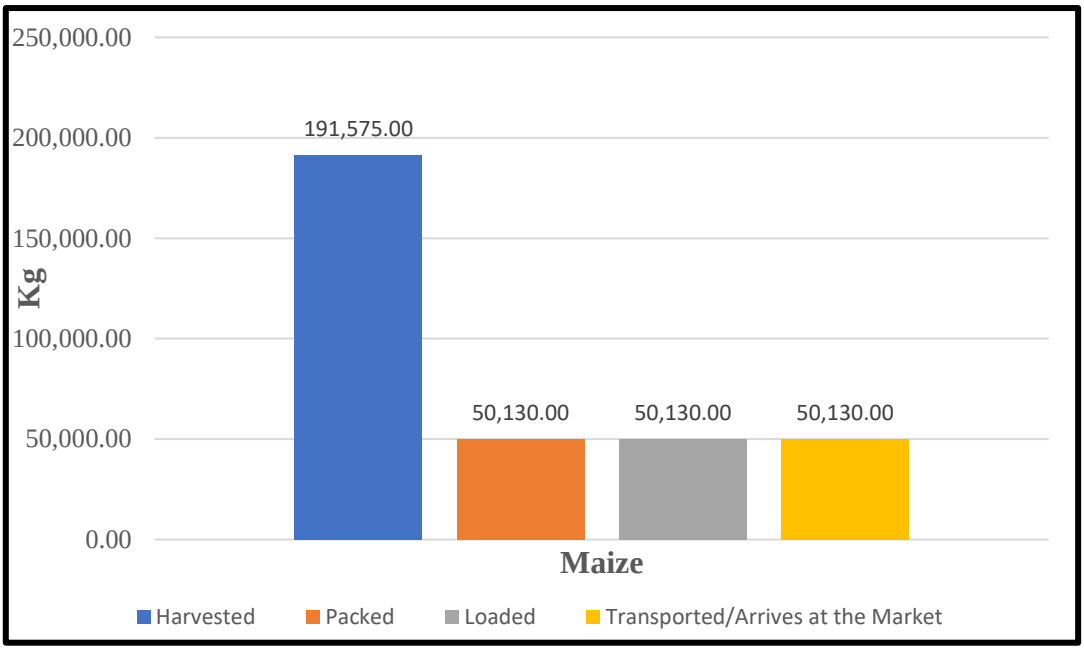

Figure 25: Quantities of Maizee in Kg Produced and Consumed in the LCRFS
Source: Field Data Collected with AfricitiesFood (2022)

6.2.1.2 Horticulture

The study found that Lusaka CRFS supplies most of the fresh horticulture products such as rape, Chinese cabbage, and other green leaf vegetable at the local markets and the city. Chisamba has the highest contribution at 33 per cent, followed by Chibombo at 27 per cent. Horticulture from within the city stood at 17 per cent. Other figures are as follows: Mumbwa 13 per cent, Chongwe 5 per cent, beyond LCRFS 3 per cent and Chilanga 2 per cent. These percentages are summarised in Figure 26. Figure 27 depicts the sampled farmers in the LCFRS while Figure 28 shows the movement of horticulture produce from farms to markets.

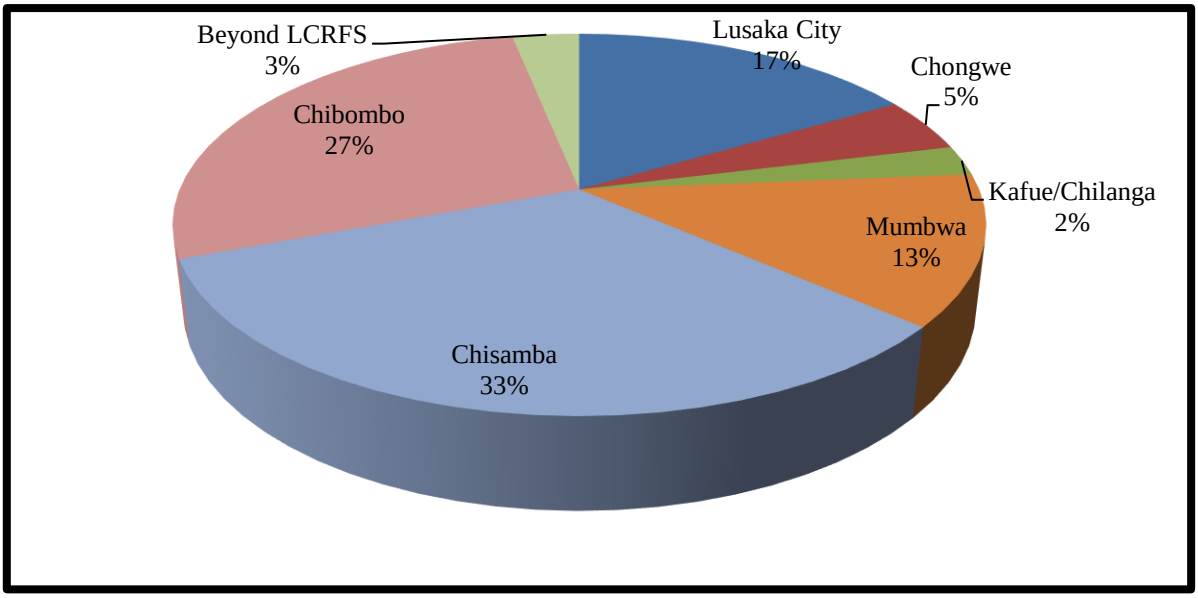

Figure 26: Sources of Horticulture in Selected Markets
Source: Field Data (2021)

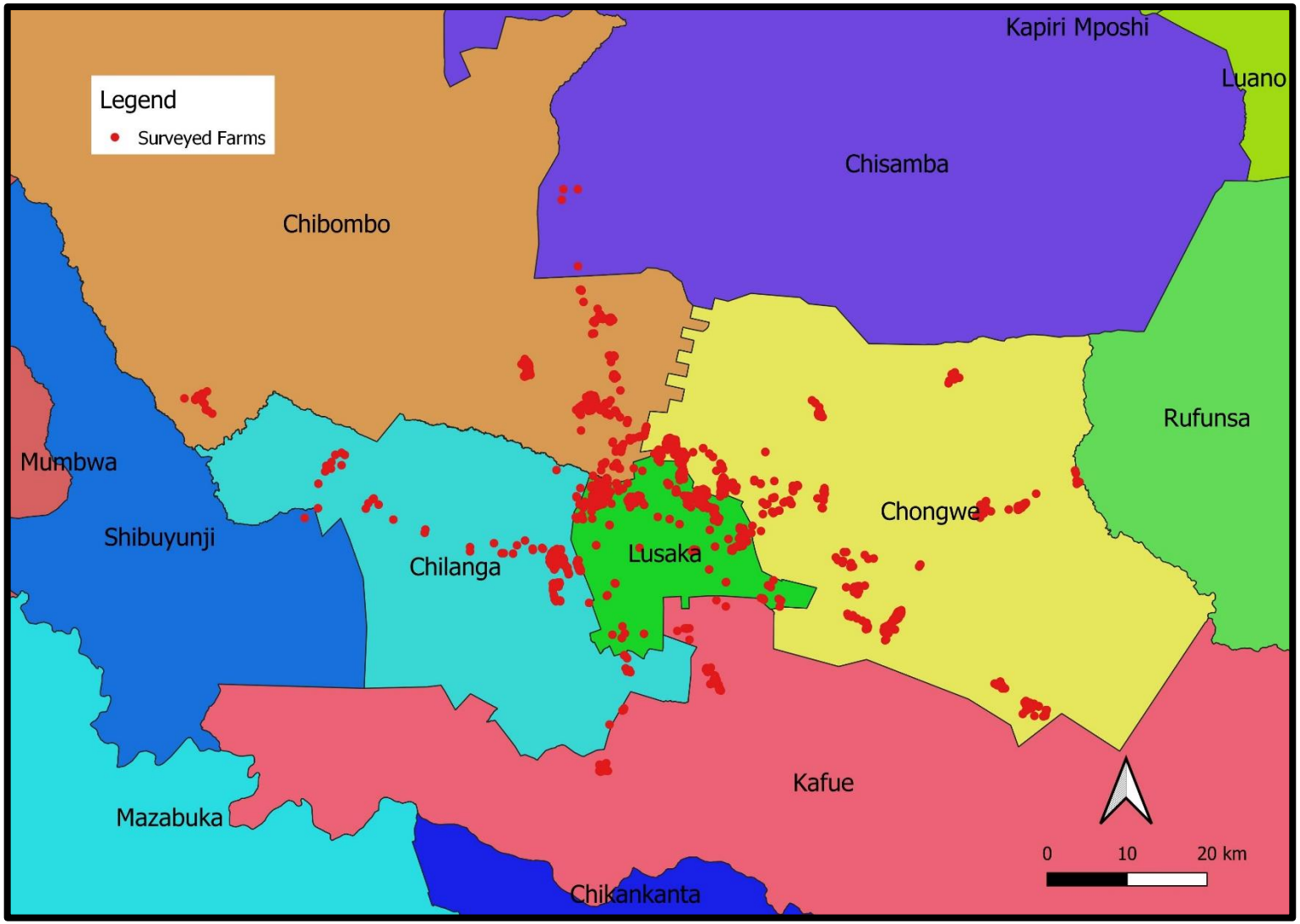

Figure 27: Some Producers by the coordinate of the farm (Sampled Farmers) of Food into Lusaka City
Source: Field Data with AfricitiesFood (2022)

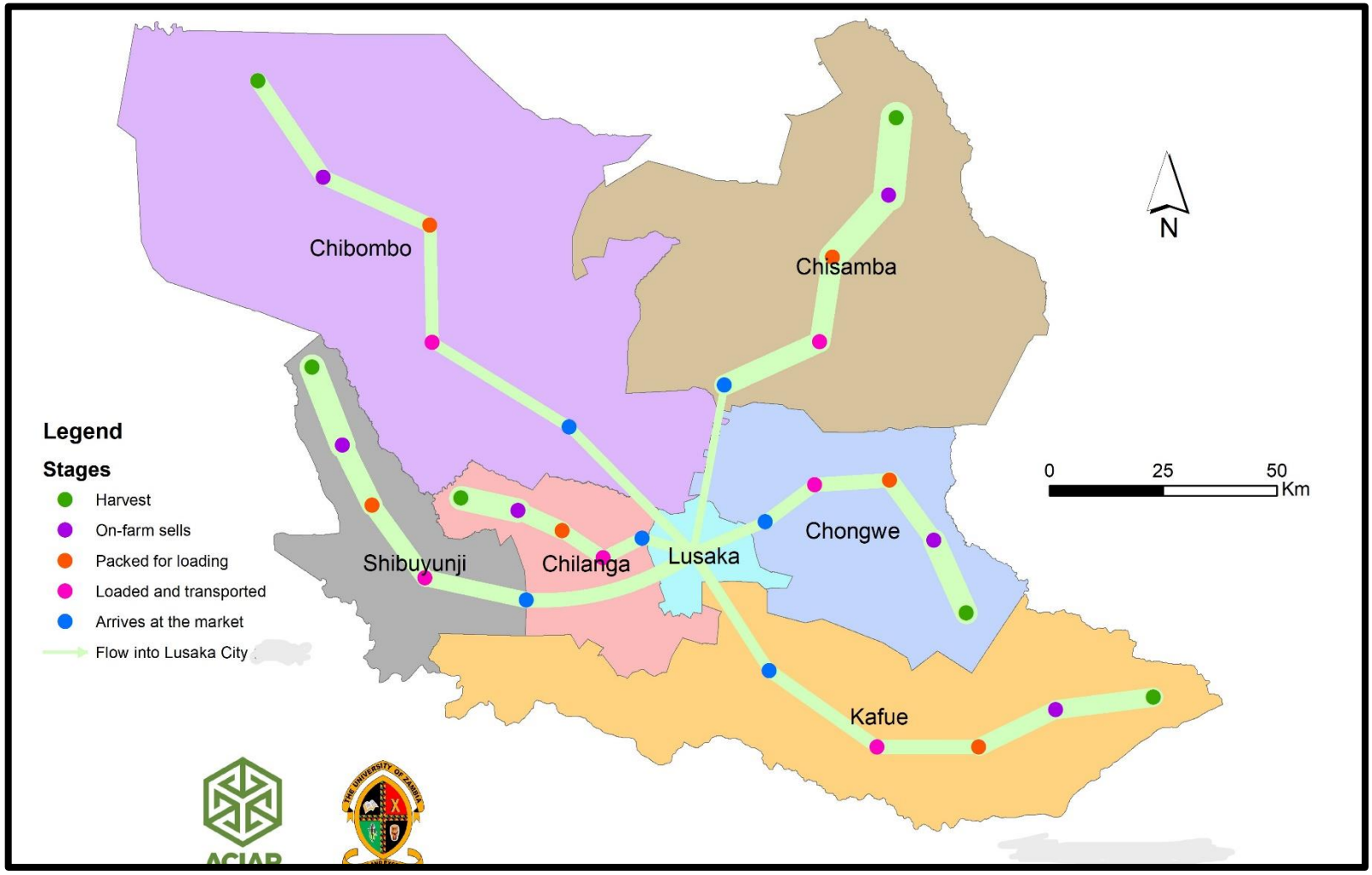

Figure 28: Horticulture Produce from Harvest to Market Among the Sampled Farmers.
Source: Field Data with AfricitiesFood (2022)

Furthermore, the average kilograms of produce per farmer that reached the market in the city, stood at 767 kg against produced 955.28 kg (Figure 29), giving 19.7 per cent as either consumed at home, sold at the farm or loss due to a lack of proper storage.

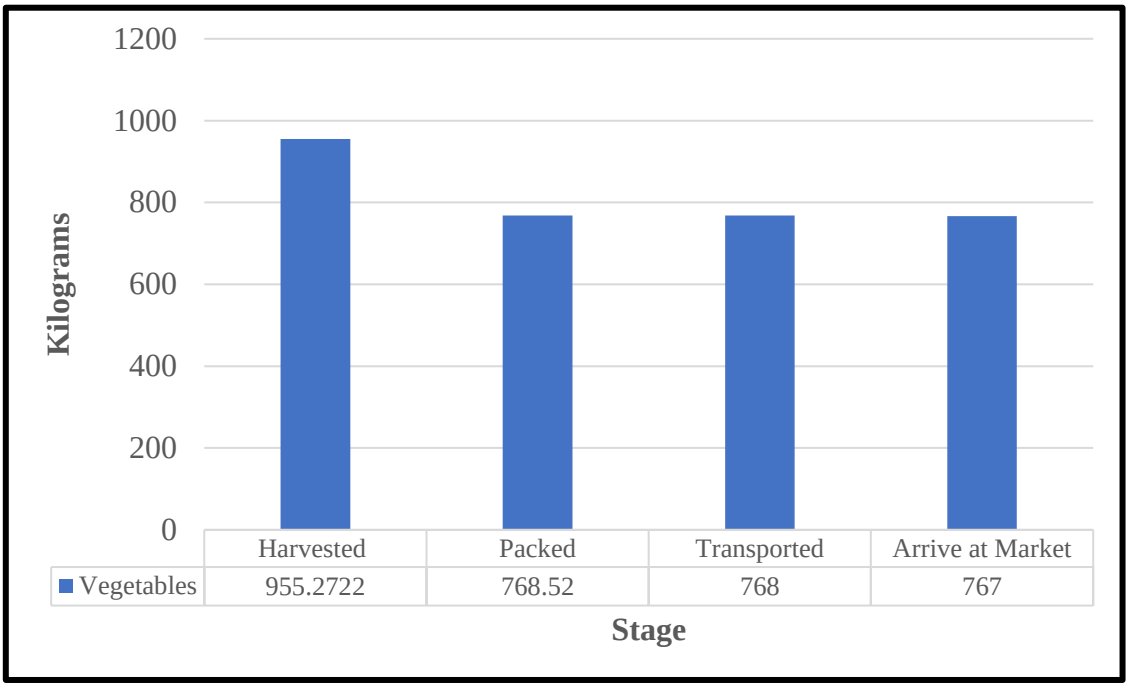

Figure 29: Quantities of Horticulture in KG Produced and Consumed in the LCRFS
Source: Field Data Collected with AfricitiesFood (2022)

From the findings as indicated in Figure 29, the LCRFS can feed the city and the surrounding areas in horticulture produce such as green leaf vegetables with a lot of surpluses that usually go to waste as observed in the Soweto market. This situation prompted the Zambia National Farmers Union to issue a circular cautioning commercial farmers against dumping excess vegetables on the market in the process saturating the market with more produce. Such practices negatively affect small-scale farmers who are forced to reduce prices due to oversupply and less demand.

"The Zambia National Farmers Union (ZNFU) has urged farmers to stop over-supplying the local market with fresh vegetables because it's causing losses to farmers who are forced to drop prices because of the abundance. The farmer's union has implored farmers who grow massive hectares to venture into value addition" (Soweto Market Manager, 2022).

In response to this letter, the public, some traders, and farmers took to Twitter to air out their views. Some of the selected Twitter responses were as follows:

"That's why we can't develop as a country like this, hearing this from a board that is supposed to champion and encourage farmers to go into value addition just shows that there

are people who don't mean well for the farmers let farmers produce more for the local Market and export the surplus to earn the country more money through the exports" (@anonymous, 2022).

"Every motivational speaker is encouraging people to go into farming. Just encourage people to diversify instead of everyone producing the same type of crop. Pa last kula fi dumping fye (at the end just dump them)." (@Suwilanji, 2022)

"Business is all about competition. Are you going to put food on their tables if they stop?" (@Chishimba, 2022)

"Value addition is the key and creation of export channels." (@anonymous, 2022)

"Farmers Union was sleeping and should now work up and address this issue of value addition. We appreciate the fact the price coming down, but it hurts the farmer must lose. Farmers Union, let this not end on the letter. This is the New Dawn where everything has a solution. It's a lesson and should not happen. The FRA buys maize from Farmers, let there be a company or factory be set to process this product to be exported." (@Andrew, 2022)

The responses and the general findings reveal a lack of value addition to the vegetables that end up on the market. A check-in at Soweto market (the largest market and main recipient of vegetables in the city) showed that there was no storage apart from one privately owned cold room which is used to store meat products. Indeed, large quantities of dumped vegetables including tomatoes were found (Figure 30; Figure 31 shows the trading of vegetables).

The lack of storage facilities to preserve fresh vegetables shows that more farmers who produce vegetables in the LCRFS are closer to the city itself. However, as one moves away from the city, there is less the production of vegetables. According to the findings, farmers are discouraged from growing vegetables the further away from the city they are due to the perishable nature of the vegetables, poor road infrastructure and inadequate transportation facilities.

"I would rather cultivate maize or keep goats or chickens because once the vegetables are harvested, they need to be taken to the market almost immediately. It is difficult to find transport here, and our roads are bad. In the rainy season, only big vehicles can pass, not small ones. So, imagine you had vegetables and you needed to transport them on time; they would just end up wasted," (Shibuyunji Small Scale Farmer , 2022).

The above response from a small-scale farmer shows that the LCRFS lacks proper roads to transport farm produce to the markets, regardless of the location or proximity which is about 95 km via the Lusaka-Mongu Road.

Figure 30: Cabbage Loss in Soweto Market
Source: Field Data (2022)

Figure 31: Vegetable Retail Selling at Soweto Market
Source: Field Data Collected with AfricitiesFood (2022)

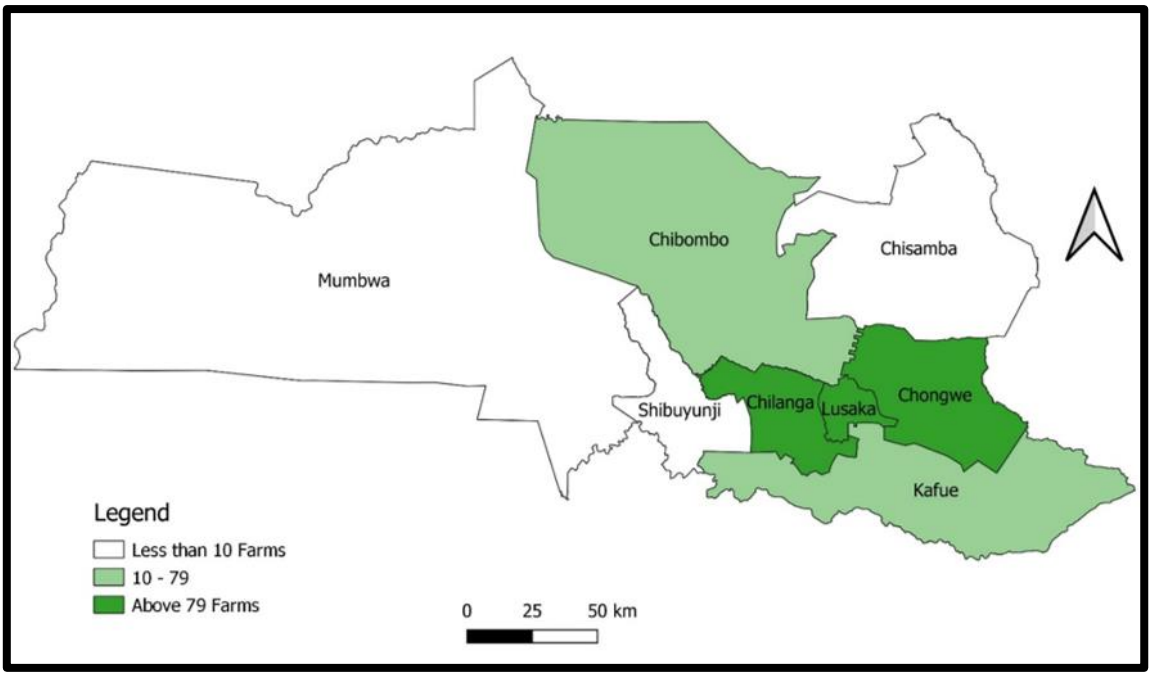

Figure 32: Fresh Vegetables Producing Farmers (Sampled Farmers).
Source: Field Data Collected with AfricitiesFood (2022)

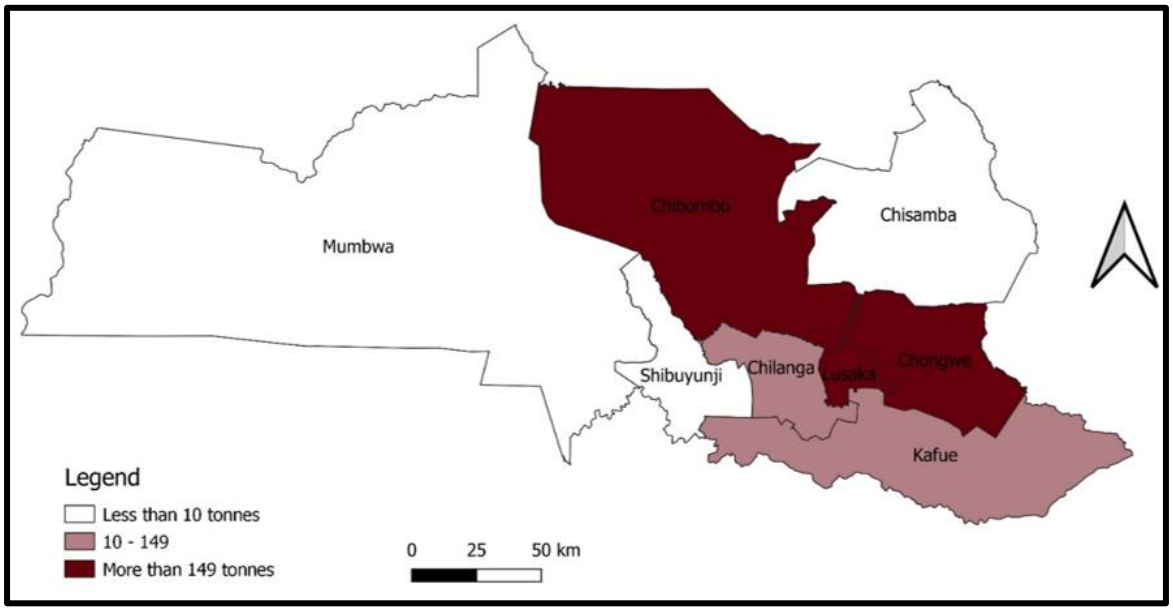

Figure 33: Fresh Vegetables Quantity of Production (Sampled Farmers)
Source: Field Data Collected with AfricitiesFood (2022)

Tomato is another important horticulture produce that is consumed within Lusaka. The '*red fruit'* as some farmers call it is often grown within the LCRFS and meets the demand of the region. A visit to the Soweto market indicated that tomatoes go to waste due to oversupply. Apart from loss through oversupply, the findings also indicated a huge loss from harvest to supply at the market. From the 1500 farmers interviewed, cumulatively, their annual tomato

produce was 1,087,572.5 kg compared to 521,242 kg that arrived at the markets - giving a total loss of 48 per cent per year. It should be noted that about 5 per cent of the produce is on farm sale. However, when it comes to the loss incurred, some of the reasons attributed to this loss included lack of storage, lack of proper packaging, and transportation. The perishable nature of tomatoes makes them vulnerable to price manipulation and as such, for each extra hour tomatoes spend on the market, they lose value. For instance, if the selling price of tomatoes is at K250 per box, the possibility of the box of tomatoes being sold at K100 by midday and K35 by the end of the day is very high. Just like other leafy vegetables, rotten tomatoes end up discarded right in the market due to lack of storage, processing, and preservation. Apart from the loss through dumping of the excess vegetables, the farmers also lose income through the "Agents". Agents are informal actors in the Soweto market who sell tomatoes on behalf of the farmer and are paid 10 per cent of the total sales. A farmer cannot sell in the market unless, through the Agents, Figure 34 shows agents at the Soweto market selling tomatoes on behalf of the farmer. The belief in the market is that if the agent does not sell the tomatoes on behalf of the farmer, the tomatoes will not be sold since the agents are the ones with the network of buyers. However, the farmers also indicated that the very agents are the ones at the forefront of influencing the traders not to buy from the farmers who want to sell for themselves. One farmer even lamented that:

"It is such a drawback. You cultivate the crops, and spend money on treating them and transporting them to the market, only to be told you cannot sell unless through the agents who have not even worked for any of the produce. They end up getting 10 per cent of the sales. Apart from that, we don't have storage for our perishables despite being charged for trading in the market," (Small-Scale Tomato Farmer, 2022)

Figure 35 depicts how tomatoes are transported within the market once bought. The transportation of tomatoes within the market helps in creating jobs for the transporters. The tomatoes are transported on wheelbarrows once packed in boxes for safety and easy transportation to avoid breakages. Figure 36 shows the movement of tomatoes among the sampled farmers from harvest to the various markets within the LCRFS.

Figure 34: Agents at Soweto Market Selling Tomatoes on Behalf of the Farmer
Source: Field Data (2022)

Figure 35: Transportation of Tomatoes within Soweto Market
Source: Field Data (2022)

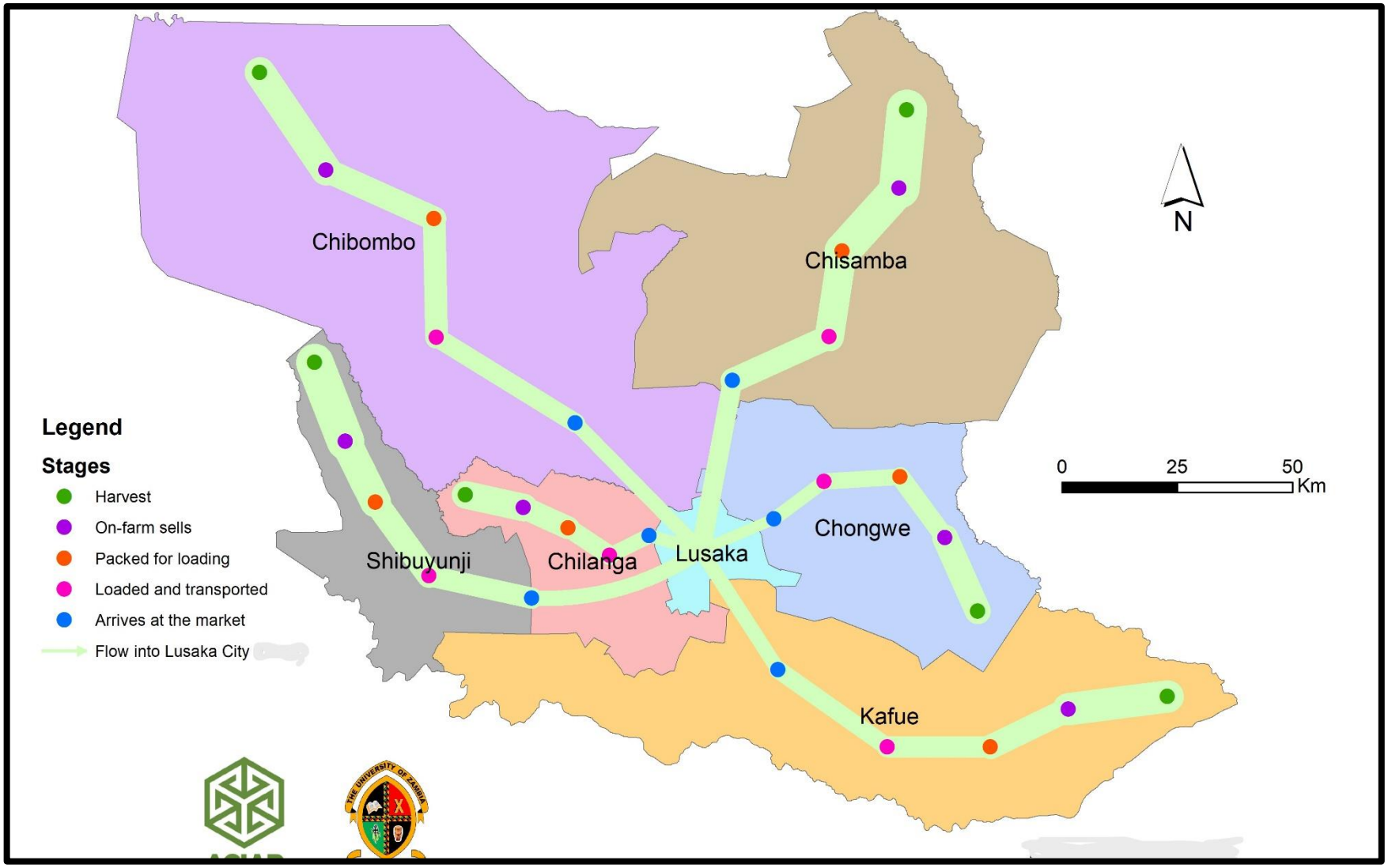

Figure 36:Tomatoes from Harvest to Market Among the Sampled Farmers.
Source: Field Data with AfricitiesFood (2022)

6.2.1.3 Livestock Products

According to the findings, the production of poultry in the urban setting of Lusaka has in the recent past increased, with many backyard poultry houses (Anonymous, 2022). Compared to other meat products, poultry does not need large quantities of land. This has made poultry the leading venture in UA. However, based on the findings from the selected markets, the markets receive an approximated 24 per cent of all meat and poultry from Kafue, followed by 22 per cent from beyond the LCRFS. Other sources are Chongwe at 8 per cent, Chisamba at 15 per cent, within Lusaka District, Mumbwa at 4 per cent, Chilanga at 3 per cent and Shibuyunji at 2 per cent. Note that these are cumulative percentages of livestock products, as shown in Figure 37. It should be noted that beef is the most common type of meat product sourced from Kafue. This is due to being proximate to some of the major cattle-rearing farms in the Southern Province of Zambia.

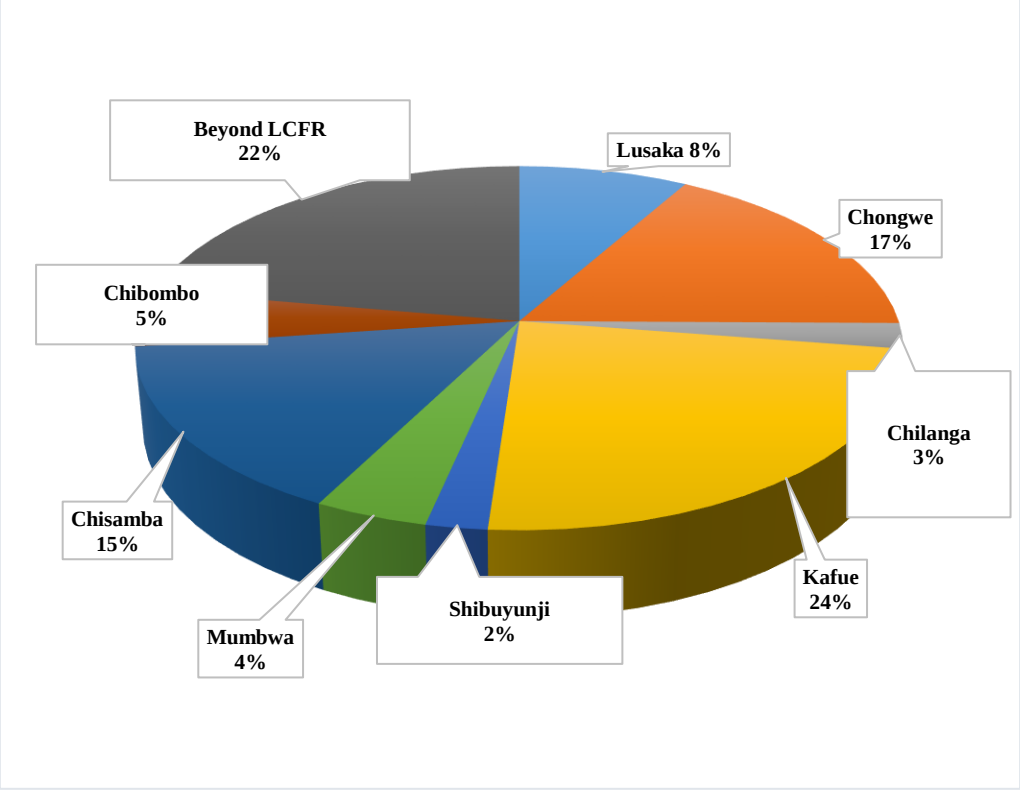

Figure 37: Sources of Livestock Products in Selected Markets
Source: Field Data (2021)

This increase in poultry production in the urban setting of Lusaka suggests a growing trend of urban residents engaging in backyard poultry farming. This has been driven by factors such as a desire for locally sourced food, self-sustainability, and economic opportunities in poultry farming. From both the residents and farmers interviewed, it was pointed out that consuming chicken was perceived as affordable as compared to the other kinds of meals including kapenta

and beans. As such it is a clear sign that demand has played a critical role in the increase of poultry farming as a form of livestock in the LCRFS.

The findings have further emphasized that poultry has become a leading venture in Urban Agriculture (UA). This could be attributed to the practicality of poultry farming in urban areas, where limited space is often a constraint. As such, backyard poultry houses have allowed residents to take part in agricultural activities without the need for extensive land.

When it comes to the distribution of meat and poultry to markets, the findings reveal interesting patterns. As aforementioned, Kafue is a significant contributor, supplying approximately 24 per cent of all meat and poultry to the markets. Beyond Lusaka CRFS also plays a substantial role, accounting for 22 per cent. Other sources like Chongwe, Chisamba, within Lusaka district, Mumbwa, Chilanga, and Shibuyunji contribute varying percentages. However, cumulatively these percentages provide an overview of the overall market dynamics. Understanding these percentages is crucial for stakeholders, policymakers, and those involved in the agriculture and food distribution sectors to make informed decisions. It has also been noted in the findings that there is a dominance of beef as the most common meat sourced from Kafue. This information could be valuable for consumers, producers, and policymakers interested in understanding the market preferences and dynamics related to different meat types.

With regard to the economy, the findings suggest that urban agriculture, particularly in poultry production, is playing a vital role in local food systems. This has implications for food security, economic development, and the sustainability of agricultural practices in urban areas. As such it will be imperative to put in measures when it comes to spatial planning to ensure that food systems are enhanced in spatial planning owing to the fact that the findings point to a notable shift towards poultry farming in Lusaka's urban setting, with implications for both local agriculture and the broader food distribution network. Understanding the dynamics of meat and poultry production in this context is essential for shaping policies and practices that support a sustainable CRFS approach.

The LCRFS receives an approximated average of 1241.91 kg of poultry per farmer per year. These birds are converted into kilograms, with an approximate weight of two to three kilograms per bird. However, the study also found that the number of birds produced and harvested was much higher than the quantities received at the region for consumption. This suggests that there is a significant loss of poultry, with an estimated 226 kg per farmer, or 18 per cent of the total production, being lost, stolen, consumed, or sold at the farm. This information is depicted in

Figure 38. It is important to address the issue of poultry loss, as it affects the livelihoods of farmers and the food security of LCRFS. The findings have pointed out that some of the reasons for the loss include inadequate storage facilities, poor transportation infrastructure, and theft. Addressing these issues could reduce the loss and increase the income of farmers, resulting in the economic development of LCRFS and the entire Country.

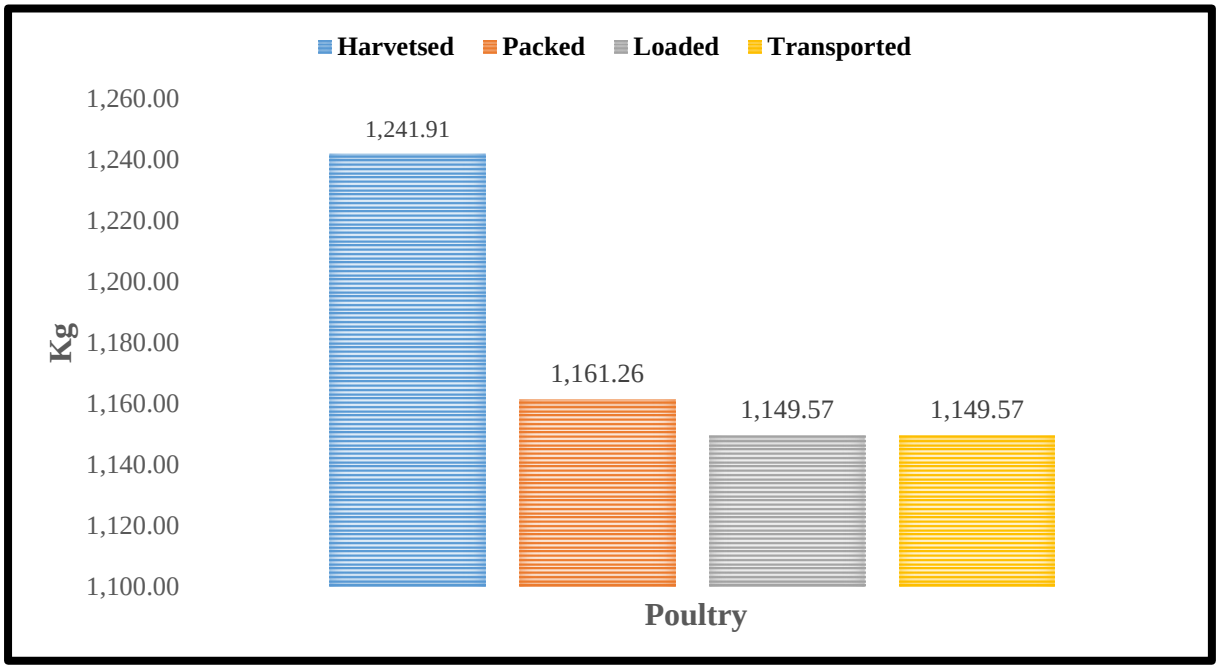

Figure 38: Quantity of Poultry Produced in the LCRFS
Source: Field Data Collected with AfricitiesFood (2022)

Each farmer has an average production of meat and other meat products at 961.24 kg and a loss of 200 kg - which translates to 21 per cent as loss, stolen, consumed, or sold from the source. This loss of 21 per cent accentuates challenges in the production-to-market chain, affecting the economic viability of farmers and the overall food security in the region. It is also important to note that as a perishable product, meat faces similar problems as other perishable products earlier discussed. Therefore, spatial planning must take centre stage in addressing these issues to ensure accessibility to quality products and food security. This can be done by improving the handling, transportation, and storage of meat. Perishable goods are more susceptible to spoilage, requiring efficient supply chain management to minimize losses and ensure that consumers receive high-quality products. Spatial planning is not only about settlement management but ensuring that even food systems are efficient and effective. The emphasis therefore should be that spatial planning recognizes the importance of strategically organizing agricultural activities, markets, and infrastructure to enhance accessibility to quality meat

products. This involves planning transportation routes, establishing storage facilities, and ensuring that consumers have convenient access to fresh and safe meat products.

With the presented findings, it would be important for spatial planners to note that for spatial planning to be efficient, there is a need to not only address the economic concerns of farmers but also to play a vital role in ensuring food security. Accessible and reliable sources of meat contribute to a more stable food supply, reducing the risk of shortages and enhancing the overall resilience of the entire LCRFS. The angle of policy is yet another aspect that spatial planning should deal with. The fact that spatial planning often involves policy considerations related to land use, transportation networks, and market infrastructure, as such policymakers may need to develop and implement regulations that support the efficient movement of agricultural products, address storage needs, and promote fair market practices. There is also a need to involve the community through collaborative planning, communicative approaches and just city to understand the specific needs and challenges of both farmers and consumers and ensure effective planning solutions tailored to the local context.

Figure 39 depicts the movement of Livestock products among the sampled farmers in the LCRFS.

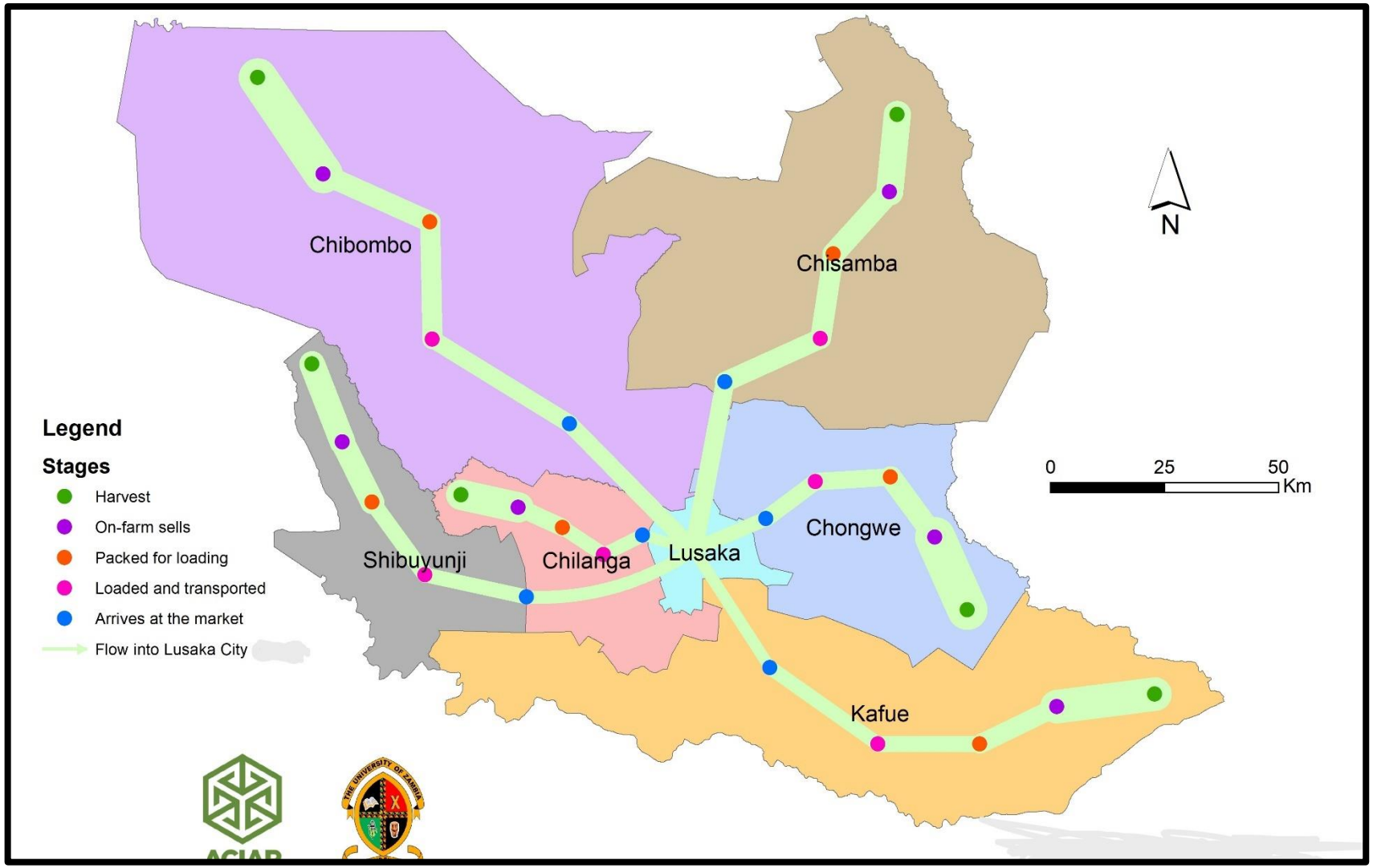

Figure 39: Livestock Products from Harvest to Market Among the Sampled Farmers.
Source: Field Data with AfricitiesFood (2022

6.2.1.4 Fish

Fish farming is the *'new gold'* in the LCRFS as it has become a valuable and profitable venture. This may be attributed to increasing demand for fish, preferences for pond-raised fish, and the potential economic benefits for farmers. Fish in the context of this study included fresh fish, dry fish and kapenta. This inclusion of fresh fish, dry fish, and kapenta in the study indicated a diverse range of fish products being produced. This diversity can cater to different consumer preferences and market demands. Apart from the surveys administered to the 1500 farmers, field visits to two fish farmers in the region and Siavonga at *Buyantashi* fish farming cooperation were undertaken. Another fish-producing institution that was visited is Kabulonga Girls' Secondary School which produces fish on a small scale as part of its production unit and sells within the region. The responses received indicated that the region is developing in the production of fish similar to fresh vegetables and poultry. However, due to the perishable nature of fish, fish farmers experience major losses that affect the contribution of fish to the wide LCRFS and to the city itself. An approximated average of 67490 kg is harvested yet only 14653 kg ends up at the market - giving a 78 per cent loss as indicated in Figure 40. From this 78 per cent that is indicated as loss, about 20 per cent of it is sold and consumed within the points of production. Furthermore, one of the farmers (Figure 41) who visited in Lilayi explained:

"We do not meet the market for the fish. There is a lot of demand for fish in Lusaka now more than ever. Most people now find fish from ponds tastier than fish from natural water bodies and that's what has necessitated the growth of our market. We sell at K55 per kg, and we cater for everyone when selling - regardless of income status. That's why we sell fish of different sizes. In a day, we have about 60Kgs of fish that we harvest and sell" (Lilayi Fish Farmer, 2022).

The fish farmer's testimony from Lilayi suggests a strong demand for fish in Lusaka. The preference for pond-raised fish and the perception of better taste compared to fish from natural water bodies contribute to the growth of the market. The farmer's strategy of catering for customers of all income levels by selling fish of different sizes reflects an inclusive approach. The preference for pond-raised fish over fish from natural water bodies suggests that consumers value certain qualities in fish, associated with taste, texture, or concerns about the source of the fish. Understanding and meeting these preferences are crucial for sustaining market growth and this is the duty of spatial planners. Furthermore, the farmer's pricing strategy at K55 per kg and

the effort to cater for consumers regardless of income status indicate an awareness of market dynamics and an attempt to make fish accessible to a wide range of customers.

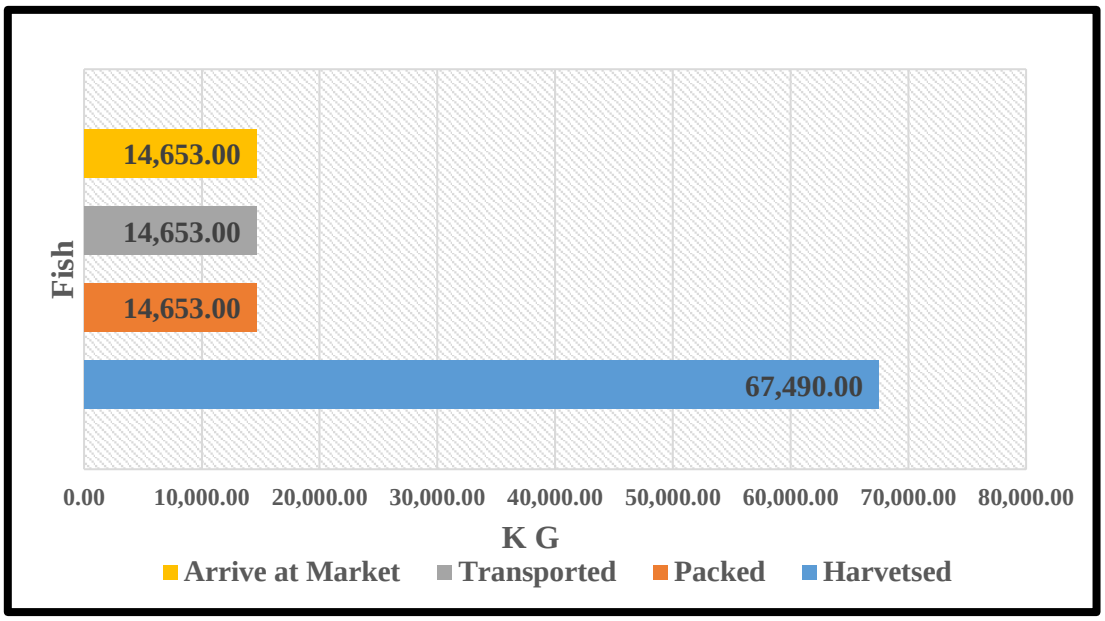

Figure 40: Quantity of Fish Produced and Consumed in the LCRFS
Source: Field Data Collected with AfricitiesFood (2022)

Figure 41: Liyayi Fish Farm

Source: Field Data Collected with AfricitiesFood (2022)

Another farmer from Chongwe said that:

"*The harvest is done after 5 to 6 months, and it's done according to demand. The fish is sold right here at the farm, fresh from the pond and sometimes when it is still alive. This guarantees freshness and helps us to avoid any losses that might take place. Everything at the farm is also run by solar energy. We sell at K55 per kg, and 500 grams is the biggest size ever caught." (Mr Zulu, 2022)*

Figure 42: Chongwe Fish Farm
Source: Field Data Collected with AfricitiesFood (2022)

Despite all the successes recorded in the fish industry within the region, the major source of fish in Lusaka is external. The findings from the selected markets indicate that 87 per cent of the fish comes from other regions, and the remaining 13 per cent is sourced within LCRFS – with Kafue taking up the largest percentage as indicated in Figure 43.

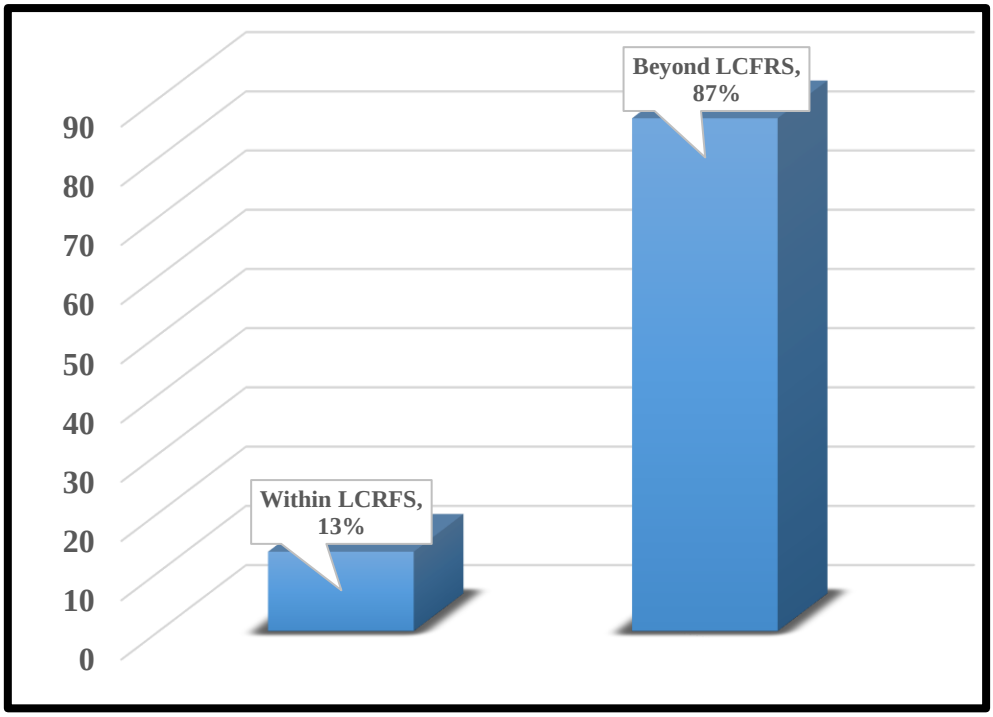

Figure 43: Sources of fish inflow into Selected Markets
Source: Field Data (2021)

There is a need to provide strategies for reducing fish losses this so because addressing the 78 per cent loss requires strategic interventions in the fish farming supply chain. Similar to other livestock products, interventions could involve improvements in transportation infrastructure, better storage facilities, and the development of markets closer to production areas to reduce the time between harvest and sale which calls for the enhancement of local food systems in spatial planning. Furthermore, exploring technological solutions, such as improved refrigeration, packaging, and transportation methods, could help mitigate losses and ensure that more harvested fish reaches the market in optimal condition. Above all, there is a need to understand consumer preferences and market dynamics, along with implementing solutions to reduce losses through a communicative approach and collaborative planning. This can contribute to the sustained growth of the fish farming sector in the LCRFS.

When it comes to the rivers and drainages of the LCRFS and their influence on fish production, the water bodies in LCRFS do not contribute heavily to the fish that is consumed in the region. Similar observations have been put forth by Chomba and Sichingabula (2015), who indicated that the drainage systems in Lusaka are mostly used for irrigation and little for fishing. However, just like the findings indicated, Chomba and Siachingabula were also in agreement that with the rate of siltation especially in rivers like the Chongwe River, even the small number of fish catches that happen will reduce even further. This is a clear indication that spatial

planning would play a critical role in the maintenance and preservation of these water bodies through the various local authorities where the drainages exist, proper management and planning are essential to sustainably use and protect the region's aquatic resources. Effective management of water resources involves collaboration between government bodies at different levels. Local authorities play a crucial role in implementing and enforcing regulations to ensure the sustainable use of water bodies. Furthermore, spatial planning involves organizing and regulating land use to achieve sustainable development. In the context of water bodies, it would involve determining zones for agricultural activities, urban development, conservation, and other uses. Figure 44 depicts the drainage system of the entire Lusaka Province. Understanding the spatial distribution of these water bodies is crucial for assessing their potential for various uses, such as fishing and irrigation.

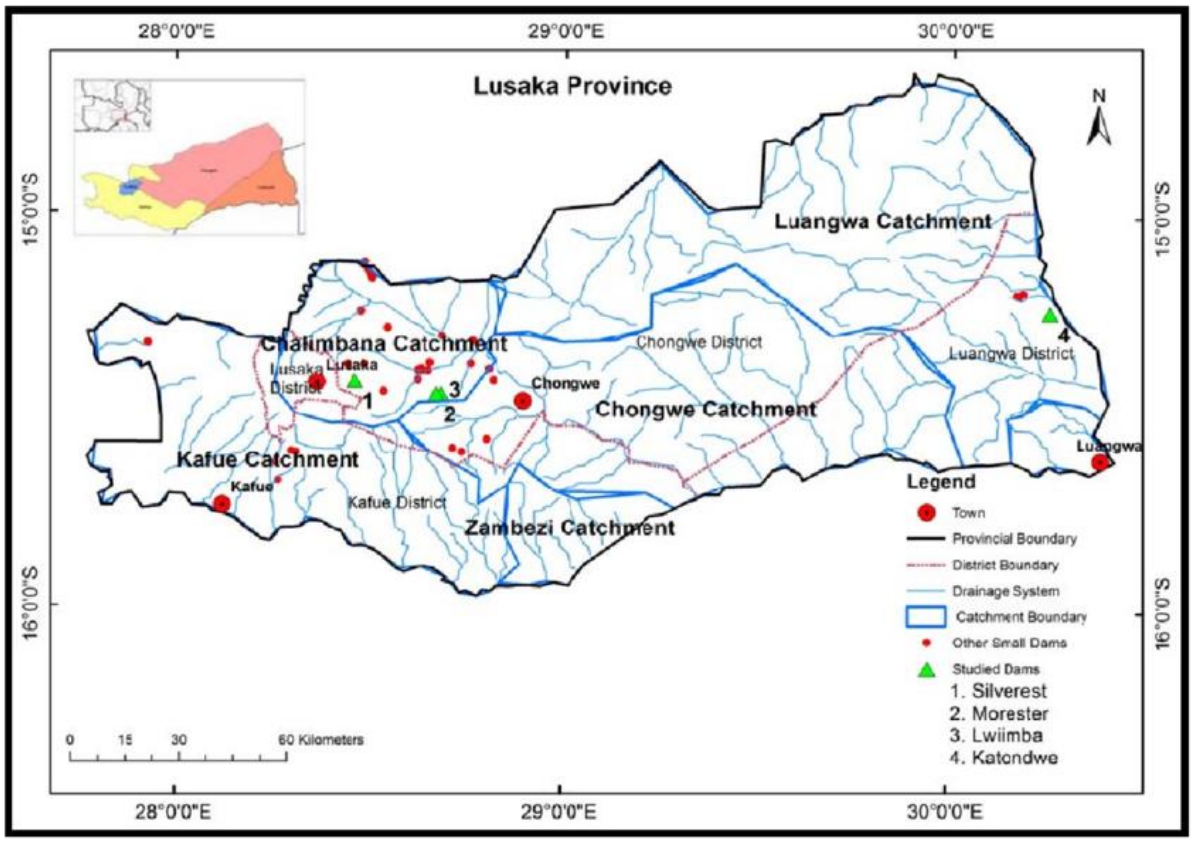

Figure 44: The Drainage System of Lusaka Province and Spatial Distribution of Existing Small Dams
Source: Chomba and Sichingabula (2015:7)

6.2.1.5 Dairy Products

Milk is one of the major commodities consumed in Lusaka city. The LCRFS has many dairy farmers who produce milk. Among the major dairy companies that are milk up-takers from farmers in LCRFS and beyond include Lactalis, Zambeef, Dairy Gold, Zayaan Investments,

Diamondale, Kasisi Farms and Ranchdale. These up-takers process milk into other dairy products such as cream, butter, fermented, yogurt, and cheese, among others. Therefore, it is not clear the quantity of milk consumed by the city that is sourced from the farmers in the region. However, Dairy Gold is the up-taker of the milk from Palabana Dairy Cooperation (PDC) which has a membership of 90 to 100 active small-scale farmers who have their dairy cattle (Figure 45). The farmers from PDC deliver 4000 to 5000 litres a day and sometimes 7000 litres. The milk is delivered twice or three times a day transported via bicycles, tractors, and oxcarts, loaded in metallic containers. To contextualize this, the PDC board Chairperson narrated that:

"We sign a year's contract with a buyer at a price which is subject to change based on the trends in the market. Each farmer is subjected to a small handling fee which supports the operations of the cooperation" (Palabana Board Chairperson, 2022)

Figure 45: Dairy Cattle for one of the farmers in Palabana.
Source: Field Data Collected with AfricitiesFood (2022)

The disparate in the milk delivered by the PDC farmers is dependent on so many factors including management practices, nutrition, milking techniques, genetics, and breed of dairy animals, among others. However, most of the small-scale farmers interviewed in the LCRFS pointed out that management practices, nutrition, and milking techniques as the major contributing factors to their unstable production of milk from the animals. This resonates with the assessments of ZNFU who pointed out that there is much need by various stakeholders

including spatial planners in training farmers on how to handle dairy animals and ensuring that maximum milk is claimed from the animals. It is however important to also draw lessons from Battersby and Watson (2019), who indicated that economic considerations, such as the cost of feed, labour, and infrastructure, also influence the profitability of dairy farming in urban areas. They further pointed out that efficient management practices that balance input costs with milk production are crucial. This was one of the gaps that existed in most of the farmers that were sampled in the LCRFS.

However, it is important to note that the interplay of these factors requires a holistic approach to dairy farming, encompassing genetics, nutrition, management practices, and environmental considerations to optimize milk production and ensure the sustainability of dairy operations. There is also needed to control and manage the aspect of diseases in animals which has the potential of hindering milk production. This could be championed by the public health department of the local authority with a communicative approach through indigenous knowledge and one health of which planners in the public health department should poses. Cook (2018) points out that there is a need to understand what has been working for agricultural food producers in mitigating diseases and ensuring maximum food production is attained.

With the expansion of the city into the food-producing hubs of LCRFS such as Chongwe, Chisamba, Lusaka West, Chibombo and Kafue dairy farmers have been under threat. This is so because they are the majority who are closer to the city due to the perishable nature of the products, they deal in. A classic example is that of Ranchdale dairy farm which has now been turned into residential plots. Others are Dimondale, which was once a household name, and has also been affected by city expansion. What this status quo has created is a slow monopolization of the dairy industry to be dominated by internationally supported companies such as Lactalis and Zambeef. However, drawing lessons from Cabannes and Marocchino (2018), there is a need to fully integrate dairy farming into the main urban space even as cities expand. As a signatory to the Milan Urban Food Policy Pact (2015), Lusaka has the potential to fully implement and preserve dairy farming even as the city is expanding into the food-producing region. Figure 46 shows the location of some of the dairy farms in the LCRFS while Figure 47 shows the movement of the sampled farmers to the market.

Figure 46: Dairy Producing farms in the LCRFS.
Source: Google Earth (2023)

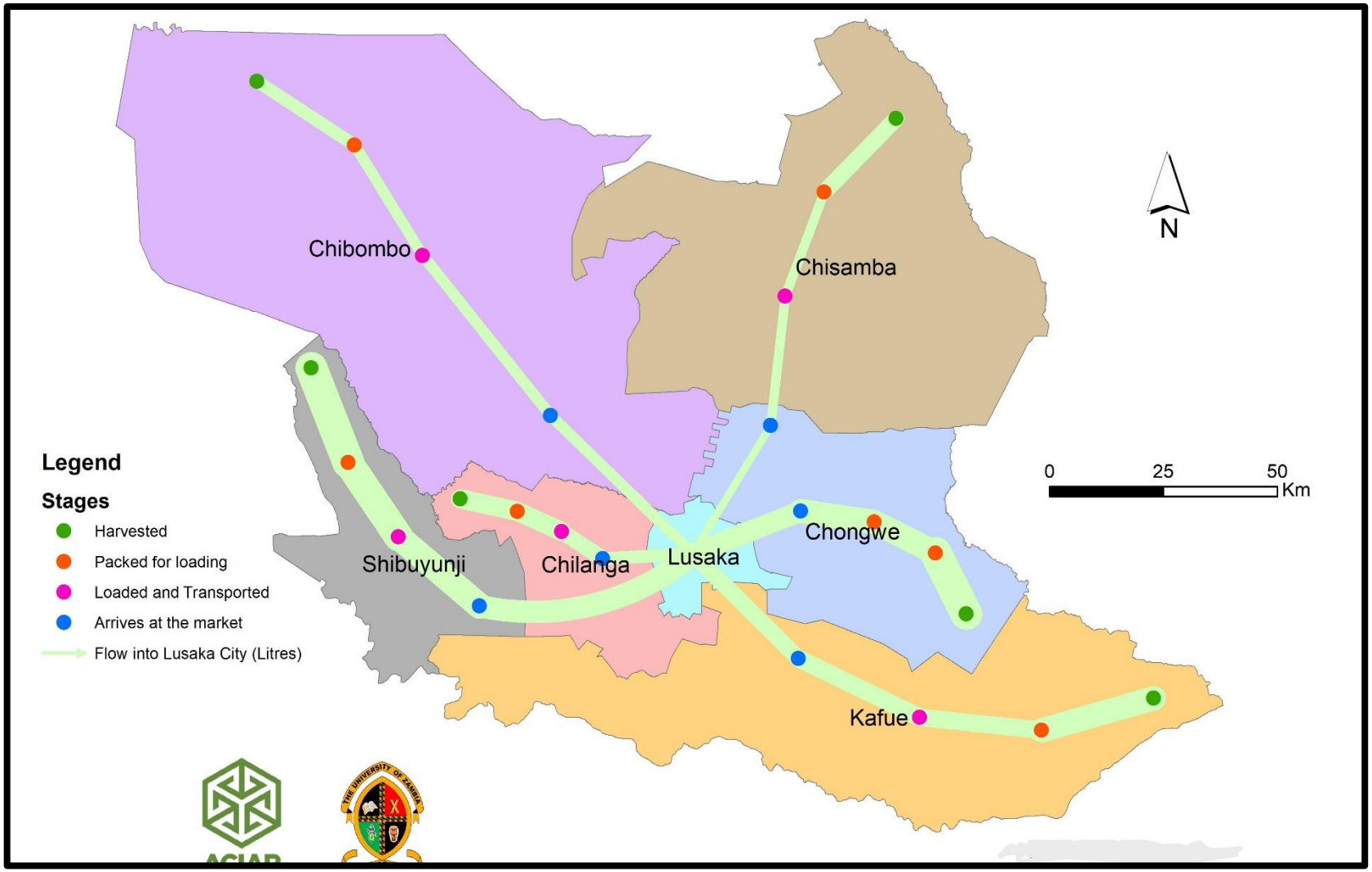

Figure 47: Milk from Harvest to Market Among the Sampled Farmers.
Source: Field Data with AfricitiesFood (2022)

6.2.1.6 Pulses/Legumes/Nuts

Pulses, legumes, and nuts are key components of a healthy diet. Ninety-six per cent of those at the local markets are sourced outside Lusaka CRFS, two per cent from Chibombo and the remaining two per cent from Lusaka and Chongwe districts. In most urban settings both the global north and the global south, pulses, legumes, and nuts are never a major issue of the diet or something that could be considered a priority in meeting food security. However, the findings differ considerably from those of Toriro (2018) in Epworth Zimbabwe. In Epworth, it was found that nuts (Peanuts) specifically play a critical role in the diet of its residents, as such they are readily available and produced within the town. This can be attributed to the aspect that Epworth is agriculturally oriented as it lies near farmlands that readily produce the nuts. Furthermore, in Epworth, there is a huge tendency to grow crops on-plot. Drawing it back home, there is a need to promote the growing of pulses/legumes/nuts on-plot and in the immediate surrounding farms to ensure their readily availability in the CRFS.

It should be noted that a lack of on-plot farming in Lusaka has a lot to do with a lack of integration of local food systems in spatial planning. Lusaka developed differently, and the planning was largely organic and spontaneous. As a city of the global south, the growing of food mainly on-plot has had further implications on conflicts with authorities. The legislative framework, planning practice and general urban administration perceive off-plot urban agriculture more negatively than on-plot agriculture (Mbiba, 1995; Mubvami and Mushamba, 2006). The legislative frameworks in most sub-Saharan Cities Lusaka inclusive were enacted for a food system that was mainly supplied from the rural and commercial farming areas. Urban food production was therefore not meant to significantly contribute to urban food provisioning. This position was reflected in the planners' attitudes to urban food production. Whilst some displayed the influence of a modernist approach, some felt there are still sufficient spaces for food production outside urban areas.

6.2.1.7 Roots and Tubers

Roots and tubers are staples at the local markets. Findings indicated that sweet potatoes, cassava, Irish potatoes and *bustle* are among the types of tubers/roots consumed in Mtendere East and Lusaka at large. It was established that sweet potatoes, cassava and *busala* (Dioscorea hirtiflora) are all sourced beyond the Lusaka CRFS. Sixty-four per cent of the Irish potatoes are sourced beyond the LCRFS as far as South Africa and 18 per cent from Chisamba and Chibombo Districts respectively. Just like the pulses/legumes/nuts, the roots and tubers are not

a major diet issue in Lusaka hence the lack of their production in the CRFS. Furthermore, they don't yield exorbitant profits to the local farmers hence less investment in them.

6.2.1.8 Fruits

The bulk of the fruit inflow into the Lusaka City local markets is externally sourced. Ninety-two per cent of fruits such as apples, oranges, bananas, and lemons, come from outside the LCRFS in South Africa and the remaining eight per cent is what comes from within the CRFS. Forty-two per cent of the wild fruits come from outside the CRFS, 18 per cent and 16 percent from Shibuyunji and Mumbwa districts respectively, and 11 percent from Chongwe District. Fifty-five per cent of the local fruits are sourced within Lusaka CRFS and 45 per cent outside the CRFS. Figure 48 shows how much of the fruits are harvested and transported (using small tracks) within the LCRFS. The difference Regarding quantity, is 46,180 kg are seasonal fruits and an approximated 33,681 kg ends up on the market in the region. These findings suggest that the region does not produce enough fruits to meet the demand. Figure 49 depicts the modalities that surround mango trading which is one of the seasonal fruits in the region, while Figure 50 shows fruit loss (mangoes) due to lack of storage.

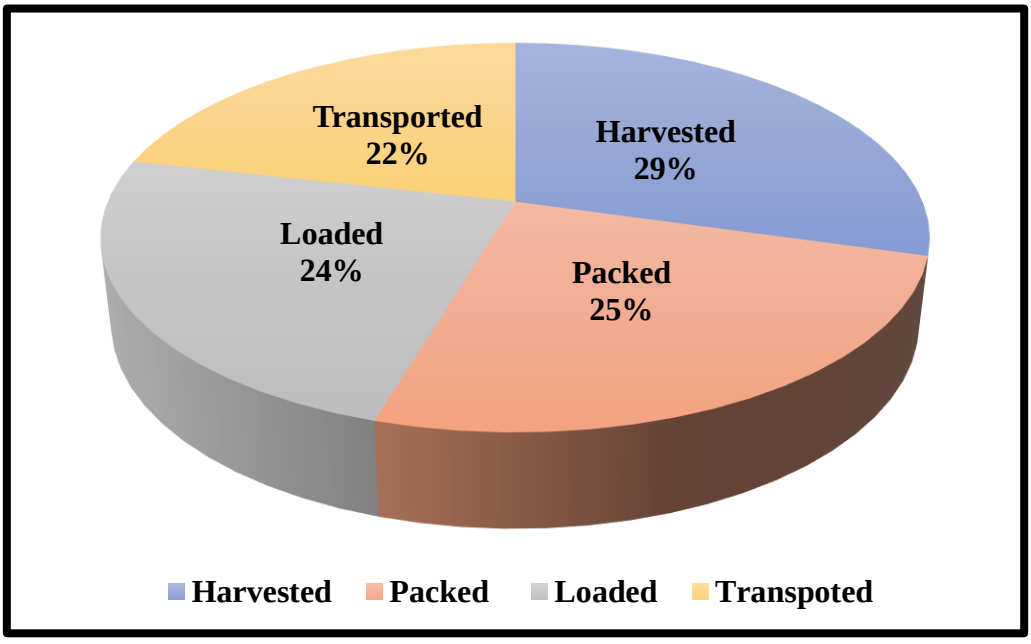

Figure 48: Fruits Produced and Consumed in the LCRFS
Source: Field Data Collected with AfricitiesFood (2022)

Figure 49: Selling of Fruits (Mangoes) From Point of Distribution at Soweto Market
Source: Field Data Collected with AfricitiesFood (2022)

Figure 50: Mango Loss at Soweto Market Due to Lack of Storage
Source: Field Data Collected with AfricitiesFood (2022)

Traditionally speaking, most Zambians do not consider fruits a major diet priority. It is usually looked at as a luxury or something eaten when one is sick. This has contributed to less production within the CRFS. However, the findings have also pointed out that climatic conditions influence their production and are also another major factor that has contributed to the lack of their production in the region. As such the major bulk of the citreous fruits are imported from South Africa. Once they reach Lusaka, they are distributed to all the markets including Soweto, Bauleni, Chazanga, Kaunda Square, and Mtendere East.

6.2.2 Major Sources of Food in Local Markets

Table 10 shows the food that comes from within the LCRFS and beyond into Mtendere East Market, Chazanga Market, Kaunda Square Market, Bauleni Market and Soweto Market. Averaging all the sources of the listed food groups, evidence shows that the major source of food in the food system for Lusaka is externally sourced from the Southern Province, Eastern Province, Central and Northern Province. This accounts for up to 59 per cent of the supply in Mtendere East Market, Chazanga Market, Kaunda Square Market, Bauleni Market and Soweto Market. Within LCRFS, the remaining 41 per cent is sourced from Chisamba District and Chibombo District at 13 per cent and 9.5 per cent respectively. Others are Kafue District at 4.75 per cent, Mumbwa District at 4.5 per cent, Lusaka District at 4 per cent, Chongwe District at 3.88 per cent, Chilanga District at 0.88 per cent and Shibuyunji District at 0.38 per cent. These distributions are in tandem with what FAO (2019) established. Based on the survey that FAO (2019) conducted to better understand the farmers specifically engaged in production diversifying of horticulture and/or livestock production, it was indicated that 37 per cent of the farmers sell their produce in urban areas (Lusaka), while 33 per cent in both rural (peri-urban areas) and urban areas including Mongu, Kitwe and Ndola, and a further 30 percent in rural or peri-urban (Chongwe, Chibombo, Mumbwa, Shibuyunji, Kafue, Chisamba, Chilanga) areas. Some of the products were sold at the farm gate and at local markets in each of the districts within the LCRFS.

When it comes to actual quantities, the amount of food that is produced in the LCRFS is not enough to meet the demands of the entire region or just Lusaka city. The exception is made with seasonal products like tomatoes. Thus, to meet the needs of the entire Lusaka food system, food is also sourced from outside the region and the country. Certain products that meet the needs of the food system come from South Africa through various chain stores like Shoprite, Pick and Pay, and Choppies. Table 11 summarizes the quantities in kilograms of some of the foods that are produced and consumed within the LCRFS by the 1500 farmers. The table has

broken them down into what is harvested, sold on the farm, packed, loaded, and eventually transported to the market.

That food that is mainly sourced outside the LCRFS is a clear indication of the gap that exists in food production within the city and the LCRFS. The implication is that food costs more than it should because of higher transportation costs. There are also issues of food safety and loss of freshness considering the distance covered to the market. Nevertheless, if food prices are to be kept at a low price through spatial planning, the following factors will have to be enforced: provision of good road infrastructure; protection of agricultural land; provision of incentives such as toll waivers for food transporters into the city; and building trading points. And in the most limited land parcels in the informal settlements, UA must be encouraged and promoted at all costs to guarantee food security. No doubt, spatial planning needs to take a leading role in ensuring that informal settlements are prioritised in championing the provision of food since they host the bulk of the entire population of Lusaka. The role of marketers should also be considered as they are major stakeholders in ensuring that food security is attained.

From the viewpoint of FAO (2019) and that of the findings in the LCRFS, marketeers are agents who arrange sales without taking ownership of the commodity, earning their money on a commission basis. In theory, they can improve the efficiency of the market by gathering information on sellers and buyers transparently when bilateral search between buyers and sellers happens at too high a cost. However, these efficiency gains depend solely on the behaviour of marketeers, and whether they have enough power to hide information and influence prices. As a result, in Lusaka's market, their presence remains controversial as farmers have mixed opinions of brokers: some see them as solely profiting from their intermediary position by manipulating prices. Others believe that they provide some level of services, such as greater security and sales opportunities for their product. This is where spatial planning comes in. As already alluded to, spatial planning is beyond physical planning but also intermediating among the various players such as marketers and farmers. In ensuring that the integration of food systems in spatial planning is enhanced, the study did trials in which all the stakeholders including the farmers, transporters and marketeers were brought to one table to iron out how best they can all benefit from the food system without one party feeling outdone. The result has been a partial harmonization in the food system of which more needs to be done.

Giving a context to the power dynamics aforementioned, marketeers' behaviour is influenced by the governance mechanisms within Lusaka's food system. Two main types of markets exist:

city council markets, like Soweto, and cooperative markets like Mtendere East, Kaunda Square, Chazanga and Bauleni. Soweto is the main entry point for fresh food. The arrangements governing the market stipulate that producers must use the service of marketeers and not sell directly to buyers. Producers and marketers then agree on a commission which could be as high as 10 per cent. This is where the greater price increases occur within the food system (Blekking et al, 2017). Therefore, the role of marketeers and the services they provide, and more broadly how markets are governed and regulated within the city, remain a major weakness of the food system in which as already indicated, spatial planning must take centre stage.

One critical aspect is the aspect of proximity. The food that comes into the LCRFS is sourced externally and from distant places. Food coming from the Southern Province covers an approximated distance of about 300-400 Km, while from the Northern Province covers about 1,024 Km picking Mbala as the furthest point. Withing the LCRFS picking Mumbwa and Lufunsa as the furthest points, we see food moving at an approximated distance of 162 Km and 158 Km. These distances compromise the quality of the food, especially the perishables. Apart from the quality of the food, food miles are more leading to high transport costs which are paid by the consumers. If in spatial planning land was deliberately allocated to produce food within or closer to urban centres, food miles would be drastically reduce making food more affordable. There is a need to reroute some of the road networks to ensure shorter distances are covered when transporting food within the LCRFS. This is a capital project, but it can be attained. Other than rerouting, there is a need to properly maintain and manage the already existing roads which are impassable, especially in the rainy season.

Table 10: Average sources of food inflow into Mtendere Market, Chazanga, and Kaunda Square Markets in Percentage

Food Groups	Sources									Total per cent
	Lusaka District	Chongwe District	Chilanga District	Kafue District	Shibuyunji	Mumbwa	Chisamba	Chibombo	Beyond LCFR	
Cereals	4	6	0	0	0	18	25	20	27	**100**
Vegetables	17	5	2	0	0	13	33	27	3	**100**
Livestock	8	17	3	24	2	4	15	5	22	**100**
Fish	0	0	0	13	0	0	0	0	87	**100**
Milk	1	1	1	1	1	1	8	4	82	**100**
Pulses & Legumes	0	0	1	0	0	0	1	2	96	**100**
Roots and Tubers	0	0	0	0	0	0	18	18	64	**100**
Fruits	2	2	0	0	0	0	4	0	92	**100**
Average	**4**	**3.875**	**0.875**	**4.75**	**0.375**	**4.5**	**13**	**9.5**	**59**	**100**

Source: Field Data (2022)

Table 11: Produce Quantities from 1500 Farmers in the LCRFS

Produce	Actual Quantities (Kg/Lt/) Per Month						Individual Average Individual Farmer Quantities (Kg/Lt) Per Month						
	Harvested	Sold/Consumed/Lost on Farm	Packaged	Transported	Arrival at Market	% of Arrivals	Count of Farmers Interviewed Per Product	Harvested	Sold/Consumed/Lost on Farm	Packaged	Transported	Arrival at Market	% of Arrivals
Fish	67,490	52,837	14,653	14,653	14,653	22	**30**	2,249.7	1,761.30	488.4	488.4	488.4	22
Fresh Vegetables	656,272	169,028	487,243.7	487,243.7	474,327.6	72	**687**	955.3	186.80	768.5	768.5	751.7	79
Fruits	47,140	8,910	38,230	38,230	33,723	72	**71**	663.9	93.30	570.6	570.6	510.9	77
Maize	191,575	141,445	50,130	50,130	50,130	26	**45**	4,257.2	79.70	4,177.5	4,177.5	4,177.5	98
Livestock	64,110	9,319	54,791	54,791	54,191	85	**62**	1,034.0	72.80	961.2	961.2	961.2	93
Milk	23,430.5	32	23,399	22,820	21,949	94	**48**	508.7	10.00	498.7	487.8	475.4	93
Milk Products	4,640	540	4,100	4100	4,100	88	**9**	662.9	150.40	512.5	512.5	512.5	77
Poultry	250,866	27,850	223,016	223,016	220,639.5	88	**215**	1,241.9	92.30	1,161.3	1149.6	1149.6	93
Tomatoes	1,087,572.5	563,111	524,462	521,242	521,242	48	**336**	3,265.9	1,540.70	1725.2	17,14.6	17,14.6	52

Source: Field Data (2022)

6.3 Food Security

6.3.1 Household Dietary Diversity Score (HDDS)

What households buy has a bearing on what individuals eat. However, it is not possible to directly calculate individual diets from household expenditure due to imbalances in the sharing of food among household members (Ruel et al., 2014). According to the WHO, Household Dietary Diversity Score (HDDS) refers to the consumption of foods from major nutritionally significant foods while maintaining a balance between plant and animal-source meals (WHO, 2021). To capture dietary data, a dietary diversity score is used to get the consumption of different food groups statistically associated with nutrient adequacy (rather than individual foods) (Ruel et al. 2014).

Based on the sample size, and calculations done in chapter three, HDDS of 126 households of Chazanga, 124 for Kalikiliki and 124 for Mtendere East were obtained as indicated in Table 12 for the last 24 hours and the last 7 days as indicated in Table 13. In calculating HDDS, the value of the variables ranged from 0-16 based on the 16 food groups presented in the questionnaire. The total number of food groups consumed by members of households (values from 'A' to 'P') are presented as either '1' or '0'. After summing up, it was concluded that the higher the value, the more diverse the diet and the more food secure the household is.

***HDDS** (0-16) = (A+B+C+D+E+F+G+H+I+J+K+L+M+N+O+P)*
For Example, one of the households in Chazanga had the following outcomes in the last 24 hours = (1+0+0+1+1+1+0+0+1+0+0+0+0+1+0+0)
HDDS Variable for Last 24 hours = 6
This meant that out of a possible 16, the household scored 6 which is 37.5 per cent food secure.

Table 12: Tally of 24 Hours Recall Household Dietary Diversity Scores for the Individual Households in the Study Areas

Study Area	Tally of Household Dietary Diversity Score							Total Tally (Sample Size)
	HDDS4	HDDS5	HDDS6	HDDS7	HDDS8	HDDS9	HDDS10	
Chazanga	1	5	37	24	52	7	0	**126**
Mtendere-East	0	2	36	37	36	12	1	**124**
Kalikiliki	0	10	20	34	37	23	0	**124**
TOTAL	**1**	**17**	**93**	**95**	**125**	**42**	**1**	**374**

Source: Field Data (2022)

Table 13: Tally of 7 Days Recall Household Dietary Diversity Scores for the Individual Households in the Study Areas

Study Area	Tally of Household Dietary Diversity Score							Total Tally (Sample Size)
	HDDS4	HDDS5	HDDS6	HDDS7	HDDS8	HDDS9	HDDS10	
Chazanga	1	5	40	24	49	4	3	**126**
Mtendere-East	1	2	35	39	29	12	6	**124**
Kalikiliki	4	09	25	30	30	23	3	**124**
TOTAL	**6**	**16**	**100**	**93**	**108**	**39**	**12**	**374**

Source: Field Data (2022)

From Tables 12 and 13, many of the households across all three residential areas had HDDS of eight and below for both 24-hour and seven days recall. A total of 88.5 per cent in the last 24 hours and a total of 86.4 in the last seven days were said to be food insecure (any household that had an HDDS of 50 per cent (8) and below was said to be food insecure in this study). When it comes to the individual households, Table 14 indicates the percentages of food insecurity levels for the last 24 hours and seven days among the sampled households.

Table 14: Percentages of Food Insecurity Levels in the Selected Residential Areas

Residential Area	Duration	% of HDDS of 50% and below
Chazanga	Last 24 Hours	94.4
	Last 7 Days	94.4
Mtendere-East	Last 24 Hours	89.5
	Last 7 Days	85.4
Kalikiliki	Last 24 Hours	81.5
	Last 7 Days	79

Source: Field Data (2022)

Of the three residential areas, Kalikiliki presented lower food insecurity levels compared to the other two residential areas in the last 24 hours and seven days. It was followed by Mtendere East and Chazanga was last. There was not much variation between the recall of 7 days and that of 24 hours among the residential areas. However, the percentage of households that were food insecure was too high in the selected areas, which could be an indication of a lack of a proper food system in Lusaka and a higher level of poverty in informal settlements. Several

factors may be pointed at as reasons for these high levels of food insecurity in Lusaka's informal settlements. For instance, as the findings have indicated, informal settlements often face challenges in accessing affordable and nutritious food. The residents of Kalikiliki, Chazanga, and Mtendere East are constrained by factors such as limited income, lack of formal employment, or inadequate infrastructure for food distribution. This scenario not only affects the informal settlements in Lusaka but also the entire sub-Saharan Africa. Battersby (2018) points out that the major challenge that informal settlement dwellers of Soweto South Africa are facing is the issue of lack of income, lack of meaningful jobs and an absence of food distribution infrastructure. This can also be related to the happenings in Kisumu Kenya, Harare Zimbabwe, and Lilongwe Malawi (Mulenga, 2013).

Apart from having a limited income, the findings suggest a potential inadequacy in the local food systems. This has been necessitated by challenges in the production, distribution, and availability of food within these residential areas. It might be indicative of the need to strengthen and diversify local food production and supply chains. The inadequacy of the local food systems has exacerbated economic constraints. With economic constraints comes high levels of poverty which contribute strongly to food insecurity. It is disclosed in the selected areas that limited access to financial resources may have prevented the households from having access to an adequate and diverse range of food items, leading to nutritional deficiencies as highlighted by the scores. With infrastructure and services being a problem in the LCRFS especially in the informal settlements, including having poor sanitation, having limited access to clean water and inadequate waste management, food security has been affected notwithstanding the health issues as such contributing to the overall vulnerability of residents.

However, addressing the observed important levels of food insecurity in Lusaka's informal settlements requires a comprehensive and multi-faceted approach unlike working in silos. The first point in which these issues would be addressed through spatial planning is by ensuring there is improvement in the local food systems. Here, spatial planning would need to take a leading role in enhancing local agricultural practices, promoting community gardens, and supporting local farmers. This approach would ensure a more resilient and sustainable food system. There is also the issue of economic empowerment. Informal settlements through the Constituency Development Fund (CDF) could be economically empowered by implementing programs that focus on income-generating activities and skills development to help alleviate poverty and improve households' purchasing power. This could be complemented through

social safety nets, such as food assistance programs or conditional cash transfers, which can provide immediate relief to vulnerable households in the informal settlements.

Spatial planning is synonymous with infrastructure development as such it can also be an avenue in which the integration of food systems in spatial planning can be enhanced. This could be done through investing in infrastructure improvements, such as better water and sanitation facilities as well as contributing to improved health outcomes and indirectly impacting food security. Nima settlement in Accra, Ghana is a perfect example that has used infrastructure improvements to improve the status of food security. After the improvement of the Nima settlement, there was an increase in the levels of food security from 36 per cent food secure to about 42 per cent (Chitekwe-Biti, et al., 2022).

Furthermore, collaboration between government agencies, non-governmental organizations, and local communities is essential to design and implement effective strategies that address the root causes of food insecurity in informal settlements. Additionally, ongoing monitoring and evaluation of these interventions will be crucial to assess their impact and make necessary adjustments.

6.3.2 Affordability and Household Food Insecurity

Household Food Insecurity (FI) is a measure of the availability of food in households and limited access to safe and nutritious food to fulfil dietary requirements for an active and healthy life. Household Food Insecurity is a multi-dimensional phenomenon that occurs in most areas of Lusaka. Results show that households in Lusaka regard three meals of the day as important. These are breakfast, lunch and dinner or supper. However, low-income households rarely ate breakfast due to limited finances. According to the HDDS, the most common foods consumed frequently in these households are vegetables because they are relatively more accessible as they are easily grown in Lusaka (Chapoto, et al., 2016). The results also indicated that the consumption of protein foods, dairy products and fruits remains quite low in terms of the number of households who eat them and the frequency with which they are eaten. High costs and the inability to identify healthy foods are the main reasons some households do not eat healthy foods. The poor households' inability to afford healthy food forces them to switch to cheaper, less preferred alternatives that have little or no nutritional value. It is this desire to reduce the percentage of household expenditure, consumption and meals taken in a day that leads to food insecurity in these households. This is evident through the Lusaka monthly surveys by JCTR:

"The cost of living for a family of five living in Lusaka as measured by the Jesuit Centre for Theological Reflection (JCTR) Basic Needs and Nutrition Basket (BNNB) in March 2022 stood at K9, 411.50. This is a K106.12 increase from K9, 305.38 recorded in February 2022. Overall, the total food cost increased by a larger margin than the non-food cost. Total food costs stood at K3, 738.04 from K3, 648.92 - a K89.12 increase. The upward movement in the basket is attributed to increased prices of items such as 25kg bags of roller meal which went up by K70.36 from K205.64 (K102.82/per bag) to K276.00 (K138/per bag), 1kg of Kapenta also went up by K40.41 from K249.52 to K290.00; 40kg of vegetables also went up by K14.05 from K566.41 to K580.49. Additionally, the basket recorded increases in the price of 3.6 litres of cooking oil which went up by K6.00 from K159.63 to K165.00. However, the basket recorded decreases in 4kg of onion given the increased domestic supply of the commodity moving from K118.20 (29.55/kg) to K100 (K25/kg), 14kg of other fruits which was reduced by K36.66 from K399.66 (28.55/kg) to K364.00 (26.00/kg). 1 kg cassava flour also reduced from K146.43 to K137.61, a reduction of K8.82." (JCTR, 2022, p. 1).

It can be pointed out that there is a total cost increase in the overall cost of living for the family from K9,305.38 in February 2022 to K9,411.50 in March 2022. This represents a K106.12 increase. This change is essential for understanding the economic pressures on households in Lusaka during this period, it has also been pointed out that the total food cost increased by a larger margin than non-food costs. This shows that food prices experienced significant changes during the specified period, which could affect the family's budget and overall well-being. It is also indicative that the prices of 25kg bags of roller meal, 1kg of Kapenta, 40kg of vegetables, and 3.6 litres of cooking oil increased. This increase can be attributed to several factors such as supply chain issues, inflation, or other economic dynamics affecting the prices of these commodities of which spatial planning might not have a direct influence. It should also be noted that the increase in the prices of roller meal, Kapenta, vegetables, and cooking oil suggest challenges in food affordability for the average family. These staple food items are crucial for daily meals, and upward price variations can strain household budgets, especially for the informal settlements.

The fluctuations in prices may influence consumer behaviour, as families may need to adjust their spending patterns based on the varying costs of essential items. For instance, they might seek alternatives or reduce consumption of items that have significantly increased prices which unfortunately results in compromising food security. The information provided by the JCTR highlights the economic challenges faced by families in Lusaka, Zambia, of increased cost of living, particularly in the prices of essential food items. This analysis sheds light on the dynamics of local economic conditions and their impact on household budgets and well-being. As such there is a need to find ways in which to integrate local food systems in spatial planning.

6.4 Legislative Guidance to Food Accessibility in Lusaka

Some many policies and legislations promote and guide food accessibility in Lusaka and the country at large. Among them is the National Nutrition and Agriculture Policy. According to the National Nutrition and Agriculture Policy, Zambia's Vision 2030 aims for a well-nourished and healthy population by 2030.' In line with this vision, Zambia became one of the first signatories to the Scaling Up Nutrition (SUN) movement which is aimed at improving stunting rates.

The country is also a signatory to the new Universal Sustainable Development Goals (SDGs) (which include nutrition and agricultural targets) and the World Health Assembly which is committed to ending all forms of malnutrition. Furthermore, it has adopted a Comprehensive Africa Agriculture Development Plan compact which aims to improve food security and nutrition, among other things.

6.4.1 The National Food and Nutrition Policy

The National Food and Nutrition Policy provides strategies for improved nutrition but has historically focused on managing malnutrition, particularly among the low-income population. The National Food and Nutrition Policy operationalizes the National Food and Nutrition Act. The 2006 National Food and Nutrition Policy called for nutrition to be addressed through a multi-sectoral approach involving the health and agricultural sectors, among others and included a call for food diversification. According to the WFP (2014), the food policy aims at achieving national self-sufficiency in the staple crop of maize, with large input and output subsidies for its production taking up around 80 per cent of the agricultural budget.

However, despite having this policy in place, addressing malnutrition requires a comprehensive and multi-faceted approach that goes beyond just food production. It involves addressing economic, educational, and healthcare aspects, as well as ensuring the accessibility and affordability of a diverse and nutritious diet for all segments of the population. Additionally, continuous monitoring, evaluation, and adaptation of policies are crucial to ensuring their effectiveness over time. This heightens the integration of food systems in spatial planning. Spatial planners can coordinate a multi-faceted approach beyond just producing food and ensuring that the entire food system is functioning effectively.

6.4.2 Food Reserve Agency ACT

The mandate of the Food Reserve Agency (FRA) is to procure, maintain and/or safely store major foods (grains and cereals) for the national strategic reserves to ensure national food

security. It operates under the FRA Act No. 12 of 1995 which provides for matters connected with, or incidental to, the foregoing.

The Food Reserve Agency (FRA) plays a crucial role in ensuring food accessibility and national food security through its mandate to procure, maintain, and safely store major foods, particularly grains and cereals. It is however important to note that while the FRA contributes significantly to ensuring food accessibility, a comprehensive approach to food security involves addressing various factors such as agricultural practices, infrastructure, economic conditions, and social policies. The collaboration between the FRA and other stakeholders is essential to creating a resilient and accessible food system for the entire population. Spatial planners would be the link to upholding the FRA Act.

6.4.3 Food and Drugs Act

The Food and Drugs Act, among other things, aims to protect the public against health hazards and fraud in the sale and use of food, drugs, cosmetics and medical products and devices. 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.

The stability and safety of the food consumed is one of the pillars of food security by FAO (2016). As a result, the Food and Drugs Act, with its focus on protecting the public against health hazards and fraud in the sale and use of food, drugs, cosmetics, and medical products and devices, plays a crucial role in ensuring food accessibility through several mechanisms: quality assurance, consumer confidence, prevention of fraud, market fairness, public health protection, supply chain integrity. Spatial planners can influence the supply chain integrity. Through Spatial planning, safeguarding public health and consumer interests by setting and enforcing standards for food products will be guaranteed. This, in turn, would contribute to enhanced food accessibility by creating a reliable and trustworthy food supply system for the entire LCRFS.

6.4.4 Markets ACT (CAP 290)

This Act makes provision for the establishment of markets by local authorities with the approval of the Minister and the control and management of such markets by a local authority. The Act sets out the matters that may be regulated by the Minister by statutory instrument and by a local authority making by-laws, including the examination of produce or food for sale and the prohibition of adulteration of food.

The markets fall directly under the local authorities as such the Act should be managed easily through spatial planning. The Act's provision for the establishment and regulation of markets by local authorities addresses key aspects of food accessibility, including infrastructure development, quality control, consumer protection, and support for local agriculture. These measures collectively contribute to creating a reliable, organized, and safe marketplace for the community. As such it is up to spatial planners to take advantage of this Act and ensure that the food system functions effectively.

6.4.5 Competition and Consumer Protection ACT of 2010

The Competition and Consumer Protection Commission (CPCC) is a government body that seeks to protect consumers from unfair business transactions and competition processes under the Competition and Consumer Protection Commission Act (CPCA). The CCPC was established in 1997 under the name Zambia Competition Commission (ZCC). The name was later changed in 2010 to CCPC following the enactment of the new CCPA No. 24 of 2010 and the repeal of the old Act.

If well harnessed and applied by the various stakeholders in the Food System, the CCPA serves a vital role in ensuring fair competition and protecting consumers from unfair business practices. The commission's activities, grounded in legislation, contribute to creating a marketplace that is transparent, competitive, and beneficial for consumers and businesses alike. It is from these attributes that spatial planners need to take a keen interest to ensure collaboration in the food systems.

6.4.6 Farmer Input Support Programme (FISP)

The Farmer Input Support Programme was introduced in 2002 by the Zambian Government under the Poverty Reduction Strategy Paper (PRSP). FISP aimed to increase the production of maize and improve food security amongst small-scale farmers by supplying inputs such as fertilizer and maize seed at a subsided price. According to the FISP implementation manual (2014/2015:4), it is aimed at:

> *"... Improving access of resources to poor small-scale farmers to inputs and enhancing the participation and competitiveness of the private sector in the supply and distribution of agricultural inputs in good time and adequate amounts".*

According to Smale and Mason (2013), subsidised seed raises maize production, and incomes, and reduces the poverty gap and relative deprivation income equality among Zambian smallholder farmers (IAPRI, 2013).

FISP has led to notable innovations such as the involvement of local leaders in the selection of beneficiaries. For the FSP programme, beneficiaries were selected by cooperative boards and local extension officers only, and representatives from traditional authorities (e.g., chief or headman). Others involved in the selection of FISP beneficiaries include community-based organisations, youth farmer organisations and public officers other than MAL (World Bank, 2021).

Another innovation under FISP (2010/2011) was the expansion of the range of crops which were included in the program such as sorghum, cotton, rice, and groundnuts as part of crop diversification. Also affected was the area of cultivation which moved from 1 ha of maize to 0.5 ha in line with the reduction in the input pack size. The eligibility requirements for FISP remain the same as those under FSP. The overall objective of FISP is to improve the supply and delivery of agricultural inputs to small-scale farmers through sustainable private sector participation at affordable costs to increase household food security and incomes.

6.5 Summary

The chapter has outlined the food system and food security status of Lusaka. It has been noted that although the food system of Lusaka has sustained the lives of many people, it is inadequate in many areas. The system has not eliminated food insecurity in the city, to the extent that people go hungry for days and children suffer from malnutrition as evidenced from the HDDS. It can be pointed out from this Chapter that apart from facing limited income challenges, the research findings indicate potential shortcomings in the local food systems. These shortcomings are primarily due to difficulties in food production, distribution, and overall availability within residential areas. This situation underscores the importance of strengthening and diversifying local food production and supply chains. The deficiencies in local food systems have further worsened economic hardships. These economic difficulties often lead to elevated levels of poverty, which significantly contribute to food insecurity. The study highlights that restricted access to financial resources may have hindered households from acquiring a sufficient variety of food items, resulting in nutritional deficiencies, as evidenced by the scores. Inadequate infrastructure and services within the Lusaka City Region Food System (LCRFS), particularly in informal settlements, such as poor sanitation, limited access to clean water, and insufficient waste management, have also impacted food security. These challenges, coupled with health issues, contribute to the overall vulnerability of residents in the region. This is primarily attributed to the lack of inclusion of food in spatial planning. Other

reasons include poor and exclusive policy, legal, and institutional frameworks; poor food production practices and systems; poor food waste management; high post-harvest losses; lack of storage facilities for perishable foods such as onions, tomatoes, and green peppers; poor road infrastructure links between urban and rural areas; high food production prices; and high unemployment rates among peri-urban dwellers. Therefore, the government should emphasize and strengthen its efforts toward policy implementation and monitoring as much as it does policy formulation. The government should also develop a policy or strategy that removes the impediments to the food system and enhances effectiveness and efficiency at production, marketing, and consumption levels.

CHAPTER SEVEN: NEXUS BETWEEN SPATIAL PLANNING AND FOOD SYSTEM OF LUSAKA

7.0 Introduction

This chapter also presents part of the findings. It focuses on the third objective of the study by bringing out the nexus between spatial planning and food systems in the city of Lusaka and the LCRFS. Part of this chapter has already been accepted for publication as a book chapter in "*Springer's book on Food and the City.*" The book chapter is titled "*From Urban Agriculture to city region food systems: The Changing Character of food in Lusaka City.*"

7.1 The Problem with Urban Planning and Nexus with Food System of Lusaka

Similar to Geography, Urban planning is a dynamic concept in constant need of review but has been heavily lacking in cities of the global south. Cities of the global south (including Lusaka) have often been characterized by poverty, inequality, and informality. Most often, these characteristics arise from planners not understanding the role they play in the dynamic world they exist. For instance, planning approaches that were adopted from the global north and not localized to the global south context are still in use, thus presenting a lacuna in the implementation. One would argue that reforms such as the introduction of the URP Act of 2015 are being made to replace some of these planning practices, however, this is not enough to change the narrative. There is a need to change forms of governance in terms of spatial planning and urban conditions to meet the growing demands of new urbanism which require cities to be self-sufficient in matters of food security.

Like most cities in developing countries, Lusaka's land management is guided by a detailed land use plan projected for many years called a Master Plan. According to the findings, the Master Plan constitutes regulatory systems such as land zoning by assigning what should be done on a particular zone of land, and the alteration to that zone through what is known as 'change of use'. The change in land use is equally supported by the URP Act of 2015. This means that if a particular area is zoned as an agricultural zone, only agricultural-related activities should be practised in that area. At the same time, if one applies to change the use of that land to residential or commercial, upon approval, the area will be changed. Consequently, most of the areas meant for food production in Lusaka city have largely been turned into residential areas, commercial and industrial areas (Chitonge & Mfune, 2015). This demonstrates the inability of spatial planning in Lusaka to enhance food systems, thereby reducing the nexus between spatial planning and food systems in Lusaka.

Master planning exists on the premise of the 'good city', a notion rooted in the thinking of early urban modernists with the works of *Le Corbusier*. In line with the 'good city' plan, the JICA master plan for Lusaka hinges on the belief that urban form focuses on aesthetics (order, harmony, formality, and symmetry); efficiency (functional specialisation of areas and movement, and the free flow of traffic); and modernisation (slum removal, vertical or tower buildings, connectivity, plentiful open green space). However, these characteristics are utopian for Lusaka. According to the findings, the planning in Zambia and Lusaka to be specific is heavily influenced by politics and less technocratic contribution. Furthermore, master planning and zoning have been used as tools for endorsing urban modernist ideas in ensuring that cities such as Lusaka remain for the elite and prevent the low-income majority from accessing land in prime areas of the city due to the high costs associated with land acquisition in planned residentials. Thus, the tools intended for 'public good' are being used as tools for safeguarding the property value of the wealthy and excluding the poor. As a result, Lusaka has experienced a growth in informal settlements which continue to ravage the city and perpetuate the non-inclusive nature of food systems in spatial planning.

Though highly regarded in Zambia, master planning and zoning have been abandoned and criticised in some countries of the global north mid-20th Century. This is because the nature and dynamics of cities as well as the ability of planning to control market forces had not been accepted (Watson, 2009). Its rigidness has made cities like Lusaka not employ new ways of planning to respond to the needs of the ever-changing world and bridge the gap between food systems and spatial planning. Watson (2009) points out that as a way of compensating for the Master Plan, new approaches to 'planning', including 'structure' and 'strategic' plans have come on board. However, the underlying concept of zoning and change of land use has generally persisted. This is evident in Lusaka where, despite the changes in planning legislation, zoning and change of land use still take centre stage, making them major contributors to the weak nexus between spatial planning and food systems. One practical example is in Chongwe District of Lusaka Province where farmland previously owned by the National Resource Development College (NRDC) has been changed into residential areas: Chelstone-Obama, *Madido* and *Ranchdale*. Within the stated area, more change in terms of land use is taking place from agriculture to residential and commercial, thereby creating even more land use conflict. Figure 51 indicates a notice for change of use in the area.

Figure 51: Notice to Change of Land Use
Source: Field Data, 2022

Chamba Valley is another area that has experienced a lot of change of use. This area was originally planned as a smallholder farms block, but it has been overtaken by residential use. Hybrid Poultry and Chamba Valley Farms are the only two food-producing lots that have remained operating in the area. This is proof of the weakness that exists between spatial planning and food systems. Figure 52 shows Chamber Valley Farms as one of the few surviving areas of food production in the smallholder farm belt of Chamba Valley. One of the major reasons for the survival of this farm from land use change is that it is situated next to sewerage ponds which makes it less attractive for other competitive land use activities, as suggested by the proprietor of the farm:

"We have been trying to sell this land to many people, especially those that have bought land around this area. However, we are either given a very low offer or nothing at all. This is because this smallholder farm is next to sewerage ponds. Even after these ponds were worked on by the Millennium Challenge Account, people are still not interested. That's why we decided to just use it to farm crops such as tomatoes, cabbages, asparagus, and onion, among others. And yes, the land is very fertile, and we do not use the water or waste from the sewerage ponds" (Anonymous, 2022).

Figure 52: Location of Chamba Valley Farms with the few remaining green spaces. Source: Field Data (2022)

In Zambia's planning history, there has been a transfer of models, processes, policies, and regulatory measures introduced to the country by the British Colonial government. For instance, the TCPA was a British concept that was applied in the country until 2015. Under the British government, planning in Zambia was used in part to create acceptable urban environments for foreign settlers and to extend administrative control and sanitary conditions to the growing numbers of indigenous urban poor. The country was also used as a place for testing out ideas about planning and administration, for later use at 'home' in England. It is this foundation that set the country on a path to the current spatial planning problems such as the mushrooming of informal settlements, which are taking up food production areas. This was mainly due to the processes of diffusion that were neither smooth nor simple, and the ideas that were often varied and contested as they did not take into consideration the needs of the indigenous people.

The study established that zoning and continued land use change provided the first missing link in the nexus between spatial planning and food systems. Furthermore, regarding the nexus between food systems and spatial planning, most of the planning and building standards are incongruous to the poor, in the sense that, the poor cannot afford to build according to the stipulated building standards and its associated costs. This has contributed to the increase in informal settlements and informality in general because many of the poor must source basic needs such as food and shelter against the established premise of the law. This in turn prompts the urban majority poor to acquire land in undesignated areas for settlement. From this context, planning is failing to create an environment in which food can easily be produced or accessed

as priority is given to more pressing and urgent matters such as accommodation. This is widening the gap between the elite and the poor urban majority in terms of access to dietary requirements, as the poor find it difficult to afford the expensive food items which are sourced from the peripheral areas. It can also be argued that the current planning legislation is deliberately not pro-poor to curb the rapid growth of informal settlements by denying the poor access to much-needed land rights, services, and basic needs. The assumption, therefore, is that master planning, zoning, change of use and other planning legislations - including the new URP Act of 2015 do not address the 'issue of food' comprehensively.

7.2 Inclusion of Food in the Spatial Planning Landscape of Lusaka

Despite the existence of food production in the LCRFS, it is constantly under threat by urbanisation, rapid urban sprawl, and population growth. Thus, there has been a growing need and concern to move from looking at the concept of UA to a broader concept of CRFS. The findings on food production in Chapter 6 showed that in the LCRFS, the main food items produced are maize at 94 per cent of the sample farmers, chickens at 68 per cent of the sampled farmers, groundnuts at 60 per cent, sweet potatoes at 58 per cent, fresh vegetables at 45 per cent, goats at 30 per cent, cattle at 23 per cent, mixed beans at 18 per cent, and cassava at 12 per cent.

Due to the scarcity of land and high population in the city (now spreading through the LCRFS), a huge percentage of the food production in the region is done by small-scale farmers (Kaulule, et al., 2021). The commercial farmers in the region and those in the immediate surroundings of the region mainly produce food crops for export outside the region and country. They also produce cash crops such as barley and pasture which are not edible, non-traditional food crops or need further processing. Some of these commercial farmers include York Farm, Miller Farm, Galaun Farms, and Zambeef, among others (Kaulule, et al., 2021).

Findings indicated that food has never been a priority in the city region at all levels, implying that the issue of food is hardly considered. Both in policy and practice, the inclusion of food production in the city is secondary. This has been exacerbated by rapid population growth. According to the UN-Habitat (2001), Lusaka is among the five cities in Africa that will grow the fastest in the next twenty years. Predictably, Lusaka city has spread into agricultural areas and natural resources reserve areas, threatening the local food supply system and livelihoods of local farmers. With the change of use already in effect as stipulated by the URP Act of 2015, the city is sprawling, food miles (measurement of how far food has moved before it reaches

the consumer) are increasing and the smallholder farmers who are the majority and depend on the customary land tenure system are under threat of losing their only means of sustenance. Even commercial farmers with title deeds have not been spared. The findings show that smallholder farmers face the highest risk of losing their agricultural land due to pressure from urban development. Concerning traditional land in the LCRFS, the findings suggest that there is a lot of land being sold to the highest bidder – whether foreign or local. Some of the purchased land that is converted from traditional to leasehold is improved to smallholder farms, while the majority is converted to residential use. These unveiling tendencies have disadvantaged small-scale farmers and taken food production away to the periphery of the LCRFS.

Another planning issue that has been at the centre of the declining food production in the city and the LCRFS at large is inadequate access to water. The findings indicate that 93 per cent of the two most urban districts in the LCRFS- Lusaka and Chilanga have reasonably good access to water for farmers and 85 percent are satisfied, respectively. However, farmers in Chisamba, Mumbwa and Shibuyunji districts are not satisfied with their access to water. As a result, water accessibility was rated as difficult by 58 per cent, 50 per cent, and 41 per cent of the respondents respectively. In Mumbwa, 27 per cent of the respondents did not have access to a water source within a distance of less than 200 metres from their farms. The lack of or inadequate access to water by these farmers adversely affected their efforts to increase crop yields and improve their livelihoods. Therefore, it is incumbent upon the local farmers to form cooperatives and try to lobby for funding from Constituency Development Funds (CDF) or from other sources such as banks for the construction of dams or boreholes in their respective areas to ensure a consistent supply of water for agricultural activities. However, since there is no proper engagement of the local communities in the spatial planning process to ensure food-sufficient cities, there is a weak nexus between spatial planning and food systems in the LCRFS.

Food security is part of a planner's repertoire considering that food choices are a public concern, and planners can play a key role in improving the food system in Lusaka. In the context of UA as a planning responsibility, Thibert (2012) points out that local government urban planners are ill-equipped in practice and policy to implement initiatives, as evident from the city of Lusaka. This means that if urban planners in Lusaka are equipped both in practice and policy, there would be no poor storage and processing capacity of horticultural products, poor market information systems and poor sanitation and hygiene in marketplaces. Hence, it is

important to include food systems in the spatial planning of Lusaka as early as the training stage.

Three key interfaces between urban planning and improving food security outcomes are:

i) Strategic planning and policy development.
ii) Land use regulation; and
iii) Infrastructure development.

For example, urban planning can influence the location and establishment of UA activities such as community gardens and fresh food stalls. These activities provide economic and social benefits such as the productive use of vacant spaces, liveability in neighbourhoods, poverty alleviation, and improved health outcomes. However, this calls for appropriate coordinated zoning and urban design guidelines in local government planning schemes to ensure success.

Clancy (2004) suggests that food advocates need to convince planners of the benefits of food security in the spatial planning of the city. This is because planning offers the essential entry point to engage the food system. Access to food in urban areas depends on the availability of food in the market, food prices, and formal and informal incomes. In most informal settlements like Chazanga, Kalikiliki and Mtendere East, most people with limited income tend to buy bulky, poor-quality foods that have little nutritional value but have an oversupply of energy, fats, and sugars to satisfy their hunger. Vulnerable people face physical and mental stress and poor health outcomes arising from limited food choices as they are often unable to change their circumstances. Moreover, they do not have the means of production owing to the shortage of farmland in their vicinity. The inclusion of food systems in spatial planning of cities is therefore of great importance to make cities inclusive and food secure.

It has been noted in the LCFR that urban policymakers neglect food systems, as municipal systems. Traditionally, food has been treated as an agricultural and rural issue (Kaulule, et al., 2021). There has been neglect of the fact that comprehensive food system inclusion in the planning of an area led by local planners could strengthen and knit loose pieces of the community's fabric and promote integration. However, the components of a food system influence and in turn are influenced by cities and their dominant land uses (such as food production and packaging) in both rural and urban areas. Though they do not produce a significant portion of the food supply, urban areas play a significant role in the system, making food systems the interest of both rural and urban areas. They have the largest populations,

making them the largest market for agricultural products. Urban planners should therefore take a proactive leading role in creating a system that promotes social and environmental justice, adequately meeting the daily needs of city residents, and limiting exploitative land use.

7.3 Policy and nexus between Spatial Planning and Food Systems

To understand the nexus between spatial planning and the food systems of Lusaka, numerous policies, regulations, and legislations governing planning in Zambia were analysed. The goal was to find out how they engage with food systems (whether enhanced, restricted, supported, or silent). The planning profession in Zambia extensively uses the law and relevant policies as major control mechanisms. The profession does not just use planning law, but also any other statute that regulates the use of land - including natural resources.

The legal and institutional framework governing city planning is presided over by the central government through the Ministry of Local Government and Rural Development which contextually superintend over the governance of housing directly or indirectly through the local authorities. The Lusaka City Council as a corporate body is governed by elected representatives (mayor and councillors) and managed by appointed officials (town clerk and directors) who provide both technical and administrative services for spatial planning and land administration functions. Functions such as the preparation of land use plans and development control, as well as recommendations for approving and disapproving applications for building permits, are executed through the City Planning Department by planners on behalf of the councillors (Chitengi, 2015).

The LCR and the entire country have no institution in charge of food systems that could potentially investigate the promotion of food in spatial planning. Nevertheless, there are several institutions whose mandates include food system governance in varying degrees of authority, within their geographical operational areas and supported by different pieces of legislation, policies, and strategies (Food and Agriculture Organization of the United Nations, 2019). At the country level, food production can be assessed through the agricultural sector which is primarily governed by policies and legislation developed and implemented through the Ministry of Agriculture.

Apart from the agricultural policy, other policies exist that affect agriculture and ultimately food systems either directly or indirectly. These include but are not limited to the National Policy on Environment (2007); the Fisheries Policy (2011); the National Forestry Policy

(2014); the environment, land, Minerals Development Policy (2013); and the National Water Policy (2010). The Legislation that affects the way the agricultural policy is governed is the National Agriculture Policy (2012–2020) which is the principal governing policy whose primary aim is to ensure that agriculture contributes to poverty reduction and increasing income at the household level. Locally and within each municipal jurisdiction, agriculture is also governed through the local council by-laws which the Lusaka City Council (LCC) does not have as evident from the interviewed council officer:

> *"Lusaka City Council does not have any by-laws that talk about food or agriculture. We depend on the Public Health Act and other legislations that are in tandem with agriculture and food production"(District Planning Officer, 2022).*

7.3.1 Institutions, Legislations, Policies and Plans Aiding Spatial Planning and Food

The nexus between spatial planning in the city of Lusaka and the region can also be seen from the point of various institutions, legislations, policies, and plans. However, the findings revealed that there is no specific framework that is unique to Lusaka but that all the institutions as indicated in Table 15, legislations, policies, and plans cover the entire country.

7.3.1.1 Policies and Legislation

7.3.1.1.1 Urban Agriculture (UA)

According to Sanyal (1985), UA, urban farming, or urban gardening is the practice of cultivating, processing, and distributing food in or around urban areas. It encompasses a complex and diverse mix of food production activities, including fisheries and forestry in many cities in both developed and developing countries. Urban Agriculture has ecological benefits such as reducing city waste, improving urban biodiversity and air quality, and reducing the environmental impact related to both food transport and storage. Urban Agriculture favours social improvement given that most urban farmers belong to the poorest populations and spend up to 85 per cent of their income on food purchases. Sociologically, urban farming favours social inclusion and the reduction of gender inequalities considering that 65 per cent of urban farmers are mostly women from informal settlements. Table 15 depicts some institutions that are in line with food systems and spatial planning.

Table 15: Institutions in line with Food Systems and Spatial Planning

INSTITUTIONS	
Institution	**Mandate in line with nexus of Food systems & Spatial Planning**
The Local Authorities	These fall under the Ministry of Local Government. Be it at the city, municipal, and district level, the local authorities govern the food systems with the legal authority provided by various laws and by-laws such as the Markets and Bus Stations Act No. 7 of 2007; Public Health Act (Cap 295); Urban and Regional Planning Act No. 3 of 2015; Decentralization Act; By-Laws such as Hawking and Street Vending; Draft Land Administration and Management Policy (2013); National Environmental Health Policy (Draft) of 2001; Local Government Act No. 9 of 2004 (Cap 281); and the Local Government Amendment Act No. 17, 2016.
Ministry of Health, including the National Food and Nutrition Commission (NFNC)	The Ministry of Health and the NFNC also help in ensuring that safe and nutritious food is consumed by the public. Their work is supported by various legislations, policies and plans, such as the Public Health Act (Cap 295); Food and Drug Act (Cap 303); National Food and Nutrition Strategic Plan (2017–2021); NFNC Act 1967 (currently under review); National Food and Nutrition Policy (2006); and the Nutrition Education Communication Strategy (2014).
Ministry of Agriculture	The Ministry of Agriculture also carries a mandate in food planning for the city. This is also done through various policies and legislations such as the Second National Agriculture Policy (SNAP) (GRZ, 2012a); Agriculture (Fertilizers and Feed) Act (Cap. 226) -2006; Plant Variety and Seed Act-Cap 236; and CAADP National Agricultural Investment Plan (NAIP): 2014–2018. Furthermore, with the implementation of the Decentralization Policy, an agricultural office has been created at the LCC where the DACO and his team are supposed to report. However, the Ministry of Agriculture faces a persistent limited budgetary allocation, a factor that aligns its allegiance to wherever the funding is available.
Ministry of Fisheries and Livestock	Like the Ministry of Agriculture, the Ministry of Fisheries and Livestock has a mandate under legislation and policies like the Fisheries Act (2011), the Veterinary and Veterinary Para-Professions Act (2010), and Fisheries Policy (2011). With fish

	farming growing in the LCRFS, the Ministry of Fisheries and Livestock is playing a critical role in the region to ensure food security.
The Competition and Consumer Protection Commission (CPCC)	Under the direction of the Competition and Consumer Protection Commission Act, the CPCC as a government body is tasked with a role to protect consumers from unfair business practices and competition processes. This is inclusive of food trading and consumption. Fair business practices hold immense potential to provide an incentive for emergent farmers to grow their farming business in a friendly, but competitive environment, which is necessary for enhancing food security in the LCRFS
Zambia Bureau of Standards (ZABS)	ZABS is one of Zambia's Statutory National Standards Body established in 1982 under the Standards Act (CAP 416) of the Laws of Zambia. ZABS falls under the Ministry of Commerce, Trade and Industry (MCTI). It also plays a cardinal role in helping plan and standardize food in the city.
Zambia Weights and Measures Agency (ZWMA)	The ZWMA is also one of the six Statutory Bodies under MCTI that consolidates food systems and planning in Lusaka and the country at large.
Food Reserve Agency (FRA)	The FRA has the mandate to procure, maintain and/or safely store major foods (grains and cereals) for the national strategic reserves to ensure national food security. It operates under the FRA Act No. 12 of 1995.
Ministry of Lands and Natural Resources	The Ministry of Lands and Natural Resources has the mandate of land administration in Zambia. It is supported by various legislations and policies such as the Lands Act (1995), Draft Land Policy (2015), Draft Land Administration and Management Policy (2013), and National Forestry Policy (2014).

It's imperative to state that Lusaka residents practice four types of agriculture, namely: gardening for food, semi-commercial and commercial gardening, and rainy season agriculture. Rainy-season agriculture is only practised between the end of October to mid-May. If facilitated by a permanent water source like natural wetlands, rivers, or small dams, gardening can be a permanent activity. Involvement in agriculture means both dry-season gardening and rainy-season agriculture. Urban Agriculture also includes inter-cropping systems of four types of crops whose combination mostly consists of maize, beans, and pumpkins. The fourth crop is the sweet potato which is cultivated separately on ridges and is becoming an increasingly important crop, probably as a substitute for other staples (Mendes, 2008). Vegetables from household gardens and mixed cropping in the fields contribute to nutrition, especially through vitamin-A content and microelements.

The findings show that urban rainy season agriculture practised in Lusaka is mostly by people with the lowest per capita income. Even though gardening has increased in Lusaka, it is not the case for high-density areas where most of the poor reside, leaving little to no room for gardening. Other factors that prevent gardening in urban informal settlements according to Mendes (2008) include lack of human labour; plant pests and diseases; human diseases and family problems; lack of time; and unreliable water supply in the townships as they face a domestic water use challenge.

Plant resources have vanished around the urban centres, especially in Lusaka's informal settlements – making urban households more vulnerable during food shortages. The ring of cultivation around the central urban zone of Lusaka has been pushed outward by urbanization. The findings indicated that as a survival and coping strategy, household gardening is becoming hard to practice in densely populated areas. This can be compared to Kisumu Kanya in which household gardening has become almost impossible due to overcrowding leading to high housing density in the informal settlements (Roy, 2005). As such, the fundamental challenges faced in densely populated informal settlements include limited access to basic resources like land and water which makes it hard to practice rain-season agriculture even with access to the needed tools, money and seeds. It can be said therefore that vulnerability increases with limitations on land and water resources. The Senior Agricultural Officer (SAO) and District Agricultural Coordinator (DACO) for Lusaka echoed this reality by stating that:

"Land for agriculture is reducing and it is affecting food affordability, especially transportation. Food availability is not a problem but because food is now produced far away, food affordability has become an issue. Food will come but it will come from far places

such as Mkushi, hence increasing the miles [concept of miles]. This is because farms have been relocated and farmers are surrounded by residential. In certain instances, residents even complain about a particular farm, yet the farmer came first" (Lusaka Senior Agricultural Officer, 2022).

> *"One of the major problems contributing to a larger population in Lusaka and has also led to the loss of land is the centralized nature of the city. Everything is done in Lusaka. The lasting solution is to decentralize and send resources everywhere. The increase of CDF does not address the need for protecting the food system; decentralization does," (Lusaka District Agricultural Coordinator , 2022).*

Figures 53, 54 and 55 are depicting some of the forms of agriculture in urban Lusaka.

Figure 53: Urban Agriculture Village Chickens in Chalala
Source: Field Data (2022)

Figure 54: Urban agriculture Fish Farming Chalala
Source: Field Data (2022)

Figure 55: Portable Fishpond
Source: Field Data (2022)

7.3.1.1.2 Legislation Governing Spatial Planning Landscape of Lusaka

The documents reviewed include the amended Constitution of Zambia (GRZ, 2016); the Urban and Regional Act Planning No. 3 of 2015 (GRZ, 2015); Local Government Act No. 2 of 2019 (GRZ, 2019); the Public Health Act (GRZ, 2019); Land Circular No. 1 of 1985 (GRZ, 1985); Water Resources Management Act of 2011 (GRZ, 2011); National Agriculture Policy; National Environmental and Land Policy; National Food and Nutritional Policy; Social Safety Nets; and the JICA Lusaka Master Plan.

Urban planning is a governance activity situated in a complex landscape of government, community, and private organizations (Healey, 2005). Methods for achieving food security are complex and cross-jurisdictional, with limited guidelines and regulatory mechanisms for incorporation and implementation (MacRae, 2011; Mendes, 2008). Food outlet decision-making influenced by planners looks at whether legislation, statutory planning provisions, and urban design policies and guidelines can be used effectively to improve food security. Despite greater general awareness and the inclusion of these issues in some planning strategies, regulations, and decision-making, positive outcomes in many jurisdictions are still limited. Statutory mechanisms such as planning schemes that substantially influence decision-making are based on state legislation. Thus, government support through appropriate institutional frameworks from national to local levels is needed.

According to Mendes (2008), there is no institution in charge of food systems within the LCR and the country. Nevertheless, there are several institutions whose mandate includes food system governance in varying degrees of authority, within their geographical operational areas and supported by different pieces of legislation, policies, and strategies. The agriculture sector is primarily governed by policies and legislation developed and implemented through the Ministry of Agriculture. Other sectors like the National Policy on Environment (2007), Fisheries Policy (2011), National Forestry Policy (2014), Environment, Land, and Minerals Development Policy (2013), and the National Water Policy (2010) also contain legislation that affects the way the agricultural policy is governed. The principal governing policy is the National Agriculture Policy (2012–2020) whose primary aim is to ensure that agriculture contributes to reducing poverty and increasing income at the household level.

There is a nexus between spatial planning and the food systems of Lusaka as a city in the global south regarding the legislation governing the spatial planning landscape and food systems of Lusaka. This is evident from the fact that most of the proposed strategies are to be implemented within the various related and existing national and local policies, programmes or plans and pieces of legislation. However, for some of the proposed strategies to be implemented effectively and efficiently, some of the related or corresponding policies, programmes or plans and pieces of legislation will need to be revised or enhanced. Furthermore, some of the proposed strategies may or will need formulation of new policies, programmes or plans and pieces of legislation if they are to yield tangible results.

7.3.1.1.3 The Constitution of Zambia Amendment (No 2) ACT 2016

The 2016 constitution is the principal law of Zambia and any law, practice, custom or conduct must be consistent with it (GRZ, 2016). The first reasonable promotion of food production in the constitution is part XIX subsection 253 (1) (d) which promotes sustainable use of land.

7.3.1.1.4 The Urban and Regional Planning ACT (No 3) 2015

The URP was adopted in 2015 after repealing the Town and Country Planning Act of 1962, and the Housing (Statutory and Improvement Areas) Act of 1975. The URP gives room for various levels of administration to plan as stated in Part II section 6(2) - "Planning shall be hierarchical in nature, from the national level proceeding to the regional, provincial and district levels and in like manner, planning authorities shall be so ranked." This gives room for food to be considered an issue at all levels. This preliminary of the act supports agriculture by stating that:

"Land agriculture means the use of land or buildings for, or in connection with, animal husbandry, fish farming, breeding and keeping of livestock, hatcheries, ranching, grazing,

poultry, pasture, arable farming, irrigation, tillage, floriculture, flower growing, horticulture, gardening, vegetable growing, fruit or seed growing, mushroom growing, vine growing, citriculture, afforestation, forestry or plantation, but does not include tourism, green grocership, meat processing and the use of land as a garden with a building attached to the land, and agricultural shall be construed accordingly. The area means the area falling under the jurisdiction of a local authority" (URP (Cap 184)), 2015 Part I Preliminary).

"Customary land has the meaning assigned to it in the Lands. Chief means the person recognized as such under the Chiefs. Certificate of title means a certificate of title to land issued by the Registrar in accordance with the provisions of this Act. Act No. 18 Regional Development Plan states that the use and development of land of strategic importance for biodiversity or food security" (URP (Cap 184)), 2015 Part I Preliminary).

The Urban and Regional Planning Act No. 3 of 2015 defines land as either being customary or state land. With customary land, one cannot have access to land without the help of the local chief. With statutory land, the state determines what a particular land can be used for given its zonal designation. Provided that the right policies and legislation are in place, spatial planning can be used to improve food systems in the city. This is a clear demonstration of the connection between spatial planning and food systems. Land can be used to plant different kinds of food to enhance the food systems found in the city.

7.3.1.1.5 Local Government Act number 2 of 2019

The functions of Local Authorities are to establish and maintain sanitation and drainage systems; facilitate the removal of refuse and effluent; construct and maintain public roads, streets, sanitary lanes, bridges, and water courses - and remove all obstacles thereof (Local Government Act Cap 281). It is the provision and maintenance of water in the Act that speaks to the provision of food in the LCFR. This piece of legislation also shows the nexus of food systems and planning through the provision and maintenance of roads to enhance the smooth transportation of food products and other farming implements into and out of Lusaka. As such it is evident enough that there is support from this Act in ensuring that as part of the food system, transportation is taken care of, and water is also made available.

7.3.1.1.6 Land Circular Number 1 of 1985

The provision of food systems is vivid in the Lands Act. This can strengthen the nexus between spatial planning and food systems, but only if the LCC follows Part C (i, ii and iii), which addresses Unscheduled Agricultural Lands:

"(i) Any State Land required for agricultural use shall be notified to the Commissioner of Lands so that its status and availability can be determined. Once

the Commissioner of Lands is satisfied that the land in question is available, the Department of Agriculture in consultation with the District Council shall be requested to plan the area into suitable agricultural units. The layout plans duly approved by both the Department of Agriculture and the District Council concerned shall be submitted to the Commissioner of Lands for survey and numbering.

(ii) Once the District Council has information from the Commissioner of Lands regarding the numbered farms or small holdings, the procedure outlined in paragraph 4B (ii) (iii) (iv) and (vi) above shall apply. And the application form to be completed by the applicants shall be as per Annexure 'C'."

(iii) No District Council shall have authority, in any case, to permit, authorize, or suffer to permit, or authorize any intending developer, to enter upon or occupy any agricultural farm or small holding unless and until such developer shall have first received the letter of offer and has paid the lease fees."

7.3.1.1.7 National Land Policy

Zambia has a dual set of land allocation systems: a customary tenure system managed by tribal elders and headmen, and a system of leasehold state lands managed by the central government's Ministry of Lands. Over time, population growth in customary areas has led to land pressure and land fragmentation. This has increased the difficulty in obtaining contiguous land allocations of sufficient scale to support farming. The farmers interviewed confront this problem by moving to areas where land is available, or in one case, by purchasing a leasehold farm.

Launched on 11 May 2021, the National Land Policy was timely as it helped address the land issues that have increasingly emerged over time such as urban growth, resource development and extraction, ambiguities in customary and statutory tenure systems, as well as large-scale land-based investments. By addressing these concerns, the policy can complement the nexus between spatial planning and food systems. Before the enactment of the policy in 2021, the country never had a policy to guide the land sector. This is despite the successive governments and the years of land market liberalization following the single-party rule in 1991. The land policy seeks to guide, among other aspects of land tenure, the tenure arrangements under which agricultural land exists. The draft policy has recognized the importance of customary tenure which, in the early 1990s held 94 per cent of the country's land, leaving only six per cent as state land. This distribution of land tenure systems has major implications for the protection of farmlands and sustainable food production in the LCR. Much of the land in the study area (outside Lusaka city) remains under traditional customary tenure. However, traditionally owned farmland is being lost to urban development in the region at a high rate. This makes it

more complicated given that land use planners and state regulations currently lack an adequate mechanism to control land transactions in customary areas.

Ultimately, customary land authorities will need to devise systems for consolidating land holdings and transferring land use rights in blocks of sufficient scale to permit commercial farming. Increasingly, commercialized smallholders are transferring their customary usufruct rights to leasehold tenure systems as permitted under the 1995 Land Act. In the meantime, commercial smallholders rely on inheritance and mobility to ensure access to land. Over time, as farmers move to high-value agriculture such as horticulture, poultry and dairy production, land requirements will fall. Land constraints primarily affect the low-road farmers trying to scale up cultivated areas sufficiently to generate a prosperous existence from low-value crops such as cotton and maize. Even under smallholdings, commercial smallholders will face an increasing need to access valuable forms of collateral, such as land (IAPRI, 2012).

While peri-urban and UA are practised, detailed information on the policy framework as it relates to UA remains limited. There are challenges to recognizing UA due to conflicts in policy documents and statutory instruments which in turn weaken the nexus in question (RUAF, 2008). This is common in African cities, including Zambian towns and cities where urban management and planning laws were inherited without paying attention to contextual issues. This is also evident from the views of the Lusaka Province Planning Officer who indicated that:

> "Some of the identified conflicts in land use in the city region relate to competition in accessing adequate water resources for agricultural production. It is common to see new urban development activities displace old farm activities, especially livestock such as poultry and small ruminant animals" (Lusaka Province Planning Office, 2022).

7.3.1.1.8 Land Tenure

This is yet another issue that has a direct influence on the nexus between spatial planning and food systems. Zambia uses a dual tenure in land utilization despite all land in Zambia being vested in the presidency. The coming of the URP in 2015 provided for the harmonization of land administration between customary and state land administration systems. This Act provides for all land as planning land and empowers land use planners to engage with chiefs on any land. However, implementation of this engagement between planners and chiefs has not yielded any benefits to the nexus despite the URP being in effect for over five years. If well utilised, the URP has the potential to change land use conversations and potentially reduce the

threat of loss of farmland in the study area, thereby strengthening the nexus of spatial planning and food systems.

Land ownership is a major factor that drives high poverty, and shapes food production systems and processes in the LCRFS. Of the 1500 farmers interviewed in the LCRFS, 48 per cent operate on traditional land (land held by chiefs and other traditional leaders). Most of the land held under customary tenure is rarely recognized as collateral by financial institutions, thus limiting access to credit for small-scale farmers. Therefore, the tenure-ship of land is important in fostering food security as it facilitates access to capital for smallholder farmers. While it is possible to change from customary tenure to leasehold, the procedures can be very lengthy. This may discourage farmers from acquiring title deeds obtainable once land held under customary tenure is converted to leasehold. The main effect of land tenure on conservation is that the level of land conservation practised by farmers is influenced by the security of land tenure as reported by several studies (Idoma & Muhammad, 2014). This may then ultimately affect the efforts to reduce poverty and support the sustainability of the food system.

Furthermore, informal parts of the city mainly consist of housing areas that began as squatters or unauthorized settlements and site and-service schemes. The majority of Lusaka's unauthorized settlements were originally located on farms around the city where white farmers had rented land to migrants seeking temporary self-built housing. Squatter settlements, on the other hand, mostly emerged on vacant public property, particularly in urban areas. The process for land allocation is long and requires information and money which poses gender imbalances in accessibility, especially for women who are more prone to social and economic challenges compared to men. The centralized nature of procedures makes it difficult for women from outside the capital to go through the land allocation process.

7.3.1.1.9 Consideration of Food in the Master Plan and the Draft Lusaka Integrated Development Plan (Proposed Land Use Planning)

The land use plan for greater Lusaka (Figure 56) projects population and employment targets towards 2030. Based on this projection, the assumption is that the population will increase tremendously from the current statistic of about 3,000,000 people residing in Lusaka to about 3,324,000. It is expected that there will be a gradual dense residential development and an effective foundation for economic development, led by industrial zones and competitive urban centre development. These are fundamental elements of the land use plan. The implication is that more agricultural land will be taken up by residential areas. Table 16 shows how agricultural land is expected to reduce by 2030.

Satellite cities were proposed to be established in medium and long terms in adjacent areas covered by Chibombo, Chongwe and Kafue Districts, in conjunction with industrial zones' development within the sphere of the proposed Outer Ring roads. Peri-urban agricultural land will be retained and improved for both food production and environmental buffer green of ECHO Garden City development.

Table 16: Future Land Use Plan for Greater Lusaka

Category	UNIT: Hectare								
	2007			2030			2007-2030 Change		
	Lusaka	Kafue,Chongwe, Chibombo	Total	Lusaka	Kafue,Chongwe, Chibombo)	Total	Lusaka	Kafue,Chongwe, Chibombo)	Total
Agri (high-intense)	2, 857	6, 268	9, 125	1, 077	6, 260	7, 337	−1, 780	−8	−1, 788
Agri (low-intense)	2, 375	10, 187	12, 562	0	10, 000	10, 000	−2, 375	−187	−2, 562
Rural settlement	11,809	9,851	21,660	4,360	7,570	11,719	-7,449	-2,281	-9,730
Residential	12,321	357	12,678	24,040	4,270	28,310	11,719	3,913	15,632
High-dense	1,841	0	1,841	3,080	0	3,080	1,239	0	1,239
Medium	4,350	0	4,350	12,430	3,840	16,270	8,080	3,840	11,920
Low	6,130	357	6,487	8,530	430	8,960	2,400	73	2,473
Commer & Business	447	26	473	1,130	200	1,330	683	174	857
Industry	1,350	36	1,387	1,850	1,680	3,530	500	1,644	2,143
Public Use	2,642	1,878	4,520	3,700	2,210	5,910	1,058	332	1,390
Park & Recreation	735	67	802	4,080	700	4,780	3,345	633	3,978
Green & Open Space	2,256	1,235	3,491	2,100	6,028	8,128	-156	4,794	4,638
Vacant/ grass & bush	5,545	13,774	19,318	0	4,760	4,760	-5,545	-9,014	-14,558
Total	**42,337**	**43,678**	**86,015**	**42,337**	**43,678**	**86,015**			

Source: JICA Study Team (2009)

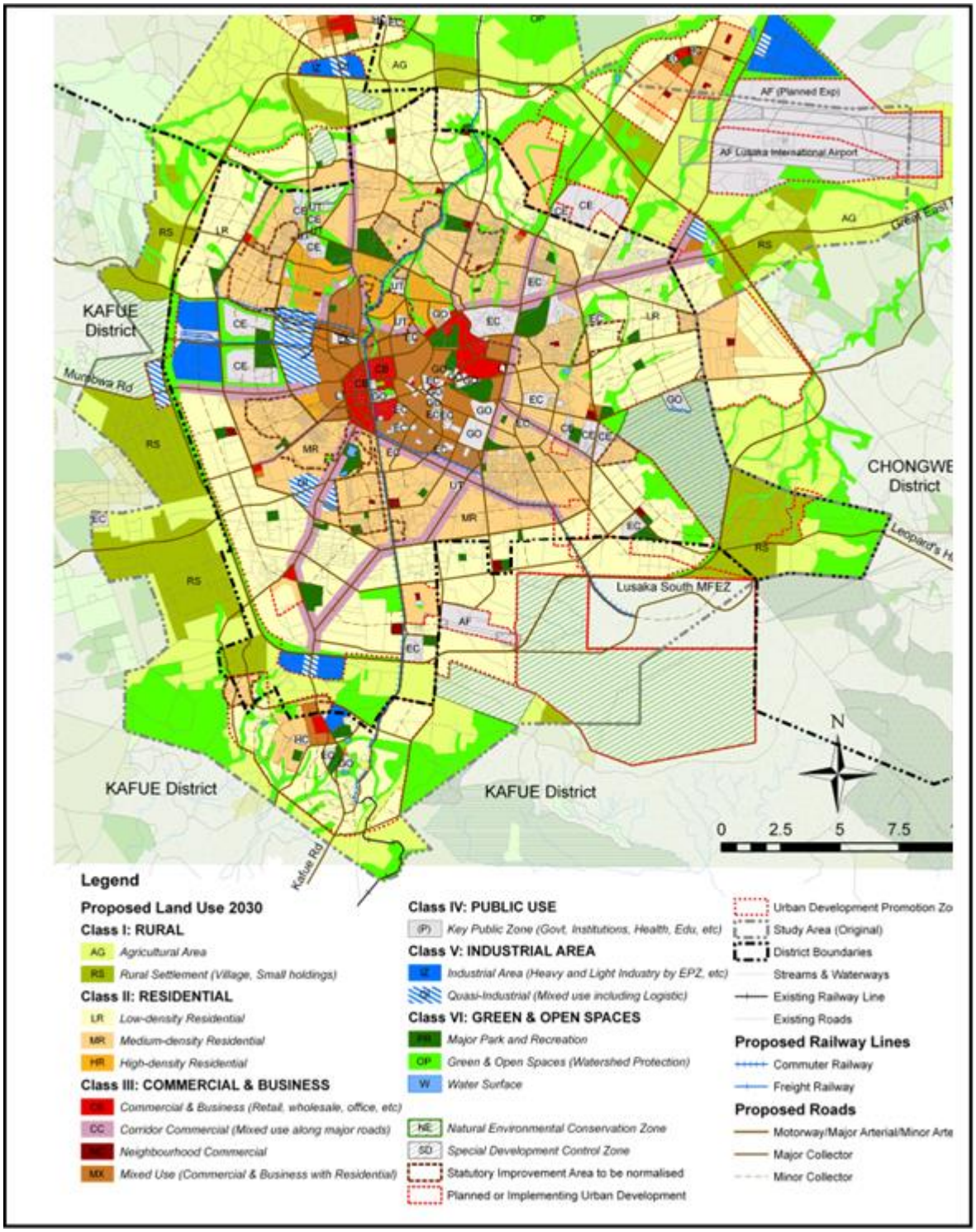

Figure 56: Proposed Land Use 2030 of Lusaka with Minimal Consideration of Agriculturally Based Food Production
Source: JICA Study Team (2009)

The Global Forest Resources Assessment approach was developed by FAO to classify different land uses in Zambia. This approach classifies land uses into four broad categories, namely, forests, other wooded lands, other lands, and inland water. Land uses can be used to improve local food production, processing and distribution which would drastically increase food

security for low-income groups that struggle to raise funds to buy expensive food and travel long distances. Additionally, some city people prefer local produce, indicating that CRFS could be a solution to the increasing demand for locally produced food and local diets. This could reduce the consumption of food such as fast foods which have been established to be increasingly consumed by high-income households. Any effort to tackle food and nutritional security in the city region will need to focus on the production, processing, marketing, and distribution, as well as on food prices.

It is therefore important to consider local food production in the Master Plan as the country pursues the transformation and adaptation of farm production to become climate resilient and tolerant (which requires training and improved input supply systems, especially for small-scale farmers). Investment in food processing in both the urban and rural parts of the city region is key to creating sustainable markets and jobs for farmers and farm workers. Thus, efforts to ensure food and nutrition security in the city region must take a multi-sectoral approach. A coordinating body that involves consumers, farmers, food retailers, wholesalers, regulators, civil society groups and consumer watchdogs must also be established. This should advance policies that are targeted at food challenges for low, medium, and high-income households and farmers.

7.4 Infrastructure Development

Informal settlements generally lack proper infrastructure, which remains a major hindrance to food security. Defined by a lack of basic services such as electricity, water and sanitation, proper roads and a lack of adequate housing, these settlements are, *ab initio,* poorly placed to encourage a workable food system that can eventually guarantee food security. As shown in this study, informal settlements are food-insecure and source their food mostly from outside the city, leading to higher food costs. Nevertheless, as already noted, spatial planning can play a key role in ensuring that areas such as Mtendere East are serviced properly as they strive to attain food security. This in the long run could foster food production by having adequate water and enough space for Urban Agriculture.

Infrastructure development such as storage points and proper trading areas in markets will also ensure that food systems are maintained and completed. The provision of infrastructure is the responsibility of spatial planners, as noted by a key informant:

"Trading points in most of the informal settlements in Lusaka are in a bad state because spatial planners and those charged with the responsibilities of planning have paid a blind eye to it. They are convinced it is not their responsibility to take care of informality" (Anonymous, 2021).

Indeed, the lack of proper infrastructure presents a huge problem in the formal settlements as indicated by the key informants. For instance, Mtendere East's location presents a problem in food production, food safety and food consumption. This location makes the residents heavily susceptible to waterborne diseases such as cholera, typhoid, and diarrhoea. With proper spatial planning, however, residents are guaranteed a hygienic environment that secures healthy food and an improved standard of living.

Infrastructure such as roads is another aspect that can either enhance food systems in a city like Lusaka or completely derail it. Roads are cardinal for the transportation of the various commodities produced in the region and outside the region. Most of the roads in the region, for instance, are impassable due to lack of maintenance or are non-existent. Poor roads lead to an increase in commodity prices. Apart from being in a poor state, these roads will need to be rerouted to reduce travel time. Figure 57 depicts the poor state of the road in the LCRFS which connects to farms.

Figure 57: Roads in the LCRFS
Source: Field Data (2022)

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7.5 Mapping of Food-Producing Areas Lusaka City Food Region System

Mapping provides a method of assessing and tracking local food assets as a way of strengthening the food cluster and connecting farmers to processors, manufacturers, and new markets. Planners use the information to understand how land use policy and economic development programmes can best support the agri-food sector and the implementation of the Food and Farming Action Plan (2021). Land mapping not only helps to identify where food-related activities should take place and become part of the municipal plan but also helps to map the starting point of the establishment of a municipal land bank. This makes land accessible to poor urban farmers through fiscal incentives for the owners and temporary leases to the producers (Mazzuca et al., 2009). Planners are important in the mapping of food-producing areas and the preservation of the ecosystems in urban areas.

7.6 Summary

Food security is when all people always have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Lusaka city has the highest population and serves as a strategic market for the food produced in the region. Most of the proposed strategies are to be implemented within the various related and existing national and local policies, programmes or plans and pieces of legislation. Approximately half of the households are involved in food production in the LCR. Basic food products that feed this region mostly come from rural areas outside the city region, within Zambia or imported from abroad. The provision of fresh products comes mainly from peri-urban areas within the city region. Hence, the nexus between spatial planning and food systems of Lusaka as a city in the global south. As such for this nexus to be effective, the Chapter summarises that, similar to many cities in developing nations, Lusaka's land management follows a long-term detailed plan known as a Master Plan. The Master Plan includes regulatory mechanisms such as land zoning, which dictates the permissible activities for specific land zones, and the process of altering these zones known as 'change of use.' The change in land use is also supported by the URP Act of 2015. For instance, if an area is designated as agricultural land, only agricultural activities should occur there. Conversely, if there's an application to convert the land use to residential or commercial, and it's approved, the area will change accordingly. Consequently, a significant portion of areas initially intended for food production in Lusaka have been transformed into residential, commercial, or industrial zones. This highlights the challenge in Lusaka's spatial planning to effectively integrate food systems, thus weakening the link between spatial planning and food systems in the city.

Furthermore, due to the limited availability of land and the high population density in the city, which is now extending into the Lusaka City Region Food System (LCRFS), a significant portion of food production in the area is carried out by small-scale farmers. On the other hand, commercial farmers within the region and its immediate surroundings primarily focus on producing food crops for export beyond the region and country borders. They also cultivate cash crops like barley and pasture, which are not intended for direct consumption, non-traditional food crops, or crops that require further processing. Some of these commercial farming entities include York Farm, Miller Farm, Galaun Farms, and Zambeef, among others.

CHAPTER EIGHT: PROPOSED FRAMEWORK FOR ENHANCING INTEGRATION OF LOCAL FOOD SYSTEMS INTO SPATIAL PLANNING

8.0 Introduction

This chapter focuses on the fourth and last objective of the study. It brings out the framework developed to enhance the integration of food systems in spatial planning. This framework draws on the findings of the other three objectives which are: reviewing the spatial planning landscape of Lusaka; assessing food systems and food security in Lusaka; and examining the nexus between spatial planning and food systems of Lusaka. These objectives informed the development of the framework by giving an understanding of the status quo of the relationship between spatial planning and food in Lusaka. The chapter is approached from the perspectives of planning policy and legislation, land functions, as well as food systems and security. The framework is depicted in Figures 59 and 60.

8.1 Planning Policies/Legislation

8.1.1 Multi-Sectoral Involvement

Transdisciplinary approaches are an effective way of sorting out planning and food-related issues. The various stakeholders engaged are the Ministry of Agriculture, Water Affairs through Lusaka Water Supply and Sanitation Company (LWSC), WARMA, LuWsi, DMMU, Traders, Farmers, Transporters, Traditional Leaders from areas in the LCFS, and National Nutritional Commission. This gives a rounded representation of key players in urban planning and food systems which allows for the development of a wholesome, well-balanced, and representative framework. Collaborative planning, communicative planning, co-production and the 'just city' approaches played a pivotal role in bringing all stakeholders together. Spatial planning is not limited to conservation orders or land appropriation. It also involves a wide range of multi-sectoral collaborations for the effective integration of food systems.

To effectively address the lack of enhancement of spatial planning in the food systems of Lusaka, an integrated approach for the multi-sectoral stakeholders was adopted. This integrated approach was done through the lens of research, technology and data, capacity building of the stakeholders and power relations through governance. The engagement was facilitated by AfricityFood - a project sponsored by the Australian government through the Centre of Urban Regional Planning (CURP) under the Geography and Environmental Studies Department of the University of Zambia. From these four cornerstones, an understanding of the communication pathway was created for informed participation in spatial planning and food

systems. A network of stakeholders comprising local farmers, local traders, Directors from Lusaka City Council, District Planning Officers in selected districts of the LCRFS, Soweto market officials, residents from the three informal settlements in this study, DACO, SAO, a nutritionist from the Ministry of Agriculture, Department of Water Affairs, NGOs such as PAM, HIVOs, IAPRI, PPHPZ, Self Help Africa and Harvest Fund were all present. Others present were the WDCs of the three residential areas represented. This was to represent local perceptiveness, subjections as well as the engagement of all the available stakeholders in ensuring a concrete approach to the food system problem in Lusaka. The outcomes as already pointed out included:

1. **Multi-Sectoral Research**: This was achieved through collaborative planning. Collaborative planning in its entirety is when different practitioners agglomerate to deliberate on what is affecting them and, in the process, apply consensus-building and public participation methods to make policy decisions. The road map that was used is indicated in Figure 55.
2. **Technology and Data**: Through the advocacy and encouragement of new forms of food production such as hydroponics, aquaponics, vertical farming, and intensive subsistence farming which has been experimented with by some small-scale farmers in the LCRFS was proposed to the local authority for them to encourage it and actualize it in the quest to produce more food amidst ever-increasing scarcity of land.
3. **Capacity Building**: This was looked at by way of the suggestion of a curriculum review of spatial planning for programs at the University of Zambia and Copperbelt University to include the food issue as one of the major interests of a spatial planner. Local authorities were also encouraged to appoint a director for the Department of Food at the council who would investigate the affairs that directly hinge on food.
4. **Power Relations through Governance**: This called for advocacy for local authorities to be independent of any government interference in spatial planning matters. Farmers pointed out the exploitation they face in the marketplaces from ‘agents’ who manipulate the pricing and demand ten per cent of the products they did not produce. Market managers are encouraged to curb such acts.

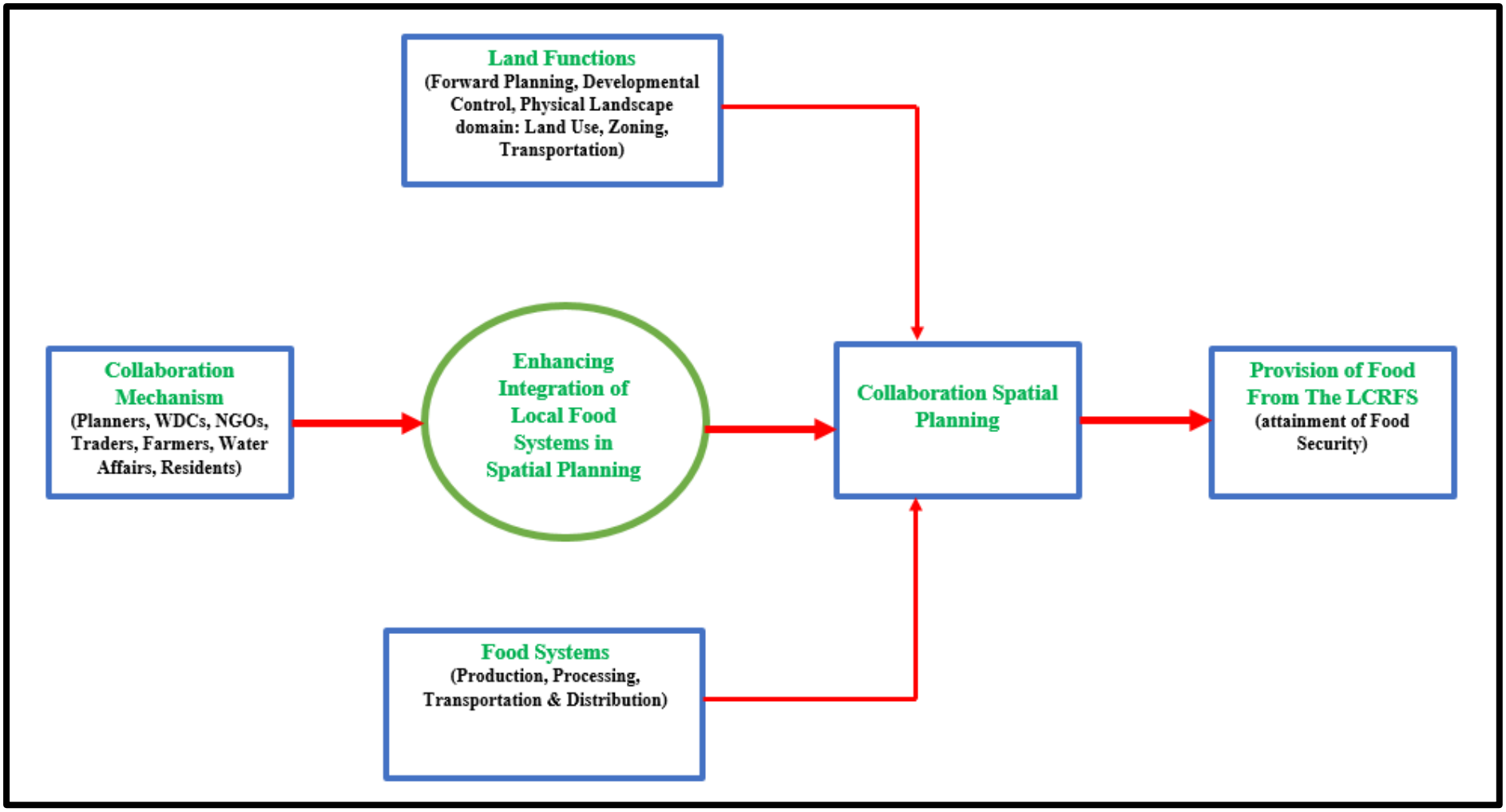

Figure 58: Road Map to Framework Formulation through Collaborative Planning Theory

Source: Authors Construction (2022)

8.1.2 Revision Non-Food Considering Policies in Spatial Planning

To ensure that food systems are considered in spatial planning, the framework proposes the revision of spatial planning policies that do not have a food component in them. For cities to have a meaningful contribution to food systems, the surrounding environment which consists of the CRFS should be protected through regulations. Indeed, regulation is already a fundamental policy tool in spatial planning, but on its own, it is insufficient to achieve spatial planning goals that include the enhancement of the integration of food systems. To complement the already existing regulations in the URP, Master Plan and LDP, policies that have a food component in them will need to be progressively adopted. This directive should be implemented at a ministry level to emphasise its importance.

8.1.3 Adopting Policies that Consider Food in Spatial Planning

8.1.3.1 No Approval of Plans minus Backyard Garden/Green Spaces

Currently, the city of Lusaka can be said to have run out of both residential and commercial land to offer. Nevertheless, the immediate surroundings have immense land parcels that are slowly being turned into residential areas. Some of these areas are the Chamba Valley area (previously small holdings); Chelstone-Obama together with Kwamwena and Ranchdale areas (previously National Resource Development College (NRDC) farm; almost the entire Chongwe District, including Silverest and Liempe farm (used to be an agriculture farm for UNZA); Makeni area and parts of Lusaka West; Chisamba and to Chibombo. All these areas were originally agricultural food-producing areas for both livestock and crops but have slowly been turned into residential. The majority of the LCRFS has been turned into residential and commercial at the expense of food production and green urbanization. The framework proposes the non-approval (by the local authorities) of developmental plans that do not have a backyard garden or a provision for green space. This will help to secure a degree of UA despite the change of land use that is already in effect. This should be followed by developmental control that is championed by the local authority.

Not only can UA help in the creation of green cities, but it can also act as an alternative income-generating activity and as a buffer for household food security. Policymakers should therefore consider the following aspects:

1. Strengthen rural development, including the entire CRFS.
2. Use a self-help approach to resource management.
3. Fully decentralize (which is already in effect but not fully due to budget allocation limitations)

4. Conduct appropriate town planning within the confines of the URP and other given policies. Selective application of the working clauses would also go a long way.
5. Improve the water supply in urban townships, especially in informal settlements.
6. Support urban composting and waste management.
7. Support programs for UA and gardening.
8. Provide support for and research on indigenous vegetables and crops.
9. Extend services for urban smallholders who are practising agriculture.
10. Strengthen the role of women.
11. Provide support for existing gardens and other agricultural land uses, like animal husbandry and rainy season cropping.
12. Provide research on extension services for the sustainable use of wild food resources that can be located within the CRFS or the immediate surrounding areas.

8.1.3.2 Preservation of Agriculture Land within the Traditional Land and CRFS of Lusaka (Creation of Multi-Facility Economic Zones MFEZs)

According to the Local Government Act No. 2 of 2019, acquisition of land cap 189 No. 21

> *"(1) A local authority may acquire land by agreement whether by way of purchase, lease, exchange, or gift. (2) Where the acquisition by a local authority of land under the powers conferred under subsection (1) is being hindered because of the inability of the parties to agree on the terms of the acquisition or any other cause, the President may, on an application by the local authority and on being satisfied that the land is land to which the Lands Acquisition Act applies and that its acquisition by the local authority is necessary or expedient acquire land, (a)in the interest of public safety, public order, public morality, public health or urban and regional planning; or (b) to secure the develop mentor utilisation of that or other land for a purpose beneficial to the inhabitants of the area of the local authority. (3) All expenses and compensation incurred because of the acquisition shall be paid by the local authority into the Consolidated Fund and, on payment being made, the estate of any land so acquired by the President shall be transferred to the local authority."*

Apart from the non-approval of plans that do not consist of backyard gardens or green spaces, the framework also proposes the preservation of non-affected areas in the CRFS. This has already been proven to be effective with the Lusaka South Multi-Facility Economic Zone (LSMFEZ) and the Lusaka East Multi-Facility Economic Zone (LEMFEZ) near the Kenneth Kaunda International Airport (KKIA). This concept has helped and will continue to help the preservation of agricultural land and green spaces for the city's regeneration, water regeneration and city greening through the protection of both flora and fauna. This should be a policy directive within the city. Its application can also be extended to traditional land which

is the major contributor to diminishing food-producing areas as well as the increase in informal settlements.

8.1.3.3 Promotion of Urban Agriculture within the CRFS of Lusaka: Regulating Change of Use

Urban Agriculture is already practised within the city but lacks an institutional framework that enhances and encourages it. It is the mandate of the local authority through the planning department to ensure that UA is promoted through the development of deliberate policies on top of plan approval that consists of backyard gardens. In-fills need to be identified and allocated for agricultural practices. Banks of various streams within the city such as the Ngwerere stream need to be cleared, improved, and allocated for UA. Water provision in informal settlements will also enhance UA, considering that all of Lusaka's informal settlements lack proper water reticulation. If water is prioritized in these areas, there will be an increase in the practice of UA and space maximization.

8.1.3.4 Adoption of New Food Production Practices

The framework proposes moving away from traditional food production practices that only require the utilization of land and soil to produce food instead of intensive food cultivation. New practices such as hydroponics and aquaponics must be developed and improved to ensure maximum utilization of land. Empowering residents of informal settlements with the necessary skills and equipment for hydroponics or other new models of food production will help conserve water. Vertical farming such as rooftop farming should also be initiated to not only reduce dependency on the limited land but to also ensure that every part of the household or abandoned buildings and spaces within the city (both formal and informal areas) are properly utilized. Achieving all the above concepts requires them to be incorporated into the various spatial planning legislation and policies.

8.1.3.5 Sensitization of Local Communities on New Practices

Lusaka residents, much like the rest of the Zambian residents are very conservative. This means that they might not easily embrace new ways of doing things. Therefore, local communities (formal and informal) must be sensitized to the importance of adopting new food production models. As acceptance is a greater measure of success or lack thereof for any model, deliberate interventions on sensitization tailored to the needs of each community must be effected. The normative planning theories such as communication and co-production are ideal for ensuring a just city that will be food secure.

8.2 Land Functions

In this framework, land is the primary resource on which all the other aspects operate. It is therefore of paramount importance that land functions are examined to ensure enhancement in the integration of food systems into spatial planning. Land functions in this framework revolve around agricultural, residential, recreational, commercial, industrial and transportation functions. Spatial planners for the City of Lusaka will need to pay close attention to these land functions in their consideration of food systems for integration into spatial planning. This framework proposes harmonization of these functions so that they complement each other to promote best practices on the land to ensure food security in the city. The framework has thus considered the ecosystem, land cover, land use, plan formulation and plan implementation as critical areas to consider in pursuit of these goals.

8.2.1 Ecosystem

In this context, the area of interest is the harmonisation of interactions between the city population, weather, and landscape for the enhancement of food systems in spatial planning amidst climate change with the result being a more resilient urban environment. There is a need for the adaptation of plans and experimental projects that will bring about the creation of sustainable eco-neighbourhoods in the city of Lusaka; the restoration of the banks of various water bodies in the CFR (such as Ngwerere stream, Chongwe River and squares redevelopment); a remedy for the phenomenon of "heat island"; and solutions for urban green areas, the permeability of soils, and to favour the flow of water in the case of floods as is the case in the city. This way, water will be ever-present for UA for the city and for the CFR itself. This interaction will see to it that the CRFS attains the status of "Urban Green System" (UGS). The UGS will present an opportunity for economic variability through the residents' incomes, as well as a consideration of social, environmental, and institutional phenomena.

The framework also proposes that investments in Green Infrastructure (GI), including its management and benefits, be shared among key stakeholders within the CRFS for effective enhancement of food systems in spatial planning. An assessment of factors in the dimensions of sustainable development that contribute to the provision of useful elements for the promotion of a model of governance of the city eco-social-green must be conducted, this is an integrated perspective that recognizes the intricate connections between ecological, social, and environmental factors. Eco-social-green implies a holistic approach that seeks to address environmental challenges in a way that is socially responsible, equitable, and sustainable. Eco-social-green is often used in discussions about policies, practices, and initiatives that aim to

create a balance between ecological health, societal well-being, and environmental sustainability. Urban Green Systems can therefore be used as an instrument for redevelopment, continuity and integration between building renovations and natural and agricultural environments. This will help create and integrate ecological corridors or networks on a larger scale such as the CRFS. Furthermore, it can contribute to reducing the vulnerability of the urban system through fundamental ecosystem services. Ecosystem services can be considered as flows from natural capital stocks, and most of them are indispensable for human life and nature itself. According to Costanza (1991), ecosystem services consist of flows of matter, energy, and information coming from the stocks of natural capital - which are combined with the services of anthropogenic artefacts to generate well-being and quality of life offered. Ecosystem services perform the following functions: environmental regulator; hydrogeological protection; social, recreational, and therapeutic; cultural and educational; and aesthetic-architectural (Costanza, 1991).

The current land cover and the patterning land use must consider greening to promote food production. Planning should thus be emphasized, and implementation must be monitored to ensure developmental control.

8.3 Food Systems

As earlier stated, food systems refer to a series of activities ranging from the production of food, processing, distributing, wholesaling, retailing and consumption of food, including the disposal of waste. In all the stages of food systems, land is a paramount resource and should thus be planned for. Planning frameworks and pronouncements impact each of the four key stages in the food system (as indicated below). Therefore, it is imperative that this symbiotic relationship between land and food is examined, and strategies set in place to ensure the optimization of their value.

8.3.1 Production

In essence, production should take place on parcels of land dedicated to food production. The framework, therefore, recommends that enough land be reserved for agriculture and other forms of food production to increase economies of scale and promote cumulative productivity. Land throughout (and viability for food production) is resolute by sundry dynamics, comprising obtainability and eminence of labour, water, energy, sources, nutrients, and multiplicity of flora species. The framework recognizes these components as key factors in the integration of food systems into spatial planning, and more specifically through the preservation of such land.

8.3.2 Processing and Distribution

Availability of land and other such resources required for food production, processing and distribution are key to achieving the enhancement of food systems in spatial planning. For processing and distribution to be effective, infrastructure such as transportation facilities and factories for production and treatment must be developed. Additionally, processing materials such as the sustainable amount of water, energy and other materials must be availed to enhance production. Both skilled and unskilled human capital are valuable components in the processing and distribution of food. Food processing cannot be effectively achieved without a well-coordinated supply chain mechanism. The framework proposes investment in a wide-spread and well-distributed transportation infrastructure for the effective distribution of food to allow citizens access to affordable food from all points. The framework also proposes that informal food actors should not be ignored, this is so because recognizing and understanding the roles of informal actors in the food system is essential for developing inclusive and effective policies that support sustainable and resilient food systems. Integrating formal and informal elements can contribute to a more holistic approach to addressing challenges such as food security, economic development, and environmental sustainability.

8.3.3 Consumption

The fast-growing rate of urbanization in Zambia has led to physical and cultural detachment. Because food has traditionally been produced in rural areas in Zambia, the constant movement of people from rural into urban areas has presented a great challenge to food production. The population that was supposed to be producing food has moved into cities and towns to seek non-agrarian livelihoods. As urbanization increases, access to organically produced food dwindles, leading many to seek supply from supermarkets that generally sell highly processed foods. This framework seeks to address these food deserts. ‘Food deserts are areas of limited or no access to food within one’s home or work environment. They can exist in dense urban areas or outer suburban expanses. Prioritization of food access and utilization can fix the issue of food deserts. To achieve this, spaces must be created for trading and preparation of food and at the same time, interest and skills development must be cultivated if more food is produced. The framework puts a provision for food consumption points across the city (inclusive of informal settlements) in the planning and delineation of land.

8.3.4 Waste/Loss

Findings from the 1500 farmers interviewed revealed that food wastage and food loss are some of the major issues that have ravaged the LCRFS. The framework proposes interventions to address food loss and wastage. In the context of this study, food loss is inclusive of loss of

nutrients and food wastage refers to post-consumption waste. The framework proposes that the local authority should put in modalities such as sewage farms, landfills, incinerators, and other ways of disposing of waste in a green and environmentally friendly way. The other form of waste and loss identified in this study is food waste and loss that occurs along the supply chain, especially organic waste. The framework proposes moderates of treating and using waste for compost production or the production of bioenergy. If this waste can be preserved and sold, farmers will not have major losses in monetary form. This calls for collective responsibility by all stakeholders involved to ensure that the environment within which this form of compost is produced is ecologically safe. The food system is essentially dependent on healthy soils and river systems, insects for cross-pollination, and pest management - which are in turn maintained by healthy inherent flora and biodiversity.

8.4 Anticipated Strengths and Weaknesses of The Framework

8.4.1 Strengths

1. **Sustainability:** Integrating food systems into spatial planning can promote sustainable practices such as urban agriculture, local food production, and reducing food miles. This can lead to a more resilient and environmentally friendly food system.

2. **Health and Well-being:** By considering food access and nutrition in spatial planning, communities can be designed to promote healthier lifestyles. This may include ensuring access to fresh produce, designing walkable neighbourhoods, and creating spaces for recreational activities.

3. **Community Engagement:** Planning food systems at the local level encourages community engagement and participation. Residents can be involved in initiatives like community gardens, farmers' markets, and food cooperatives, fostering a sense of ownership and connection.

4. **Economic Opportunities:** Integrating food systems can create economic opportunities, such as supporting local farmers and food producers, creating jobs in food-related industries, and attracting food-related businesses to an area.

5. **Resilience to Shocks:** Diverse and localized food systems, supported by spatial planning, can enhance resilience to shocks such as climate change, supply chain disruptions, or economic crises. This resilience stems from reduced dependency on distant food sources and reliance on local resources.

8.4.2 Weaknesses

1. **Complexity:** Integrating food systems into spatial planning requires coordination across multiple sectors and stakeholders as indicated in the framework, including urban planners, agricultural experts, policymakers, and community members. Managing this complexity can be challenging and may lead to conflicts or delays in implementation.

2. **Data and Information Gaps:** Obtaining accurate and up-to-date data on food systems, such as food consumption patterns, supply chains, and land availability for agriculture, can be difficult. This lack of data may hinder effective decision-making and planning efforts.

3. **Infrastructure and Resources:** Developing the necessary infrastructure to support integrated food systems, such as processing facilities, distribution networks, and storage capacities, requires significant investment and resources. Limited funding or infrastructure gaps can impede progress in this area.

4. **Policy and Regulatory Barriers:** In some cases, existing policies and regulations may not align with the goals of integrating food systems into spatial planning. Overcoming regulatory barriers and promoting policy coherence across different sectors can be a barrier to implementation.

5. **Equity and Inclusivity:** Ensuring that benefits from integrated food systems are equitably distributed across diverse communities, including low-income or marginalized groups, requires planning and consideration of social justice issues. Without a focus on equity, there is a risk of exacerbating existing inequalities.

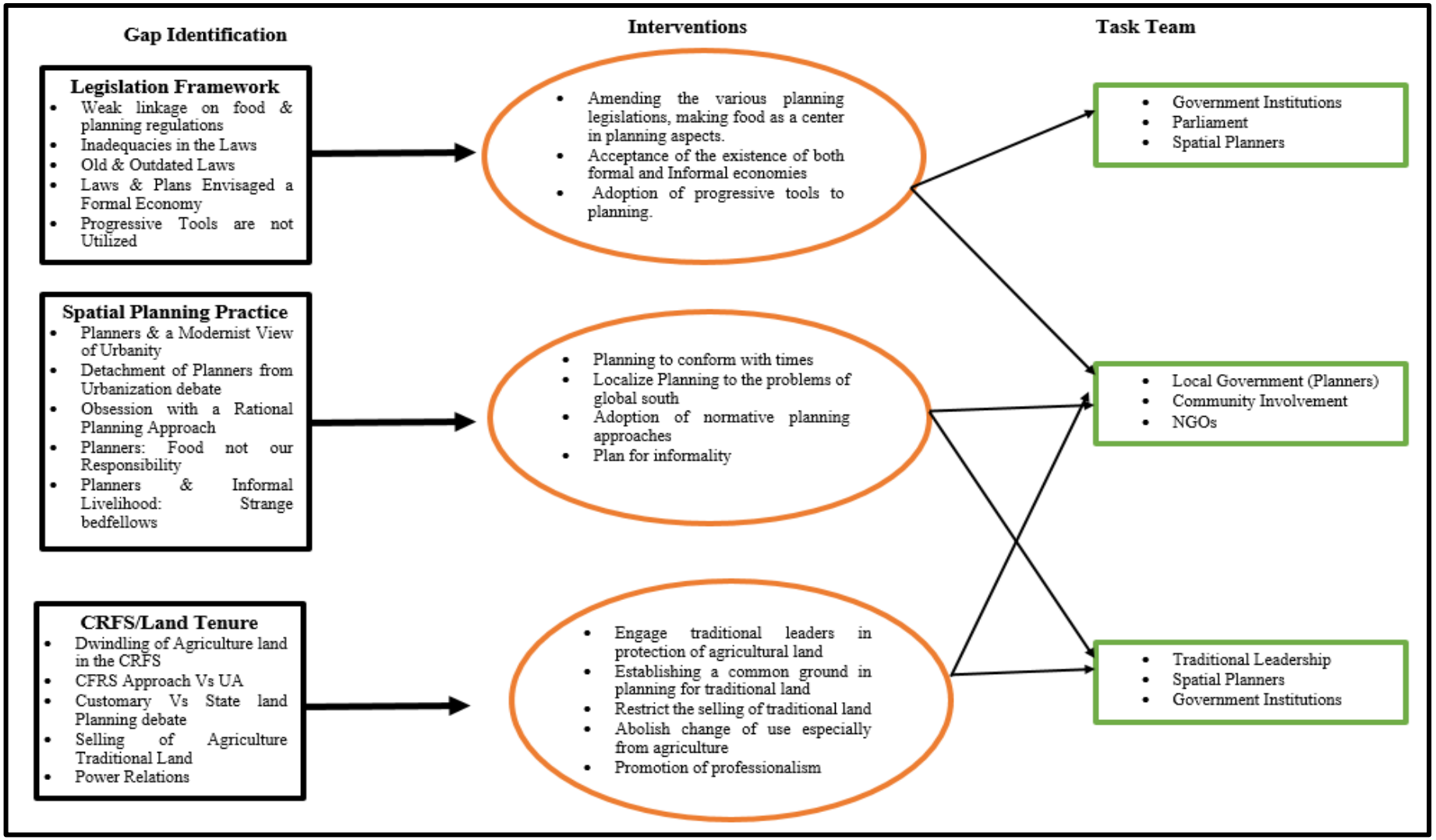

Figure 59: Schematic Representation of the Framework
Source: Authors Construction (2022)

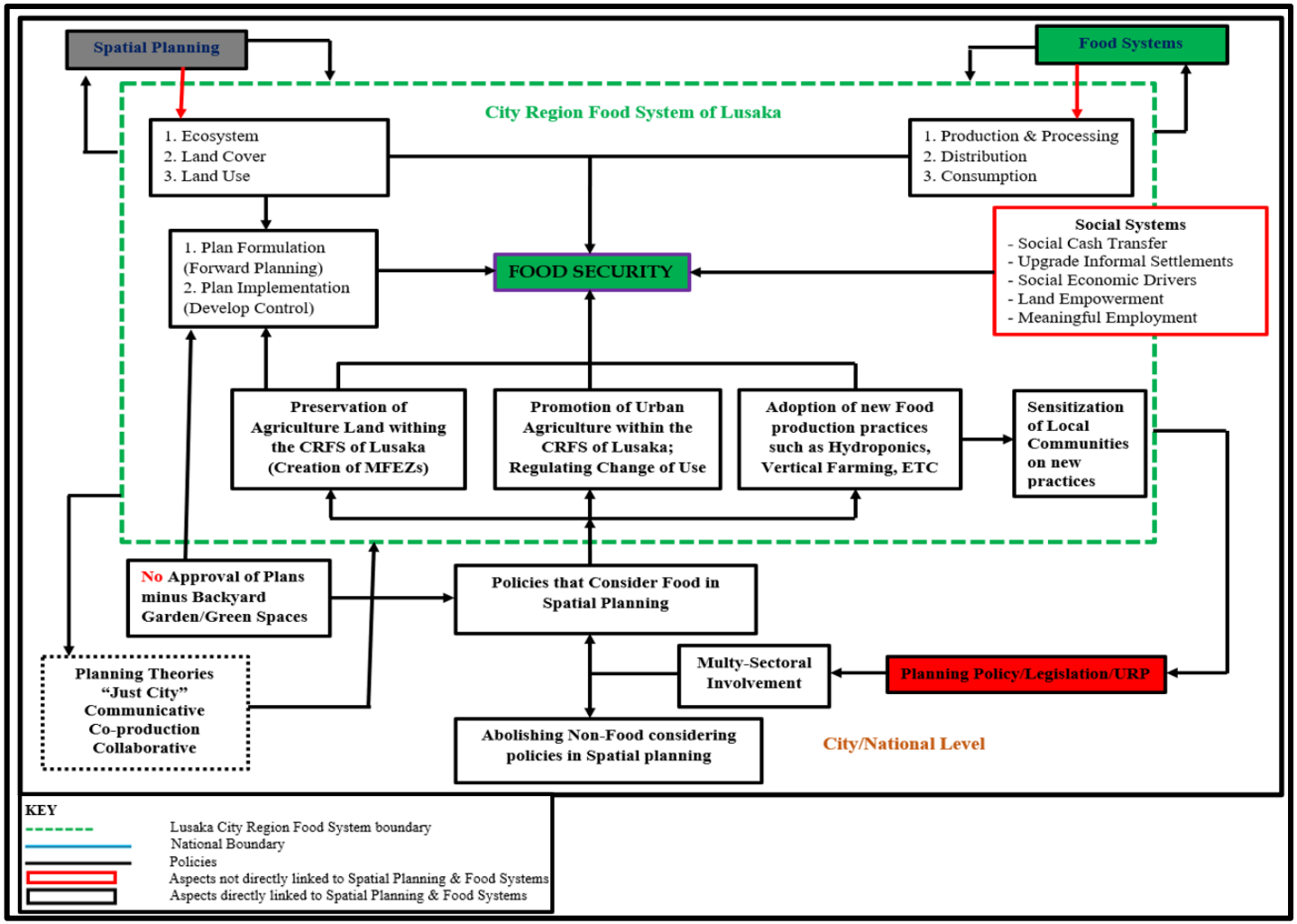

Figure 60: Framework to Enhance the Integration of Food Systems in Lusaka
Source: Authors Construction (2022)

8.5 Summary

Multi-sectoral involvement is essential to ensuring the effective functioning of the framework. This requires the coordination of all players mandated to provide food. Planning legislation and policy, land functions and food systems all need to be looked at as a single entity to ensure their relevance to food security. Adequate policies, research, and legislation have been advanced, yet implementation remains poor or weak. This is why the framework advances a deliberate policy and mandate that promises functionality and implementation. Overall, while integrating food systems into spatial planning offers numerous benefits related to sustainability, health, community engagement, and economic development, addressing challenges related to complexity, data gaps, infrastructure, policy barriers, and equity is essential for successful implementation. Collaborative efforts involving stakeholders from various sectors are crucial to overcoming these weaknesses and realizing the full potential of integrated food systems planning.

CHAPTER NINE: CONCLUSION AND RECOMMENDATIONS

9.0 Introduction

This chapter presents the conclusions made from the study and the recommendations. The chapter also highlights the new knowledge established in this study and suggests notable areas for future research. The study examined how the integration of local food systems can be enhanced in spatial planning in Lusaka Zambia. This was achieved through the following four objectives, reviewing the impact of spatial planning on the landscape of Lusaka, assessing food systems and food security in Lusaka, examining the nexus between spatial planning and food systems of Lusaka, and developing a proposal for an integrated framework for spatial planning and food security of Lusaka. Furthermore, it should be noted that without food, human survival cannot be guaranteed, therefore, there is an urgent need to ensure and actualise means and ways that will guarantee a continuous supply of food that is readily available, affordable, accessible, stable, and well utilized to attain food security. Debates on whether food should be a rural or urban issue, or whether spatial planners should be mandated to plan for it are ongoing and will continue.

The spatial planning landscape of Lusaka has undergone various changes since 1930 when Lusaka was first established and currently when urbanization has taken centre stage. Several planning frameworks, policies and legislations have shaped Lusaka from a small settlement of 5 km by 1.5 km to a large area of 373 km². Both UA and CRFS play a critical role in ensuring a constant supply of food in the city, without overlooking the food that comes from outside the city and the nation. The nexus between spatial planning and local food systems is weak in certain instances or completely missing in others. Unfortunately, there is a tendency to overlook the informal setting in the examination of this nexus. The framework highlighted how the combination of spatial planning and food systems can promote food security in the city of Lusaka and surrounding regions.

The planning profession is seen as the engine that ensures poverty reduction through food security, especially in informal settlements of cities in sub-Saharan Africa. As evident from the findings of this study, there is more that planners can do to alleviate food insecurity and one way is implementing deliberate interventions that consider food in all aspects of planning.

9.1 Conclusion

Considering the specific objectives the following were the key findings and conclusions.

9.1.1 Spatial Planning on the Landscape of Lusaka

Spatial planning continues to play a crucial role in shaping the landscape of Lusaka by guiding urban development, preserving natural areas, facilitating infrastructure development, mitigating environmental degradation, and conserving cultural heritage. By incorporating principles of sustainability, resilience, and community participation, effective spatial planning can contribute and creating a vibrant, attractive, and environmentally sustainable urban landscape in Lusaka. However, the study has noted that as the population increases in Lusaka, there is a demand for more land hence, compromising food-producing areas. There is therefore need for spatial planning through municipalities and ensuring that food-producing areas are protected from changes in the landscape of Lusaka. This could be done by ensuring that legislation that encompasses food is established. The other attribute that has been observed from the findings is the aspect of dual tenureship. Zambia uses the dual tenureship of both customary and state land. This has informed how the spatial planning landscape of Lusaka has evolved. The other aspects that can be noted from objective one that has informed the spatial planning landscape of Lusaka over the years is the continued adoption of legislation from the global north and the absence of informality in the laws and plans. These aspects are discussed as follows:

9.1.1.1 Legislation with Food

The first authors to extensively study food security with spatial planning established that through legislation and participation of key stakeholders in the value chain, municipalities in urban areas have a key role to play in ensuring that food systems are on the urban agenda (Pothukuchi & Kaufman, 1999; Pothukuchi & Kaufman, 2000). Drawing from the findings of the study, several legislations and policies in the country have recognized the significant role that food systems play in the attainment of food security. Some of these legal frameworks on food are the planning legislations; environmental laws; public health legislations; nutritional commission and legislations bordering on nutrition; and local governance legislations. However, the legal frameworks are formulated almost independently, and the implementers operate in silos, giving the impression that food is not a top priority. From these legislations, only the Public Health Act gives a clear mandate to the local authority to ensure public safety on matters of food, but that is as far as it goes.

9.1.1.2 Dual Land Tenure System

Despite the preamble of the Lands Act that vests all land in Zambia in the presidency, the adoption of a dual tenureship on the administration of land has proved problematic. Even though the traditional land holds the majority of food-producing areas in the LCRFS, spatial

planners have no jurisdiction over traditional land. Traditional leaders as land custodians sell the land to the highest bidder, at the cost of agricultural land. Therefore, the adoption of the dual tenureship as indicated below has made planning on traditional land impossible, especially since most of the informal settlements are expanding towards it and will continue to expand.

"An Act to provide for the continuation of Leaseholds and leasehold tenure; to provide for the continued vesting of land in the President and alienation of land by the President; to provide for the statutory recognition and continuation of customary tenure; to provide for the conversion of customary tenure into leasehold tenure; to establish a Land Development Fund and a Lands Tribunal; to repeal the Land (Conversion of Titles) Act; to repeal the Zambia (State Lands and Reserves) Orders, 1928 to 1964, the Zambia (Trust Land) Orders, 1947 to 1964, the Zambia (Gwembe District) Orders, 1959 to 1964, and the Western Province (Land and Miscellaneous Provisions) Act, 1970; and to provide for matters connected with or incidental to the foregoing." (GRZ, 1995, p. 1)

Evoking Section 31 Sub-section 4, the local authority can try and alleviate the growth of more informal settlements into traditional land surrounding the city.

"Where a council considers that it will be in the interests of the community to convert a particular parcel of land, held under customary tenure into a leasehold tenure, the council shall, in consultation with the Chief in whose area the land to be converted is situated, apply to the Commissioner of Lands for conversion.." (GRZ, 1995, p. 21)

However, this has proven to be difficult as traditional leaders have more grip on the land, contrary to the provisions of the law. The study thus recommends either a revision of such legislation so that they are reflective of what is on the ground, or stakeholder engagement (between chiefs and the local authority) to promote cooperation.

9.1.1.3 Adoption of Global North Legislations

The global north and global south have unique problems that should not be treated with the same policies, plans and legislations. These policies might have been altered but they had a major influence on shaping the planning environment in Zambia and Lusaka. For instance, in the 1940s, most former British colonies (including Zambia) received the Town and Country Planning Act which they adopted in its raw form. In Zambia, this law presided until 2015 despite the country's urbanization drivers being different from where the law was adopted. Furthermore, some of these planning laws were an experiment on the Zambian planning atmosphere.

As Zambia changed governments over time, new planning perspectives were introduced to enhance or replace the outdated Town and Country Planning Act.

9.1.1.4 Absence of Informality in Laws and Plans

The introduction of the Statutory and Improvement Areas (SIA) Act of 1976 saw the partial recognition of informality, but only as far as it could be planned towards formality. However, there are no other legislations that seek to mitigate informality. The laws and legislations that are in effect today only focus on formality and overlook informality. The introduction of the 2015 URP saw the repeal and replacement of the SIA. Given that the economy has mostly moved towards small-scale and informal, legislation must be in tandem with this new status quo. The introduction of the Ministry of Micro, Small and Medium Enterprises in the New Dawn government promises success for small-scale businesses and informal economies, especially in the quest for food security in Lusaka.

9.1.2 Food Systems in Lusaka

The overall food system in Lusaka is dynamic and evolving and is shaped by agricultural traditions, urbanization, economic factors, and cultural influences. Efforts to promote sustainable agriculture, enhance food security, and support local food businesses are crucial for ensuring a resilient and inclusive food system in the city. The study has established that Lusaka's food system is reliant on the neighbouring districts and the entire country at large. The city sources its agricultural produced foods within the LCRFS which consists of Chongwe District, Chilanga District, Kafue District, Shibuyunji District, Mumbwa District, Chisamba District and Chibombo District. Some of the major produce that is sourced within the LCRFS include maize, horticulture products such as green leafy vegetables, livestock products such as beef meat, fish, dairy products, pulses/legumes/nuts, roots, and tubers as well as fruits. The bulk of these products arrives through Soweto market which is the largest market in Lusaka. Other markets that were included in this study were the Chazanga market, Bauleni market, Mtendere market, and Kaunda Square Stage One. These markets are among the major food entry points into Lusaka city. However, the study has established that despite having these sources of the foods within the LCRFS, the majority of the food comes from outside the LCRFS accounting for up to 59 percent of the supply into local markets.

With regards to food security, the study concludes that from the sampled informal settlements, all three areas were food insecure based on the outcome of the HDDS for both 24-hour and 7 day recall. The HDDS indicated that the most commonly consumed foods were vegetables because they were easily accessible. While the consumption of protein foods, dairy products and fruits was low. This is because poor households are unable to afford healthy food and are

forced to switch to cheaper, less preferred alternatives that have little or no nutritional value. Other reasons for the food insecurity status in Lusaka have been attributed to the following:

9.1.2.1 Food Not Our Issue

This statement 'Food not our issue' came out more frequently in the findings. For the planners in the LCRFS, food is considered an issue for rural areas and not urban areas – a sentiment also notably echoed in the literature review (Pothukuchi & Kaufman, 2000). The spatial planners interviewed believe that food production is not a mandate of the urban setup and has contributed to the creation of settlements that are not food-sensitive. When spatial planners ignore the food component in their planning, the result is negative. The LCC does not have a food policy and above all, citing the Public Health Act, they have continually rendered illegal the production of food in the city. Practical examples have been the slashing of maize and other vegetables grown in the city, abolishing, and denouncing the keeping of broiler chickens, among others. Planners must be aware of the fact that the act of planning has a direct effect on various food systems, therefore, they should endeavour to become food literate and include food systems in planning.

9.1.2.2 Planners and a Modernist Vision of Urbanity

Spatial planners in Zambian do not fully understand the environment in which they operate. With population growth and scarcity of formal employment, it is time that the planners realised that 'informal work plays a dominant role in urban economies around the globe' (Skinner & Watson, 2018). Considering that Lusaka has 37 informal settlements, it is time for planners to embrace (but with caution) the informal economy for it is now part of the new normal. Despite the introduction of the URP, urbanity in Lusaka and Zambia at large still takes the form of the global north through the various legislations that support the URP. Their conceptualization of a city is modelled after cities such as London or other mega, metropolitan, or indeed primate cities like Cape Town and Johannesburg, which are not reflective of informal settlements in Lusaka. These informal settlements are plagued by poverty, poor water and sanitation, and diseases, a reality that is missing from the URP and must be included in all planning policies and practices. The modernist vision of urbanity should therefore be abandoned and replaced with one that promotes the co-existence of the informal and formal to ensure food security in Lusaka's urban area.

9.1.2.3 Political Influence on Planners

Planning in Zambia has equally been influenced by politics and corruption. The rise of carderism from the Second Republic to date reshaped the face of spatial planning. The UPND

government has tried to alleviate carderism, although not completely flashed out, it has been largely controlled. Previously, planners lacked the freedom to execute their responsibilities effectively as they were constantly faced with the fear of job loss or transfers to rural councils if they went against the directives of politicians and/or cadres. A political figure became more powerful than a technocrat and, in the end, much of the 'idle' land, which had been reserved as forest land, farmland or for any other future development was either ceased or illegally gazetted by political figures or corrupt personnel.

Furthermore, political influence on planning has contributed to the lack of objectivity on the planner's part. The planners interviewed at both DPO and Director Levels made little or no reference to the growth of urbanization, rising informality, food production in cities and other contemporary topical spatial planning and developmental issues. The experts were detached from reality on both global and regional spatial planning aspects that inform the planning profession. This reinforces their continued belief in approaches that are being criticized for failing in many areas.

9.1.3 Nexus Between Spatial Planning and Food System of Lusaka

The findings are conclusive that the nexus between spatial planning and the food systems of Lusaka remains weak. One of the outcomes of this study is that the inability of planners to understand the role they play in the food systems space heavily contributes to the lack of this nexus. Furthermore, the legislations, policies and plans that Lusaka uses do not encourage the nexus of spatial planning and food systems. Evidence from the findings indicates that the legislations of spatial planning and those of food systems are in silos. Furthermore, the study indicates that the players in food systems and those in spatial planning work in silos. One other critical contributor to the loss of agricultural land within the LCRFS which is also a clear indication of a lack of nexus is the change of use of land from agriculture to commercial. From the findings it was clear that the change of use is more concentrated from agriculture to commercial this has continued to push food further away from the LCRFS as such further widening the gap between spatial planning and food systems of Lusaka.

Furthermore, the findings are indicative of the use of old planning approaches, some of which have been abandoned in other parts of the world such as the Master Plan which Zambia still regards highly has also contributed to the exclusion of food in spatial planning and further weakening the nexus. For instance, the Master Plan looks at mono-zones of activities which have proved a failure in assuring proper livelihood for people, especially residents of informal settlements. The truth is that residents of Lusaka (formal and informal alike) hardly practice

mono zoning which requires backing from both policy and practice. Given the lack of space for individual zoning, it is most prudent to have the backing of the law to enable mixed-use in certain cases as such having a legal backing of this nexus.

Indicative in the study also is that spatial planners in Zambia are in a position of repudiation concerning their lived informal reality. Despite the evidence clearly showing that 75 per cent of the LFS is informal, the spatial planners would rather believe that it is impermanent and insignificant. Thus, they are doing nothing to make things right as such furthering the gap between spatial planning and food systems. It can therefore be concluded that this behaviour is akin to cognitive dissonance: their modernist discernments are so entrenched that they cannot accept the authenticity of informality existing right before them. They would rather see and wish for what they desire - beautiful Master Plan-guided world-class cities.

9.1.4 Lessons from the Theoretical Standpoint of the Study

City Regional Food Systems are proving to be more effective compared to UA due to the scarcity of land for the latter. The CRFS is relatively a new concept which still needs further exploring and understanding, especially with rapid urbanization encroaching on the very land preserved for agricultural production. Using the Garden City concept (which is the basis for Lusaka), the CRFS presents a perfect approach to achieving food security. Watson (2002) asserts that normative theories such as the 'just city', co-production and communicative approaches can be useful in most sub-Saharan African cities. Spatial planners can therefore borrow some of the lessons from the normative planning theories highlighted in this study. Lusaka city needs flexible and inclusive bottom-up approaches that will position planning as the solution to modern urbanization challenges. Consultation with the people affected by planning measures is non-negotiable. Without communication and engagement with people at their point of need (such as the provision of food), planning would be futile.

It is tempting to assume that proper coordination exists in the changing of informal settlements to improvement areas. Unfortunately, that is not what is obtained on the ground. Poor coordination leaves room for gentrification, as is the case with the Kalingalinga settlement. The normative theory of co-production presents itself as a lasting solution as the country embarks on upgrading its informal settlements. Co-production calls for the involvement of all key stakeholders in the improvement activities to be undertaken. As expected, food has been left out of the current model of upgrading the informal settlements. A more effective approach involves the leaders and those directly affected working together. Co-production has proved to

be effective in other settings such as South Africa. It could therefore prove to be just as effective in Zambia, especially if it considers the needs of all stakeholders.

9.2 Recommendations

From the findings of this study, it is recommended that the enhancement of spatial planning in food systems requires:

1. Establishment of multi-stakeholder food governance mechanisms such as food councils or market committees to connect market actors with local authorities and their constituencies to assess needs and provide input on decisions related to urban and territorial food systems.
2. Preservation of the areas that constitute the Lusaka City Region Food System through co-production and communicative approaches to ensure a 'Just City' that will have food at the centre and the promotion of backyard gardening. The Lusaka City Council should take a leading role.
3. Improvement of road networks from food-producing areas such as Chongwe, Kanakantapa which is a major source of horticulture crops. The roads need to be tarred and re-routed. This could be done using the Constituency Development Fund (CDF) or the Road Development Agency (RDA).
4. Development of sustainable physical infrastructure such as markets, separating the Soweto market into other bigger markets to give way in times of shock – such as when one market closes for cleaning or maintenance, the other markets remain in operation; The markets will need to be evenly distributed to ensure the availability of food locally. This is a mandate of the local authority.
5. Developing alternative agriculture-producing areas and routes. Expansion of the Lusaka boundaries into other districts to allocate agricultural land to produce food. Control of land-use change and mapping to protect agricultural land as it keeps reducing due to change of use which is mostly from agriculture to commercial and residential. This could be done in collaboration with surrounding local authorities and traditional leaders.
6. Developing new codes such as turning the city into three or more phased buildings to create land for food production and other commercial usages (densification) and developments to not be tolerated in water recharge areas.

7. Capacity building for local government on food issues on production and marketing of fresh foods and the entire food system. Inclusion of food is an important issue in the training of spatial planners at all levels. This could be a multisectoral approach.
8. Empowering traditional leaders with the technical know-how with regard to spatial planning in traditional land. Spatial planners are to be given jurisdiction to plan in traditional land beyond the collaboration planning that is enshrined in the URP of 2015. The local authority could take a leading role.

9.3 Future Research

Future research should look at the means and ways of making the current planning legislation applicable to the local context in tandem with the problems being experienced. In as much as the URP No. 3 of 2015 responds to some of the problems, it does not sufficiently address all the problems and gaps. Therefore, laws should be implemented to sufficiently deal with the existing problems and situations. Another key area to be addressed is the examination of spatial planning and its influence on the nutritional value of food in the CRFS of any location in sub-Saharan Africa.

It is further expected that Lusaka will continue this trajectory of urbanization, with informality taking centre stage. Thus, research should investigate the means and ways of preventing the escalation of these informal settlements, especially into the agricultural production areas. It is also imperative to critically look at food security in informal settlements compared to food systems in rural areas to determine which areas need the most attention. Using the findings from this study, an article addressing this topic was published.

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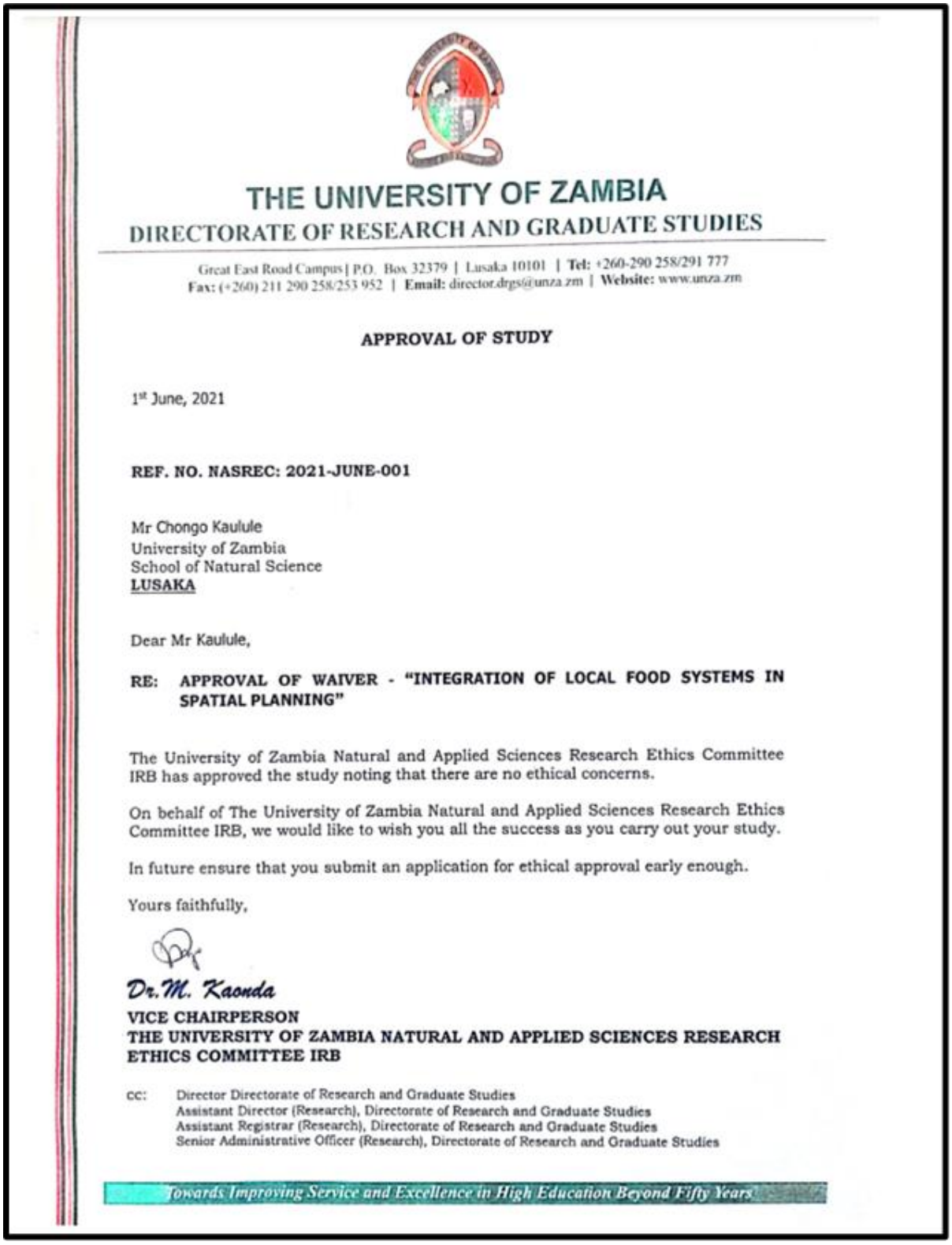
APPENDICES

Appendix I: Ethical Clearance



THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka 10101 | **Tel:** +260-290 258/291 777
Fax: (+260) 211 290 258/253 952 | **Email:** director.drgs@unza.zm | **Website:** www.unza.zm

APPROVAL OF STUDY

1st June, 2021

REF. NO. NASREC: 2021-JUNE-001

Mr Chongo Kaulule
University of Zambia
School of Natural Science
LUSAKA

Dear Mr Kaulule,

RE: APPROVAL OF WAIVER - "INTEGRATION OF LOCAL FOOD SYSTEMS IN SPATIAL PLANNING"

The University of Zambia Natural and Applied Sciences Research Ethics Committee IRB has approved the study noting that there are no ethical concerns.

On behalf of The University of Zambia Natural and Applied Sciences Research Ethics Committee IRB, we would like to wish you all the success as you carry out your study.

In future ensure that you submit an application for ethical approval early enough.

Yours faithfully,

Dr. M. Kaonda

VICE CHAIRPERSON
THE UNIVERSITY OF ZAMBIA NATURAL AND APPLIED SCIENCES RESEARCH ETHICS COMMITTEE IRB

cc: Director Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies
Senior Administrative Officer (Research), Directorate of Research and Graduate Studies

Towards Improving Service and Excellence in High Education Beyond Fifty Years

Appendix II: Publication based on Chapter Five

Chapter 3 (https://drive.google.com/file/d/1RIEleNsIFM5wqUWTrK1td_fC75OPTjz8/view)

Food Insecurity in Informal Settlements of Lusaka: Spatial Planning as the Missing Link

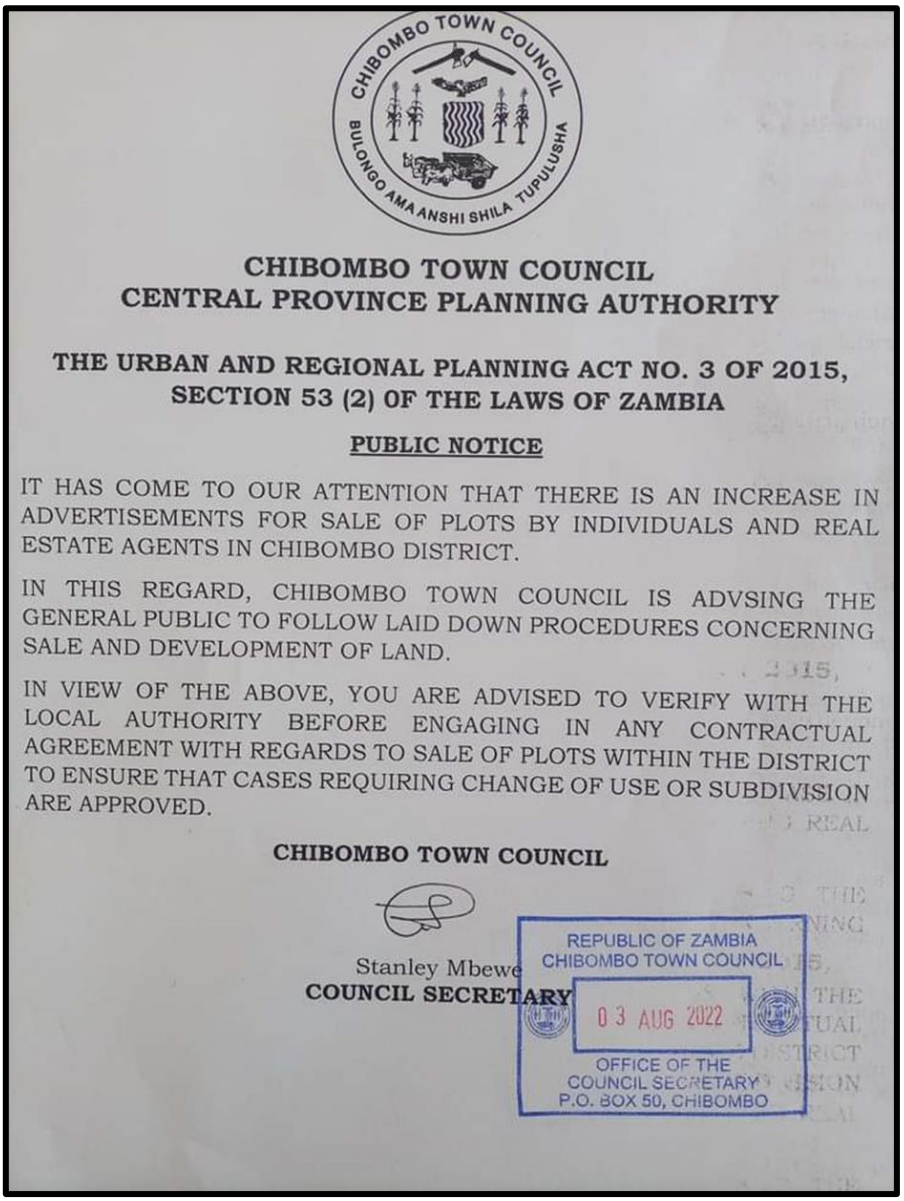
Chongo Kaulule*, Glynn Khonje and Progress H. Nyanga

Abstract

From a spatial planning perspective, it may be argued that food insecurity has been a neglected problem in the City of Lusaka, especially in informal settlements. The exclusion of food production, as a factor in spatial planning amid rapid urbanization, poses a serious threat to the quality of life of many informal settlement residents. Given high levels of urban poverty in informal settlements, there is need to explore the nexus between food systems and spatial planning. Such an exploration provides an in-depth understanding of the potential for enhanced food production in the city. Therefore, this study assesses the food security situation in Lusaka's Mtendere East in the context of sources of local foods in the area and levels of consideration of food systems in spatial planning. The case study for the research, derived from the systematic sampling of 100 households, was assessed from the prism of philosophical pragmatism. In addition to interviewing every third household, the researchers also administered a questionnaire with a 24-hour and a seven-day recall component in seeking to determine the food security status of residents. Also included were residents' views and experiences on the resultant effects of spatial planning on food security. The researchers adopted purposive sampling in selecting the key informants, viz: the Director of City Planning and the Socioeconomic Planner from Lusaka City Council, the market chairperson at Mtendere East market, officers at Mtendere East Council Office and a representative of the National Nutrition Commission. The study found that sourcing of food outside the LCRFS has caused Mtendere East to be food-insecure, given its Household Dietary Diversity Score (HDD) of six out of 16. Moreover, food is unaffordable, less accessible, and not well utilized. In terms of the spatial planning process, food provision is not taken into consideration as a factor when preparing a development plan. Consequently, there is need to include food systems in spatial planning for a comprehensive understanding of the nexus between food security in informal settlements and urban land use.

***Keywords*:** Informality, spatial planning, food insecurity/security, food systems, Garden City Plan, urbanization, city food region

Appendix III: Land Distribution Notice



CHIBOMBO TOWN COUNCIL
CENTRAL PROVINCE PLANNING AUTHORITY

THE URBAN AND REGIONAL PLANNING ACT NO. 3 OF 2015, SECTION 53 (2) OF THE LAWS OF ZAMBIA

PUBLIC NOTICE

IT HAS COME TO OUR ATTENTION THAT THERE IS AN INCREASE IN ADVERTISEMENTS FOR SALE OF PLOTS BY INDIVIDUALS AND REAL ESTATE AGENTS IN CHIBOMBO DISTRICT.

IN THIS REGARD, CHIBOMBO TOWN COUNCIL IS ADVSING THE GENERAL PUBLIC TO FOLLOW LAID DOWN PROCEDURES CONCERNING SALE AND DEVELOPMENT OF LAND.

IN VIEW OF THE ABOVE, YOU ARE ADVISED TO VERIFY WITH THE LOCAL AUTHORITY BEFORE ENGAGING IN ANY CONTRACTUAL AGREEMENT WITH REGARDS TO SALE OF PLOTS WITHIN THE DISTRICT TO ENSURE THAT CASES REQUIRING CHANGE OF USE OR SUBDIVISION ARE APPROVED.

CHIBOMBO TOWN COUNCIL

Stanley Mbewe
COUNCIL SECRETARY

REPUBLIC OF ZAMBIA
CHIBOMBO TOWN COUNCIL
03 AUG 2022
OFFICE OF THE
COUNCIL SECRETARY
P.O. BOX 50, CHIBOMBO

Appendix IV: Zambia National Farmers Union Dumping of Vegetables Letter

ZAMBIA NATIONAL FARMERS UNION

Press Release

8th August 2022

DUMPING OF VEGETABLES ON LOCAL MARKET

The Zambia National Farmers' Union (ZNFU) is deeply concerned with the dumping of several fresh commodities, such as cabbages and tomatoes on the market.

The dumping is being orchestrated and done by a few known farmers who are oversupplying the market on a daily basis. The over supplying of these fresh vegetables is causing a significant drop in commodity prices, resulting into many farmers producing at a loss.

These losses are hurting farmers, especially the small scale and emergent farmers, some of whom are contemplating to stop production altogether.

We urge these known farmers who are growing massive hectares of tomatoes to get into value addition as opposed to dumping their products at Soweto, Copperbelt and Kasumbalesa markets.

We are calling on the farmers involved in this dumping to refrain from this vice as this is distorting the market and creating unfair competition. The dangers of what is going on is that the small scale and emergent farmers will stop producing tomatoes, and in the event of these known farmers having a disease or any calamity on these hectares they have put in will result into the country importing tomatoes.

We should take a leaf from the poultry industry where those with big volumes are in processing and those with smaller numbers are selling live birds. And hence our advise to these known farmers is to get into value addition as what they are doing will not be accepted anymore.

The Ministry of Agriculture, the Ministry of Local Government and the Council must take keen interest in the new development as this has never happened in the history of this country.

The ZNFU is working hand in hand with the Council and the Ministry of Local Government to formalize and operationalize structured fruits and vegetable markets, including a structured "Agents systems" at markets, which would see Agents get formal recognition as commodity handlers for farmers.

We urge farmers to continue producing and spreading their produce across all markets.

For Zambia National Farmers' Union

KAKOMA CALVIN KALEYI
Media & Public Relations Manager

Appendix V: Part of the Publication for the Thesis

From urban agriculture to city region food systems: The changing character of food in Lusaka city

Godfrey Hampwaye, Gilbert Siame and Chongo Kaulule
Department of Geography and Environmental Studies
School of Natural Sciences
University of Zambia

Abstract

This chapter argues that addressing food crises in African cities must take a systemic approach. The urban food discourse is shifting from the narrow idea of urban agriculture to urban food systems. This chapter uses the case of Lusaka to analyse the changing character of urban food discourse for the city. The chapter argues that while urban agriculture remains important, feeding rapidly growing African cities will largely depend on food relationships between city and city regions. The chapter is based on qualitative data that was collected by the Food and Agricultural Organisation (FAO) project on city region food systems for Lusaka. The data provides evidence that achieving food security for all in Lusaka requires an in-depth analysis of food production systems, food marketing and food waste in city regions. The chapter contributes to emerging conceptual debates on city region food systems. It discusses the urban-rural food continuum as the lens for understanding the changing character of urban food in rapidly changing African cities. The chapter concludes by recommending policy changes addressing the competition between competing urban land uses, food distribution, and food loss and waste reduction strategies.

Keywords*: City region; resilience; land; hunger; informality*

Appendix VI: Household Questionnaire

THE UNIVERSITY OF ZAMBIA
HOUSEHOLD QUESTIONNAIRE
Enhancing integration of food systems in spatial planning

Correspondence Address:
Chongo Kaulule,
University of Zambia,
Department of Geography and Env Studies,
P. O. Box 32379,
Lusaka Zambia
Cell: +260-977784719
Email: twizakaulule@yahoo.com

Other Details:
Interviewer:_____
Date:_____/_____/_____/
Name of Residential Area and Plot #
……
……
……
……

CONFIDENTIAL

The study is trying to investigate the enhancement of Food Systems in Spatial Planning. The information on household food related will be requested. All information provided will be treated with the strictest confidentiality. Thanks for your co-operation.

Informant: …… (Optional)

SECTION A. Bio-data

1. Sex:
   [] Male
   [] Female

2. Household head:
   [] Yes
   [] No

3. Level of Education:
   [] Tertiary
   [] Secondary
   [] Primary
   [] No formal Education

4. Employment:
   [] Yes
   [] No

   Others ……

5. Range of Monthly income:
   [] below K1000
   [] K2000-K1001
   [] K2001-K4000
   [] K4001-K6000
   [] Above K6001

6. Household size: …….
7. Age Range:
   [] 15-25 [] 26-35 [ ] 36-45 [ ] 46-55 [ ] Above 55

8. Marital Status
   [] Single [] Married [] Widowed/Widower

SECTION B. Access and Utilization

9. Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night as well as in the last 7 days.

READ THE LIST OF FOODS. PLACE A (✓) IN THE YES BOX IF ANYONE IN THE HOUSEHOLD ATE THE FOOD IN QUESTION, PLACE A (✗) IN THE NO BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD IN THE LAST 24 HOURS AND ONE WEEK AND ONE WEEK.

Questions and Filter	Coding Categories			
	Yes		No	
	Last 24 hours	Last 7 days	Last 24 hours	Last 7 days
A. Any nshima, bread, rice noodles, biscuits, cookies, or any other foods made from millet, sorghum, maize, rice, wheat, soya?				
B. Any pumpkin (ifipushi), carrots, squash, or sweet potatoes that are white, yellow or orange inside, butter nuts, imyungu, intoyo?				
C. Any Irish potatoes, busala, manioc, cassava, beetroots or any other foods made from roots or tubers?				
D. Any dark, green, leafy vegetables such as cassava leaves (katapa), bean leaves (chimpapila), kalembula, spinach, rape, lettuce, Chinese cabbage, cabbage, bondwe, chibwabwa, kachesha and lumanda leaves, kachesha, ilanda?				
E. Any other vegetables?				
F. Any ripe mangoes, avocado, ripe papayas, guavas, infungo, masuku, masau or any other wild fruits?				
G. Any other citrus fruits such as oranges, apples, bananas, grapes, plums, strawberries, cranberry, and any other?				
H. Any beef, pork, lamb, goat, rabbit, bush meat, chicken, duck, or other birds, liver, kidney, heart, or other organ meats?				
I. Any eggs?				
J. Any fresh or dried fish or kapenta?				
K. Any foods made from beans, peas, or lentils?				
L. Any cheese, yogurt, milk or other milk products?				
M. Any foods made with oil, fat, or butter?				
N. Any sugar or honey?				
O. Any other foods, such as condiments, coffee, tea?				
P. Any visashi (relish with pounded groundnut)?				

SECTION C. Availability and Diversity

10. Where do you buy food from?
    [] Local Market
    [] Shopping Mall
    [] Town

11. Does the local market meet all your food needs?
    [] Yes
    [] No

12. Do you think the food is affordable?
    [] Yes
    [] No

13. How much do you spend per month on food alone?
    [] Below K1000
    [] K1001-K2000
    [] K2001-K4000
    [] Above K4001

14. In your own opinion, do you think the food you buy is of good quality?

[] Yes
[] No

15. Do you have a wide range of foods at affordable prices that you can buy from?
    [] Yes
    [] No

16. What is the main factor that influences your purchase of food?
    [] Food Preference
    [] Food Prices

SECTION D. Stability

17. Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was very often, often, sometimes, rarely, or never at all for (you/your household) in the last 12 months—that is, since last December.

Question	Response				
	Very Often	**Often**	**Sometimes**	**Rarely**	**Never at All**
A. How often in the last 12 months have you worried of not having enough food or not having enough money to buy enough food?					
B. How often did you experience food shortage/inadequate in the last 12 months?					
C. How often have you consumed a balanced diet of carbohydrates (e.g., Nshima, Potatoes), Vitamins (Vegetables, Fruits) and Proteins (Meat, eggs)?					

18. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?
    [] Yes
    [] No

19. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
    [] Almost every month [] Some months but not every month [] Only 1 or 2 months

20. In the last 12 months, since last December, did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?
    [] Yes
    [] No

21. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
    [] Almost every month
    [] Some months but not every month
    [] Only 1 or 2 months

22. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?
    [] Yes
    [] No

23. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?
    [] Yes
    [] No

24. In the last 12 months, did you lose weight because there wasn't enough money for food?
    [] Yes
    [] No

25. Now I'm going to read you several statements that people have made about the food situation of their children. For these statements, please tell me whether the statement was very often, often, sometimes, rarely, or never at all in the last 12 months for (your child/children living in the household who are under 18 years old).

Question	Response				
	Very Often	**Often**	**Sometimes**	**Rarely**	**Never at All**
A. How often in the last 12 months have you worried of your child/children of not having enough food or not having enough money to buy enough food for them?					
B. How often did you experience some food shortage/inadequate for your child/children in the last 12 months?					
C. How often have your child/children consumed a balanced diet of carbohydrate (e.g., Nshima, potatoes), Vitamins (Vegetables) and Proteins (Meat, Eggs)?					

26. In the last 12 months, since December of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?
    [] Yes
    [] No

27. In the last 12 months, did your child/any of the children ever skip meals because there wasn't enough money for food?
    [] Yes
    [] No

28. [IF YES ABOVE ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
    [] Almost every month
    [] Some months but not every month
    [] Only 1 or 2 months

29. In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?
    [] Yes
    [] No

30. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?
    [] Yes
    [] No

SECTION E. Food Production and Planning

31. Food types and where you produce including land ownership.

Question	**Yes**	**No**	**Where**	**Type/Name**	**Quantity (Plot size/Number**	**Whose Land**
A. Do you grow any leaf vegetables?						
B. Do you grow any other crops?						
C. Do you grow any fruits?						
D. Do you keep any poultry						
Do you keep any livestock						

E. Do you practice any Fish Farming						

32. Motive for Food Production

Produce	**Do You Eat Only**	**Eat and sell**	**Sell Only**
A. Vegetables			
B. Other crops			
C. Fruits			
D. Poultry			
E. Animals			
F. Fish			

33. The Law, Planning and Food

Question	**Yes**	**No**	**Others**
A. Are their laws affecting the growing of food?			
B. Has the Council or any government agency ever come to talk to you about regulations on growing food?			
C. Have you ever been stopped from growing anything?			
D. Have you ever been stopped from keeping poultry? If yes by who and why? (Indicate in the yes column)			
E. Have you ever been stopped from keeping animals? If yes by who and why? (Indicate in the yes column)			
F. Do you known any law in Zambia as constraining or helping food production?			
G. Is there any department from the government or private sector that supports food production?			
H. Is their land available for food production in Lusaka urban?			
I. Do you think food production should be allowed in Lusaka urban?			

34. Food Production

Question	**Yes**	**No**	**If yes explain (What Type and location)**	**If no, why**
A. Are you aware of any urban agriculture activity in Lusaka?				
B. If regulation permitted what else would you do in terms of urban agriculture? (showed on any column)				
C. Any comments or anything you would want to share on food production and planning regulations in Lusaka urban (show on any column)				

END OF INTERVIEW
THANK YOU FOR YOUR CO-OPERATION

Appendix VII: Key Informant Interview Guide

THE UNIVERSITY OF ZAMBIA
SCHOOL OF NATURAL SCIENCES
DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES
INTERVIEW GUIDE SAMPLE LUSAKA CITY COUNCIL PLANNING OFFICIAL (PRESENT OR PAST)

1. Indicate to the respondent what the interview is about. "Enhancing the integration of local food systems in spatial planning."
2. What is the mandate of Lusaka City Council? If food is not mentioned, probe if the respondent thinks food is their responsibility as a council. If the response is affirmative, ask what they are doing or have done. If the response is dissentient, ask who they think should handle food issues.
3. I am aware that the City of Lusaka has undergone various development plans from the original plan of the Garden City right through to the current Master Plan by JICA. From your professional point of view, how has the issue of planning for food been incorporated in these successful plans?
4. Discuss the current development plant, how are they effecting it, what is the status call.
5. What is the adequacy/inadequacy of the current plant in addressing food issues?
6. Are you aware of the current land use patterns in Lusaka, is it adequate for food security?
7. Am aware that Lusaka was planned on the Garden City Concept, bringing urban and countryside together, this concept even had belts of food production, do you see this partner emerging in the current development plan and city morphology?
8. Do you see the law as constraining or facilitating food production?
9. Am aware that the URP act somehow promotes food production in Lusaka, what are the other laws or by-laws that supports food production?
10. Sometimes the council used to cut down maize and other produce, limiting the number of dogs and other livestock such as chickens one would keep, why?
11. Am aware that under the town and country planning act of 1962 small holdings were supposed not to be less than 5 hectors and the purpose was to allow for horticulture and food production, as such places like Makeni, Lilayi, you could not have a plot less than 5 hectors, so why is it that this has changed? Which plan allows for this change or maybe it is just been practiced without guidance?
12. Am aware that the Garden City Concept was not fully implemented despite it been the concept that Lusaka followed, and largely it was a borrowed concept from Britain, what

are some of the effects that you fill that scenario has contributed to ensuring food security in the city?

13. Where in the current plan is it provided for agriculture production?
14. What kind of foresight is there to protect agriculture land in the city?
15. How does the current plan address food security?
16. In the Milan Urban Food Policy Pack of 2015, there is a debate that cities should now plan for agriculture. For instance, in zoning - there should be a zone for agriculture. Cities are now required to facilitate production, transportation, packaging warehouse and retailing. What role can spatial planning play in food production do that cities like Lusaka meet its food given the current developmental plan?
17. In your execution of duty in the city, is/was there collaboration with other line ministries or entities mandated with the provision of food or aspects that can ease the availability of food such as LWSE, WARMA, national nutrition commission, ministry of agriculture, among others? If yes, how? If no, why?
18. Lastly, do you think the development of an integrated framework for spatial planning and food security in Lusaka would help in the provision of food security for the city?

Appendix VIII: Questionnaire to the Farmers (Africities Food Project)

https://docs.google.com/forms/d/1CbZEzKSvmsEFtrBFR6JVjpRBWe1zNUuHWmJfrB_kAUU/edit

Appendix IX: Traders Check list.

THE UNIVERSITY OF ZAMBIA

Traders Check List

Enhancing integration of food systems in spatial planning

Food Sources and Types in Lusaka Rain Season Period

Instructions: Indicate approximated quantities in the spaces provided

MARKET NAME: …….

Food Crops	**Food Types**	**Lusaka City**	**Chongwe**	**Chilanga**	**Kafue**	**Shibuyunji**	**Mumbwa**	**Chisamba**	**Chibombo**	**Beyond Lusaka**
Cereals	Maize									
	Wheat									
	Rice									
	Millet									
	Sorghum									
Vegetables	Green Leaf									
	Dried Vegetables									
	Tomatoes									
	Onions									
	Others									
Meat, Poultry and Offal's	Goats									
	Chicken									

	Beef									
	Pork									
	Ducks									
	Rabbits									
Fish	Dry Fish									
	Fresh Fish									
	Dry Kapenta									
	Fresh Kapenta									
Milk and Milk Products	Milk									
	Cheese									
	Yoghurt									
	Other Milk Products									
Pulses/Legumes/Nuts	Soya Beans									
	Green Beans									
	Beans									
	Groundnuts									
	Cassava									

Roots and Tubers										
	Sweet Potatoes									
	Irish Potatoes									
	Busala									
Fruits	Citrus Fruits									
	Wild Fruits									
	Local Fruits other than Wild									
Eggs	Eggs									
Oils/Fats	Oils/Fats									