



31 MAY 2024

State of the City Food System Report

Kisumu



AfriFOODlinks



Funded by
the European Union



Coordinated by
ICLEI Africa

List of Figures	1
List of Tables.....	2
Abbreviations and Acronyms	3
1. Document profile detail	4
2. Executive Summary	7
1. Introduction	8
3. Introduction to Kisumu City.....	10
3.1. History of the City	11
3.1.1. Evolution of the City	11
3.1.2. Demographic Information	13
3.2. The City's Governance Structure	14
3.2.1. The City Board.....	15
3.2.2. The structure of the County Government.....	16
3.2.3. The County Assembly	17
3.3. Overarching report on economy of the City	17
3.4. City Infrastructure report	18
3.5. Food and nutrition security.....	20
3.5.1. Current food and nutrition security responses	21
3.5.2. State of nutrition transition	22
3.5.3. Nutritional deficiencies	22
3.5.4. Vulnerable groups	23
3.5.5. Food and nutrition system challenges faced in the city.....	23
3.6. Culture of the City and relationship with its food system	24
4. AfriFOODlinks City Food System Baseline Information.....	26
4.1. Food systems stakeholders	26
4.2. Policy and regulatory environment.....	27
4.3. Production environment.....	29
4.4. Food diversity and staple foods	29
4.5. Typical food basket for different income categories.....	31
4.6. Nature of the food economy	33
4.6.1. Formal food economy	33
4.6.2. Informal food economy.....	33
4.7. Food access strategies of households	34
4.8. Nutritional deficiencies (2012-2022).....	34
4.9. Food Systems Assets	35
4.9.1. Food processing firms	35
4.9.2. Food system organisations and trade associations	35
4.9.3. Local food production and harvest assets	35

4.10.	Food safety	35
4.11.	Food infrastructure	36
4.12.	Food and nutrition system interventions (2012-2022)	36
4.12.1.	Programmes.....	36
4.12.2.	Plans	38
4.13.	City and regional scale development challenges and current responses	38
5.	The state of multi-stakeholder food governance and processes.....	40
5.1.	Modes and practices of food governance	40
5.2.	Key urban food systems governance actors	40
5.2.1.	National Government	40
5.2.2.	Local Government	40
5.2.3.	International Development Agencies.....	41
5.2.4.	Non-Governmental Agencies.....	41
5.3.	Historical shifts in food systems governance	42
5.4.	Viability and efficacy of urban food systems governance	42
5.5.	Urban food systems governance opportunities and threats	43
6.	Urban agri-food systems entrepreneurial and trade context.....	45
6.1.	Nature of food systems economy	45
6.1.1.	Nature of food systems economy in Kenya.....	45
6.2.	Nature of food systems economy in Kisumu	46
6.2.1.	Where does food come from?	46
6.2.2.	Creation of food	49
6.2.3.	Food distribution.....	50
6.3.	Viability of agrifood economy	56
6.3.1.	Viability of the agrifood economy in Kenya	56
6.4.	Regulatory and political framework	56
6.5.	Stakeholders' analysis	56
6.5.1.	Business environment	57
6.5.2.	Availability of data on food business	58
6.5.3.	Analysis of Agrifood system actors	58
6.6.	Viability of the Agrifood economy in Kisumu.....	58
6.6.1.	Regulatory and political framework.....	59
6.6.2.	Business environment	59
6.6.3.	Availability of data on food business	60
6.6.4.	Analysis of Agrifood system actors and stakeholders	61
6.7.	Challenges faced by Agrifood system economy	61
6.7.1.	Challenges faced by Agrifood economy in Kenya.....	61
6.7.2.	Challenges faced by Agrifood economy in Kisumu City.....	62
6.8.	Trends and shifts in agrifood systems economy	64

6.8.1.	Trends and shifts in agrifood systems economy in Kenya	64
6.8.2.	Trends and shifts in agrifood systems economy in Kisumu	64
6.9.	Key Agrifood systems actors and their roles	65
6.9.1.	Alternative and emergent agrifood systems players.....	66
6.9.2.	Alternative and emergent agrifood systems trends.....	67
7.	Urban Food Environment	68
7.1.	State of food environment	68
7.2.	Nature of urban planning, design and spatial considerations and its role in food environment	68
7.2.1.	Built environment plans that consider food environment.....	70
7.2.2.	Nature and trends of the urban food environment	70
7.2.3.	Nature and trends of the urban food environment for the entire city	70
7.2.4.	Food Environment in different economic/income zones of the city	71
7.3.	Opportunities to address food environment limitations.....	71
8.	The city's food system: Examining unseen aspects.....	73
8.1.	Overlooked and underutilized urban food systems knowledge	73
8.2.	What makes the city's food system unique?	74
8.3.	Discussion	75
8.4.	Conclusion.....	77
9.	References	78

List of Figures

Figure 1: Map of Kenya showing the location of Kisumu City (Source: Openstreetmap.org, RCMRD).	10
Figure 2: Administrative wards of Kisumu City (Source: Otieno et al., 2022)	11
Figure 3:Figure 6: Growth of Kisumu, 1930 – 2016 (Source: Kisumu ISUD Plan)	13
Figure 4:Map of Kisumu City showing informal settlements forming a ring around the original planned city (Source: Department of Physical Planning 2015)	14
Figure 5: Basic Organisational Structure of County Governments in Kenya	17
Figure 6:: Kisumu City Road surface types (Source: Kisumu LPLDP 2020)	19
Figure 7: Location of markets in Kisumu (Source: Otieno et al., 2022)	20
Figure 8: A meal of ugali, fried fish, and kales(sukuma-wiki)	24
Figure 9: Nyoyo (boiled maize and beans)	25
Figure 10: Kenyan Mandazi	25
Figure 11: Food value chain stakeholders in Kisumu.	27
Figure 12: Kisumu Municipal Market aka Jubilee Market	47
Figure 14: Recycling food waste at Obunga Market, Kisumu Kenya	48
Figure 15: Motorcycle and tuk-tuk transport in Kisumu	50
Figure 16: Water bus and boat engine transporting fish from Mbita to Kisumu City	51
Figure 17: Hand carts (Mkokoteni) transporting water for use in food kiosks in Kisumu.	52
Figure 18: Ugali Value chain.	52
Figure 19: Fish Value chain	53
Figure 20: Vegetables value chain.	54
Figure 21: Eggs and poultry value chain.	55
Figure 22:Maize value chain	55
Figure 23: Urban agriculture in Kisumu City in Kauothe area of Nyalenda informal settlements	60
Figure 24: Kisumu Local Physical and Land Use Development Planning zones and growth nodes (Source: Kisumu LPLUDP)	69
Figure 25: Traditional food preservation methods.	73
Figure 26: Traditional pest control methods.	74
Figure 27: Kisumu fish delicacies and a fish event dedicated to celebrating this delicacy.	74
Figure 28: Global integration of Kisumu City Food Network	75
Figure 29: Benefits of farming in Kisumu City	76

List of Tables

Table 1 Summary of the action areas for Kisumu County Nutrition Action plan 2020 -2023	21
Table 2 Nutritional Deficiencies among children across health facilities in Kisumu County in 2022 (Source: County Government of Kisumu).	23
Table 3 Common food items consumed by Kisumu residents	30
Table 4 Typical food baskets for various income categories	32
Table 5 Some food system projects implemented in Kisumu in last ten years	37
Table 6 Key food system stakeholders and their roles	65

Abbreviations and Acronyms

BMU – Beach Management Unit
CBD – Central Business District
CBOs – Community Based Organisation
CEC – County Executive Committee Member
CIDP – County Integrated Development Plan
FAO – Food and Agriculture Organisation of the United Nations
GDP – Gross Domestic Product
HDDS – Household Diet Diversity Scale
HFIAPS – Household Food Insecurity Access Prevalence Scale
ICT – Information and Communication Technology
ISUD Plan – Integrated Sustainable Urban Development Plan
KALRO – Kenya Agriculture and Livestock Research Organisation
KDHS – Kenya Demographic Health Survey
KEPHIS – Kenya Plant Health Inspectorate Service
KIWASCO – Kisumu Water and Sanitation Company
KNBS – Kenya National Bureau of Statistics
LPG – Liquefied Petroleum Gas
LPLUDP – Local Physical Land Use Development Plan
MCA – Member of the County Assembly
NACC – National Aids Control Council
NCPB – National Cereals and Produce Board
NIB – National Irrigation Board
PLWHAS – People Living with HIV And AIDS
PWD – Person with Disability
SACCOs – Savings and Credit Cooperative Societies
SAPs – Structural Adjustment Programmes
WHO – World Health Organisation

Document profile detail



Publisher:

AfriFOODlinks

@ 2024 by JOOUST & Kisumu City Partners.

All rights reserved. Licensed to the European Union.

For more information, address: afrifoodlinks@iclei.org and frank.awuor@gmail.com

Publication date: May 2024

Author: Paul Opiyo, Frankline Otiende, Arvinlucy Onditi, Loice Achieng, Lydia Ominde, Michael Oloko, Stephen Agong, Rose Achieng, and John Sande

Reviewers: Mutoro, A.; Olweny, C.; Haysom, G.

Design: AfriFOODlinks and ICLEI Africa

Image credits As per the cited detail in each image. Not for re-use

As at May 2024

Cite this document as: Opiyo, P., Otiende, F., Onditi, A., Achieng, L., Ominde, L., Oloko, M., Agong, S., Achieng, R. and Sande, J. (2024). State of City Food System Report for Kisumu, AfriFOODlinks project, Cape Town, South Africa.

This publication is produced by JOOUST and Kisumu partners under the framework of the AfriFOODlinks project. AfriFOODlinks is funded by the European Union (EU). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.



Funded by
the European Union



Coordinated by
ICLEI Africa





Project partners



Deliverable Details

Del No.	Deliverable Title	Work Package	Version
D1.01.02	Kisumu State of City Food Systems Report	WP1	1.1
Contractual Delivery Date		Actual Delivery Date	Dissemination Level
May 2024		May 2024	PU
Lead Partner		Contributing Partners	Reviewers
JOOUST		County of Kisumu, Kisumu Local Board	Mutoro, A.; Olweny, C.; Haysom, G.

LINCS Value Framework



	Learning The project stresses the value of experiential learning and that multiple ways of knowing are welcomed, deemed of equal value, and can be connected to enhance understanding. <i>"NEA ONNIM NO SUA A, OHU"</i> - "He who does not know can know from learning"	Inclusivity and deliberate engagement and empowerment of communities will enhance their agency and participation in decision-making for a people-centred and informed research, policy and practice. <i>"FUNTUNFUNEFU-DENKYEMFUNEFU"</i> - "Unity in diversity"	Novelty represents the embracing of the new or unexpected, which necessarily requires diverse expertise, skills and perspectives. It includes the dismantling of inappropriate systems in favour of traditional or indigenous practices. <i>"UAC NKANE"</i> - "UAC lights" symbolises technological advancement.	Collaboration To successfully ensure transdisciplinary work, societal actors must be continuously engaged to co-define the research objectives and questions, and to continuously contribute to meaning-making with the researcher as the research progresses. <i>"BOA ME NA ME MMOA WO"</i> - "HELP ME AND LET ME HELP YOU".	Sustainability is articulated both as the overarching global imperative to ensure economic, environmental and social wellbeing, and as the ethos that every project intervention must aim to become self-sustaining. <i>"SANKOFA"</i> - The backwards turning bird symbolises returning while looking forward
How does this deliverable contribute to each of the values?	This has involved a deep learning process connecting food systems understanding to urban systems understandings	The report entailed less engagement and a surface review but consultations with diverse stakeholders will now take place	This is one of the first reviews to connect urban systems and food systems knowledge and to assess the food system of a city as embedded in both the urban, the policy and the infrastructural contexts	This work involved convening different food systems knowledge specialists. More collaborative work will commence with this report service as the site of conversation	This report serves a key sustainability position. The wealth (per a broad definition) of society is embedded how society functions and that is embedded in context and the environment. The intersections between these spheres also needs mediation and governance. This report seeks to understand this process as a primary entry point to ongoing food system engagement.
How did you practice this value in this deliverable?	Through the initial brief and active engagement through the development of the report.	This process built the foundation for more inclusive conversations with diverse actors who impact the food system across the city	This report is novel and pushed researchers to engage diverse systems at the urban scale – food, urban, governance, health, policy, politics, etc.	This report was collaborative in terms of how it brought researchers together. However, it is a key tool upon which collaborative processes are now built	This report sought to offer greater understanding about the intersections of the three spheres and how these are mediated through the sphere, who governs these processes and how these enable or constrain outcomes.

Executive Summary

This report presents insights and emerging lessons on urban food systems governance from the experience of Kisumu City and how the city has developed urban food system interventions. The report draws on diverse sources of secondary information regarding the experiences of other cities in the region and throughout the world. It highlights entry points for the governance of urban food systems issues, common procedural and content-related considerations when addressing those issues and operational opportunities for future investment.

The State of City Food System review is an attempt to capture the state of the food system as it relates to the wider city. The city food system is intricately linked to other city systems including planning, mobility, economy, and governance. This report seeks to present the city food system as a central and core consideration of the city. The report is aligned to the objectives of the AfriFOODlinks project which is to improve food and nutrition security while delivering positive outcomes for climate and the environment and building socio-ecological resilience. This review is aimed at taking stock of existing data, knowledge and perspectives of immediate need, while actively seeking overlooked and under-utilised urban food systems knowledge. This is to be achieved by undertaking urban food system landscaping and situational analyses that span key urban systems (food, health, socio- economics, urban infrastructure and services).

This review seeks to gather and engage existing published knowledge, drawn from food and nutrition system assessments, stakeholder mapping, retailer mapping, engaging urban food policies, programmes and strategic plans across government scales, through literature scans. The objective is to begin building an understanding of both what is known about the urban system and the urban food system, but also, what is not known about both the urban and urban food systems of the city. The report sets the ground from which existing knowledge can be tested, verified and deepened. It is a foundation for the wider process of engaging in and questioning the food system of Kisumu City to understand the intersection between the urban systems and the food systems of the city.

1. Introduction

This State of the City Food System Report for Kisumu City is the first Deliverable – D1.1 of Work Package 1 of the AfriFOODLinks Project. The report is a product of stocktaking of existing data, knowledge and perspectives of immediate need, while actively seeking overlooked and under-utilized urban food systems knowledge.

The methodology used in writing this report comprised the use of experiential knowledge of the research team members as residents of Kisumu city; observations; review of published literature, official government reports and policy documents; and review of reports of development agencies working in the city. The report includes urban food system landscaping and situational analyses that span key urban systems (food, health, socio- economics, urban infrastructure & services) based on existing published knowledge; food and nutrition system assessments & needs analysis; stakeholder- and retailer-mapping; urban food policies, programmes and strategic plans across government scales.

Section two of the report gives background information about Kisumu City, including information on demographics, geographical features, major events that have defined the city, and a historical development of the city through a food lens. Kisumu originated from barter trade activities at the Winam Gulf and has been shaped by the culture of the Luo community. Kisumu is governed by a city board that is a department within the county government structures. Main economic activities within the city are described, including key infrastructure. The location of Kisumu at the confluence of a major transport system is highlighted due to its potential in enhancing the city's food system.

Section three presents baseline information relevant for the AfriFOODLinks project. The key stakeholders and their mandates are highlighted. The existing policy and regulatory environment is examined and was found to be ineffective due to overlapping mandates of different agencies. The food production environment, climatic and soil conditions for production, urban agriculture and local production trends are examined. This section further delves into food diversity and staple foods and notes the dominance of informal players in the food retail sector. Households mostly access food through the market, and nutritional deficiencies are prevalent. Food assets in the city and their contributions to the food system are analysed. City and regional scale development challenges and current responses are examined.

Section four describes the state of multistakeholder governance and ways through which decisions are made and implemented at various levels, including formal and informal governance processes. The key urban food system governance actors (including government agencies/regulators, NGOs, producers, transporters, processors and retailers) are described and their relationships/linkages, outlining their mandates, contributions to the city's food system and challenges. It is noted that there are challenges with the city's governance system but there are initiatives, including establishment of multistakeholder governance platforms.

Section five examines the agrifood systems entrepreneurial and trade context of Kisumu City. It is observed that the agrifood economy is viable in Kisumu City and there are opportunities for business ventures at various levels of the value chain. The challenges faced by agrifood economy including land issues, climatic factors, marketing, unfavorable policies and poor infrastructure have been identified. Current trends and shifts in the agrifood economy are identified as well as possible intervention strategies.

Section Six describes State of city food environment. This includes food production opportunities, processing and handling of food products, variety of food products for improved nutrition, market environments and facilities, policies and regulations and consumers preferences. The nature of urban planning, design and spatial considerations and its role in food environment is considered. Additionally, informal and formal food environments with regard to locations, facilities and innovative practices are addressed, together with opportunities to address food environment limitations for improved nutrition. The section also reflects on physical, economic, political and socio-cultural contexts and how these influence decisions on production, access to, handling and consumption of food.

Finally, section seven delves into overlooked and underutilized urban food systems knowledge. These include traditional food preservation methods and urban farming within informal set ups. The unique linkages to regional and international food systems are highlighted. Finally, the governance system for Kisumu City is noted to be unique due to its position as a City within a County.

Introduction to Kisumu City

Kisumu City is located on the north-eastern shore of Lake Victoria, at latitude 0°06'00.0"S and longitude 34° 44' 60.0"E. It is the third-largest city in Kenya after the capital City, Nairobi, and the coastal city of Mombasa. Kisumu is the principal city of Western Kenya, and the administrative and commercial capital of Nyanza Region (Fig. 1).

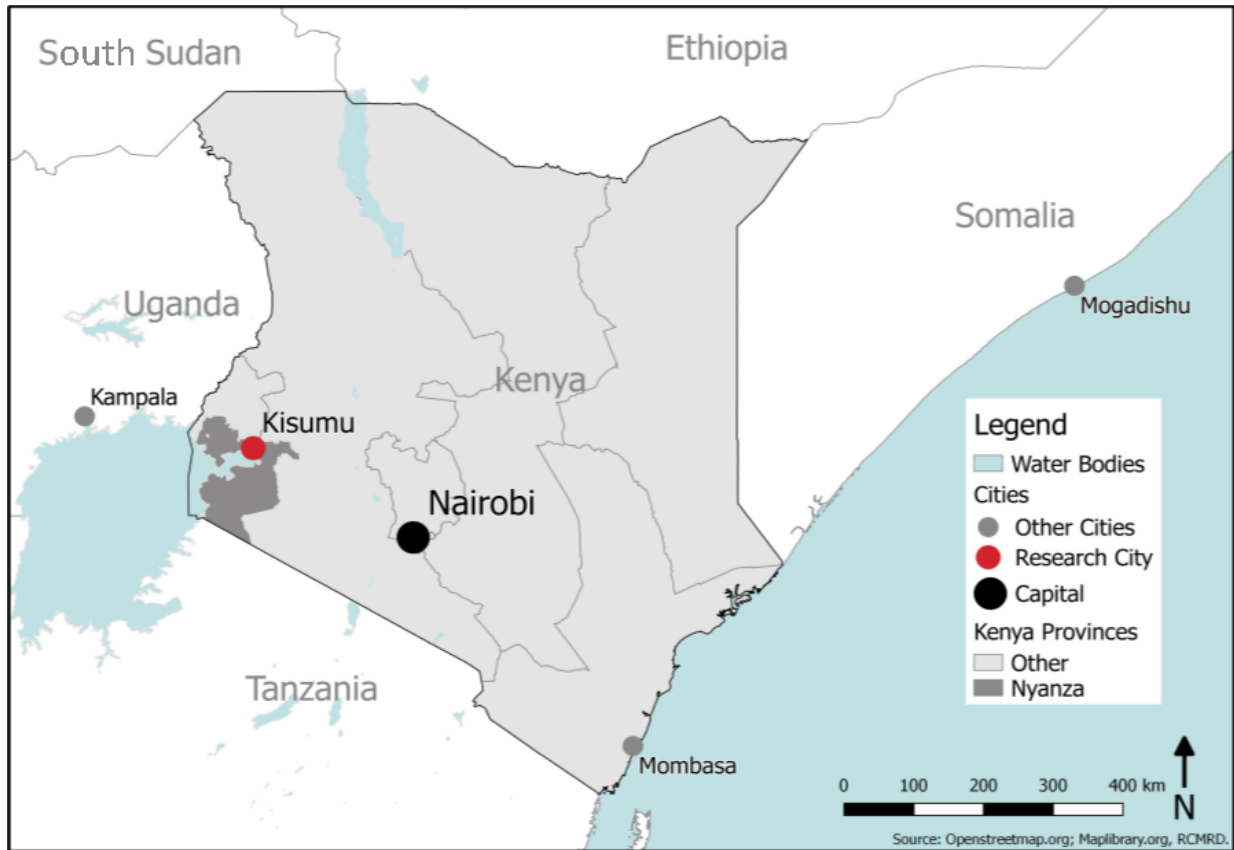


Figure 1: Map of Kenya showing the location of Kisumu City (Source: Openstreetmap.org, RCMRD).

Kisumu City is in Kisumu County, which is one of the forty-seven units of devolved governments in Kenya. The administrative boundaries of the city cover the whole of Kisumu Central and Kisumu East sub counties, and three wards (South-West Kisumu, Central Kisumu, and Kisumu North) in Kisumu West Sub County.

North-West Kisumu and West Kisumu wards in Kisumu West Sub County are outside the city administrative boundaries (Fig. 2).

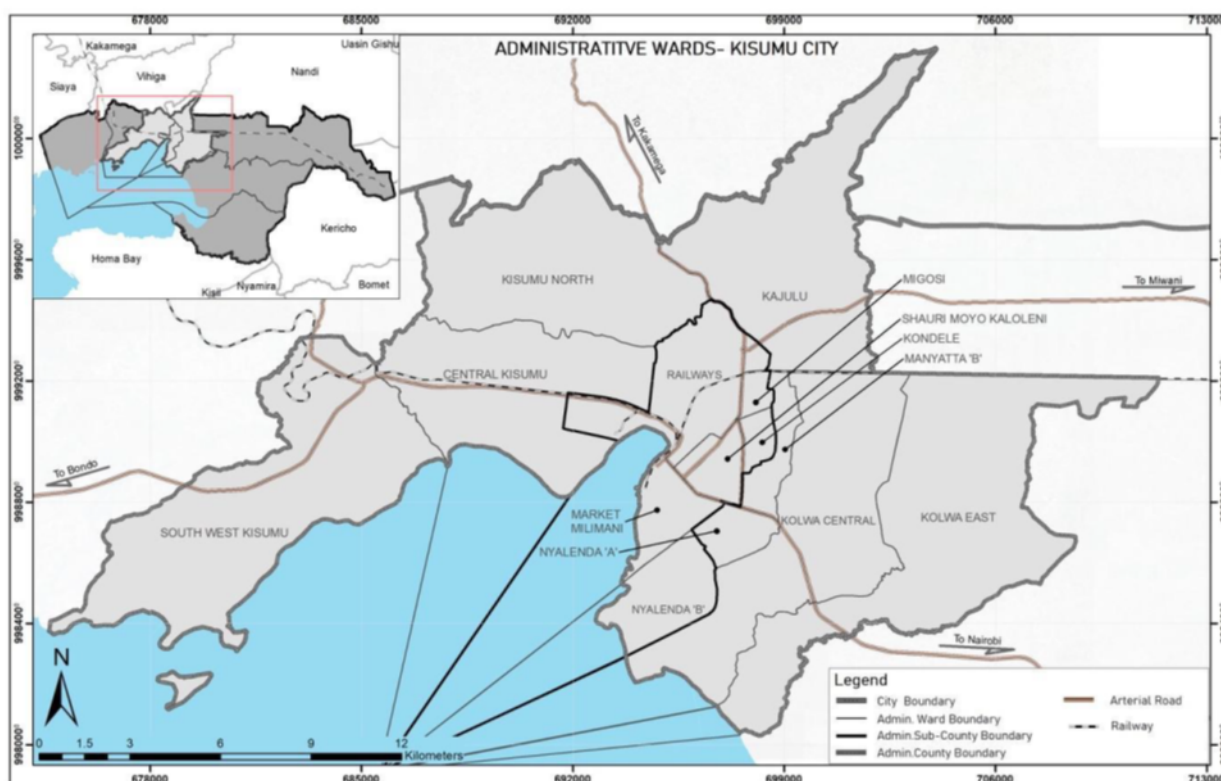


Figure 2: Administrative wards of Kisumu City (Source: Otieno et al., 2022)

History of the City

Evolution of the City

Kisumu was established as a hub for regional barter trade between the ethnic Luo, Luhya, Nandi and Kisii communities. The people from these communities converged at the tip of Lake Victoria and called the place "sumo" which literally means *a place of barter trade*. Each community called it different names, for instance: the Luo called it 'Kisumo' meaning 'a place to look for food'; the Abaluhya called it 'Abhasuma' which means 'a place to borrow food'; and the Nandi called it 'Kisumett' which means 'a place where food was found during times of scarcity'. The city thus earned its name from the original name *Kisumo*, a Dholuo derivative describing a place to find food. (County Government of Kisumu, 2023b).

Kisumu was identified as a railway terminus and port for the Uganda Railway by the British explorers in early 1898 as an alternative to Port Victoria. It was preferred because of its location on the shores of Lake Victoria at the cusp of the Winam Gulf, at the end of the caravan trail from Pemba, Mombasa, and Malindi. It therefore had the potential for connecting the whole of the Lake region by steamers. In July 1899, the first skeleton plan for Kisumu was prepared. This included landing places and wharves along the northern lake shore, near the present-day Airport Road. Demarcations for Government buildings and retail shops were also included in the plan. Another plan was later prepared in May 1900, when plots were allocated to a few European firms as well as to Indian traders who had travelled to Kisumu on contracts to build the Uganda Railway and had decided to settle at the expanding terminus. The plan included a flying boat jetty (now used by the Fisheries Department). In October 1900, the 62-ton ship SS William Mackinnon was reassembled and registered in Kisumu, and made its maiden voyage to Entebbe, marking the beginning of the Lake

Marine Services. The SS Winifred (1901) and the SS Sybil (1901) were later added to the fleet in 1902 and 1904, respectively (County Government of Kisumu, 2023b).

On 20th December 1901, the Uganda railway line reached the Kisumu pier. Florence Preston, the wife of the engineer, drove the last nail in the last sleeper by the shores of Lake Victoria and the place was named Port Florence. By February 1902, the railway line had been opened for goods and passenger transportation. Kisumu was also privileged to host the first flight in East and Central Africa. The current police workshop was the first hangar in Kenya and the entire East Africa. Before the jet airline era, the city was a landing point on the British flying boat passenger and mail route from Southampton to Cape Town (County Government of Kisumu, 2023b).

In 1903, the township boundaries were gazetted and some 12,000 acres, including water, set aside for its development. The new township reverted to its original name, Kisumu, in substitution of Port Florence. At this time, there was an 'Old Kisumu', that consisted of two rows of Stalls (Dukas) on Mumias Road, north of the Gulf. It was later demolished in the twenties when new plots became available on Odera and Ogada Streets in the present-day Kisumu, hence the new area acquired the name 'New Bazaar' (County Government of Kisumu, 2023b).

By the 1930s and 1940s, the city had become a leading East African centre for commerce, administrative, and military installations. The town was elevated to the status of a Municipal Board in 1940 and later to a Municipal Council in 1960. The settlement grew rapidly, attracting migrants who joined its expanding population. Informal settlements were, however, still non-existent. In the 1960s the population of Asians in relation to locals was significantly higher (County Government of Kisumu, 2023b). The 1960s and 70s saw a thriving Kisumu: Kenya gained independence in 1963, and the following decade saw the emergence of one of robust sugar, cotton, and fishing industries in Kisumu. However, in the 1980s and 1990s, Kisumu's economy stagnated under economic liberalisation (Aguilo et al., 2007).

The city's growth and prosperity slowed down temporarily in 1977, due to the collapse of the East African Community. However, the city spurred the reformation of the community in 1996 (County Government of Kisumu, 2023b). In the late 1990s the city experienced a recovery, based on service and leisure, consumption and transportation, and an exploding real estate market. By 1997, there were new shops, private clinics, hotels and guesthouses, coffee shops and pizzerias, live music venues and new cinemas showing the latest American movies (Geissler, 2013).

Kisumu was elevated to a city in 2001, and the turn of the millennium saw a new Kisumu emerge, with bustling city streets and new construction projects. However, this prosperity appeared to be solely fueled by the city's growing NGO sector, as manufacturing and investment levels in Kisumu were low (Aguilo et al., 2007). Currently, Kisumu is one of the fastest growing cities in Kenya. Fig. 3 shows the expansion and direction of growth of the city. It is the commercial, cultural and administrative hub of the Lake Victoria Basin (County Government of Kisumu, 2023b) (Fig. 6).

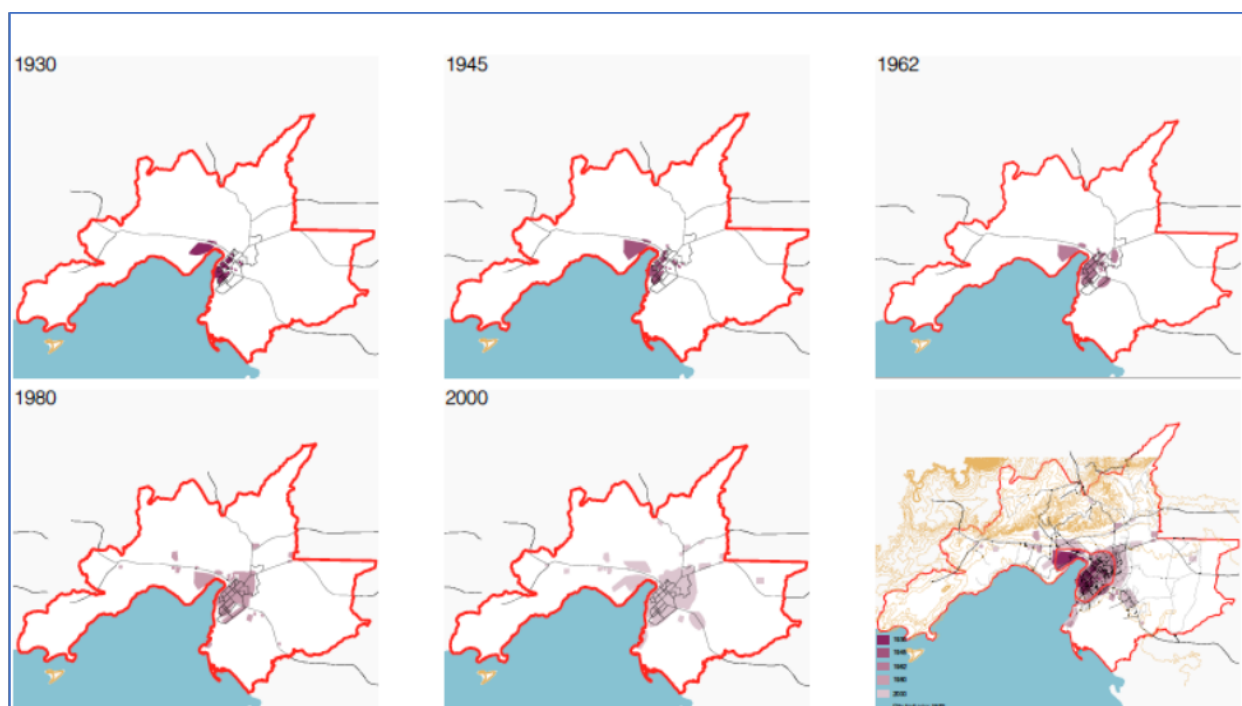


Figure 3:Figure 6: Growth of Kisumu, 1930 – 2016 (Source: Kisumu ISUD Plan)

Demographic Information

Kisumu has grown from a small town of 32,431 residents in 1969, to 152,643 in 1979, 192,733 in 1989, 322,734 in 1999, and 404,467 in 2009 (Opiyo, Ogindo, et al., 2018). The 2019 Kenya Population and Housing Census puts the population of the city (as per the administrative boundaries) at 510,408 (Republic of Kenya, 2019). In 2022, the population of Kisumu City was projected to be 566,810 (County Government of Kisumu, 2023a)

Majority of the population of the city (over 65 per cent) live in informal settlements (Opiyo, Obange, et al., 2018). The city has grown organically, with the informal settlements of Bandani, Obunga, Manyatta, Nyamasaria and Nyalenda forming a ring around the original planned city. These settlements have inadequate urban infrastructure and services. The municipality boundary extension in 1972 brought in large areas of land which was basically rural in nature into the city boundary. This provides a case of rural-urban dynamics within a city boundary. The core built up area is mainly within the old city, Kisumu Central sub-county with some overspill into Kisumu East Sub- County. The rest is mainly rural areas that are undergoing densification in terms of the built environment (Otieno et al., 2022) (Fig. 7).

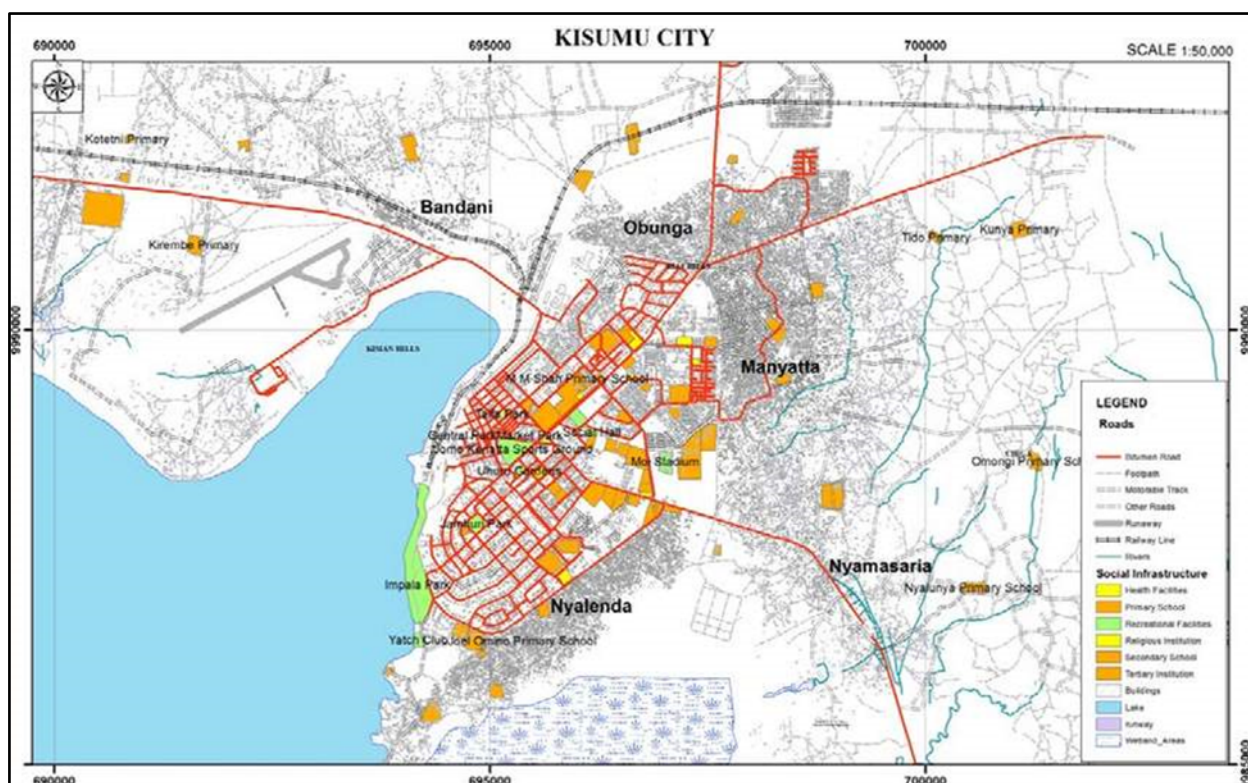


Figure 4: Map of Kisumu City showing informal settlements forming a ring around the original planned city (Source: Department of Physical Planning 2015)

The population of Kisumu is largely youthful, (64% are 34 years old and below), and is challenged by poverty and low skill levels, confining the majority to unemployment or low paying jobs in the informal sector. The population of the city has been growing at about 2.5% per annum. The densest areas of the city are the unplanned settlements of Nyalenda, Manyatta, Obunga, Bandani and the inner core of the city. Density reduces away from this inner-city core with higher densities in Kisumu East sub-county. The formerly rural Northern and Western parts of the city beyond the slum belt are developing as lower density high income residential areas (Otieno et al., 2022).

The City's Governance Structure

Prior to the enactment of the Constitution of Kenya 2010, Kisumu City was managed by a city council, with elected councilors representing electoral wards, and a mayor elected by the councilors as the executive head. The city also had a town clerk working under the mayor. The town clerk was a civil servant seconded by the national government and was the secretary to the city council.

The enactment of a new constitution in Kenya in 2010 saw the creation of a new structure of government. Kenya adopted a devolved system of government with 47 counties. Of these counties Nairobi and Mombasa are city counties (the city boundaries are the same as county boundaries). Kisumu City is within Kisumu County, that includes some rural areas. This poses challenges for urban governance. The Urban Areas and Cities Act 2011 (Revised 2012) was enacted to provide for the governance of cities and other urban areas. This was meant to take care of the interests of cities and other urban areas within rural counties. The Act provides for the establishment of a City Board.

The City Board

Under the Urban Areas and Cities Act 2011, a board of a city shall consist of not more than eleven members, six of whom shall be appointed through a competitive process by the county executive committee, with the approval of the county assembly. Of the six members, at least five shall be nominated by—

- a) an umbrella body representing professional associations in the area.
- b) an association representing the private sector in the area.
- c) a cluster representing registered associations of the informal sector in the area.
- d) a cluster representing registered neighbourhood associations in the area; and
- e) an association of urban areas and cities and appointed by the county executive committee with the approval of the county assembly.

A member of a city board holds office for a term of five years, on a part-time basis. The Act provides for the position of a city manager to implement the decisions and functions of the board and is answerable to the board. The city manager is competitively recruited and appointed by the County Public Service Board, which is the body responsible for hiring public servants in a county (Urban Areas and Cities Act No.13, 2011).

The functions of the city Board as envisaged by the Urban Areas and Cities Act of 2011 are to:

- a) oversee the affairs of the city.
- b) develop and adopt policies, plans, strategies and programmes, and may set targets for delivery of services.
- c) formulate and implement an integrated development plan.
- d) control land use, land subdivision, land development and zoning by public and private sectors for any purpose, including industry, commerce, markets, shopping and other employment centres, residential areas, recreational areas, parks, entertainment, passenger transport, agriculture, and freight and transit stations within the framework of the spatial and master plans for the city as may be delegated by the county government.
- e) as may be delegated by the county government, promote and undertake infrastructural development and services within the city.
- f) develop and manage schemes, including site development in collaboration with the relevant national and county agencies.
- g) maintain a comprehensive database and information system of the administration and provide public access thereto upon payment of a nominal fee to be determined by the board.
- h) administer and regulate its internal affairs.
- i) implement applicable national and county legislation; [Rev. 2012] No. 13 of 2011 Urban Areas and Cities Act.
- j) enter into such contracts, partnerships or joint ventures as it may consider necessary for the discharge of its functions under this Act or other written law.
- k) monitor and, where appropriate, regulate city and municipal services where those services are provided by service providers other than the board of the city.
- l) prepare and submit its annual budget estimates to the relevant County Treasury for consideration and submission to the County Assembly for approval as part of the annual County Appropriation Bill.

- m) as may be delegated by the county government, collect rates, taxes levies, duties, fees and surcharges on fees.
- n) settle and implement tariff, rates and tax and debt collection policies as delegated by the county government.
- o) monitor the impact and effectiveness of any services, policies, programmes or plans.
- p) establish, implement and monitor performance management systems.
- q) promote a safe and healthy environment.
- r) facilitate and regulate public transport; and
- s) perform such other functions as may be delegated to it by the county government or as may be provided for by any written law.

The City Board is not autonomous, but exercises delegated powers on behalf of the county government within its area of jurisdiction. The city board ensures provision of services to its residents. The board may impose such fees, levies and charges as may be authorised by the county government for delivery of services. It ensures the implementation and compliance with policies formulated by both the national and county government; makes bylaws or make recommendations for issues to be included in byelaws; ensures participation of the residents in decision making, its activities and programmes in accordance with the Act; and exercise such other powers as may be delegated by the county executive committee.

The structure of the County Government

The County Government consists of two arms: The County Assembly, which exercises the representative, legislative and oversight authority of the government; and the County Executive which exercises the executive authority of the county government.

The County Executive is responsible for the execution of county government's functions as per the Fourth Schedule of the Constitution of Kenya (2010). The Executive manages, coordinates and is accountable for all county government resources, functions of the county administration and the delivery of devolved services and is required to facilitate and engage citizens in the process (AHADI, 2020).

The County Executive consists of the Governor and the Deputy Governor elected every five years by the citizens of the County. The Governor appoints County Executive Committee (CEC) Members. The appointments are then approved by the County Assembly. The executive authority of the County Government is vested in the CEC comprising the Governor, the Deputy Governor, and the CEC members. The Governor is the Chief Executive of the County Government and the head of the CEC. The Governor's role is to provide leadership, represent the County and assent or dissent bills passed by the County Assembly (AHADI, 2020).

The CEC is responsible for the preparation of County policies, plans and budgets for approval by the County Assembly, and the submission to external regulatory offices of the National Treasury and Office of the Controller of Budget. The CEC is responsible for implementation of all laws passed by the County Assembly and National Assembly; it also may prepare laws for consideration by the County Assembly.

The CEC provides regular non-financial and financial reports to the County Assembly, and to external regulatory and oversight offices of the Controller of Budget and the Office of the Auditor General. The County Executive comprises County departments with delegated responsibility for the County functions headed by CEC Members. Each department has a Chief Officer reporting to the CEC also appointed by the Governor, and County public service staff recruited through the County Public Service Board (AHADI, 2020).

The County Assembly

The County Assembly roles are to represent citizens, exercise the legislative authority of the County Government and oversight the County Executive. It comprises elected and nominated members referred to as Members of the County Assembly (MCAs). The elected members represent and are elected by the citizens at the County Ward. Nominated members are appointed by the political parties to ensure that no more than two-thirds of the members are from the same gender and to include representatives from marginalised groups i.e. persons with disabilities and youth (AHADI, 2020).

A Speaker elected by the Members, but not from among its members, heads the Assembly. The County Assembly Speaker presides over all assembly sittings. The Assembly administration is headed by a County Assembly Clerk and is appointed by the County Assembly Public Service Board. The County Assembly Clerk is responsible for day-to-day administration of the County Assembly (AHADI, 2020).

The County Assembly makes and passes all County laws required for the effective performance and exercise of the powers of the County Government. It also approves County policies, plans, and budgets and oversees implementation by the County Executive. The Assembly is also responsible for vetting and approving nominees for appointment to County public office. The County Assembly is required to engage the public in the performance of all its functions and to hold committee sittings in public (AHADI, 2020).

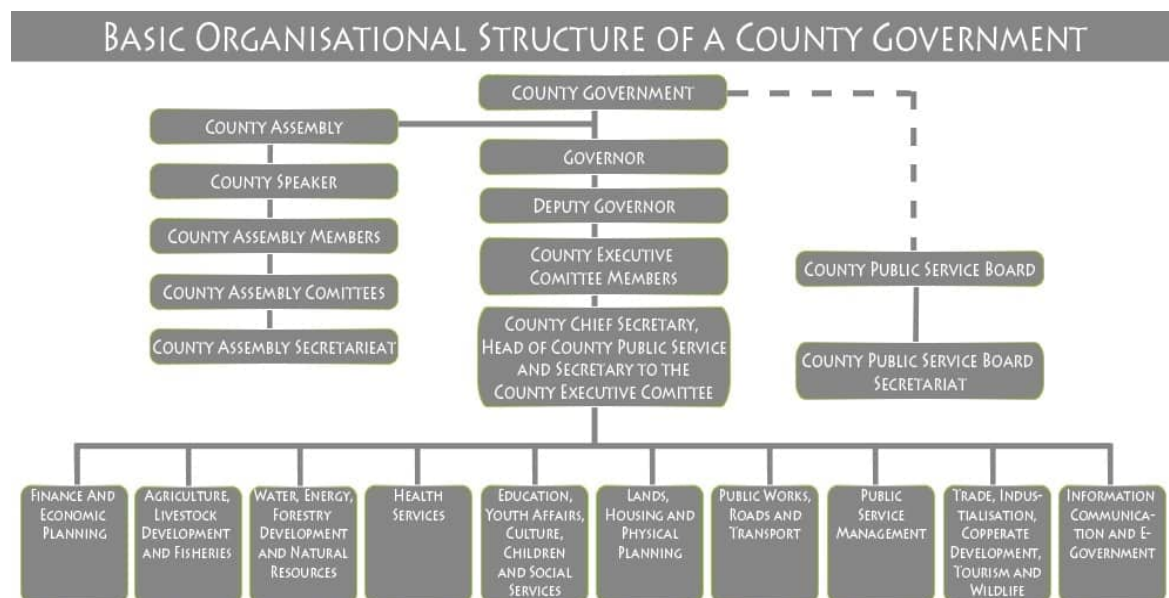


Figure 5: Basic Organisational Structure of County Governments in Kenya

Overarching report on economy of the City

Kisumu serves as a critical gateway to Kenya from the neighbouring countries in the Great Lakes region. It is a vital commercial centre and transport hub for the Western region of Kenya. Kisumu is the regional headquarters for trade for the Lake Region Economic Block of thirteen Counties of Homa Bay, Siaya, Migori, Kisumu, Kisii, Busia, Kakamega, Bungoma, Kericho, Nyamira, Kisii, Vihiga, and Bomet. Key economic drivers in Kisumu include trade, transport, agriculture, and fishing (Institute for Transportation and Development Policy, 2020).

Kisumu's location on the shores of Lake Victoria presents an opportunity for fishing and the fish processing industry. However, the use of outdated technology combined with the challenges of the invasive water hyacinth have made it difficult for the fishing industry to thrive. Rice and sugarcane growing thrive along the river Nyando in the Kano plains of Kisumu County. Maize, beans, poultry, sweet potatoes, and fresh

vegetables are produced on a small scale across Kisumu County (Institute for Transportation and Development Policy, 2020).

Kisumu County is home to three state owned sugar factories, Muhoroni, Miwani, and Chemelil; and the privately owned Kibos Sugar Factory within the City. The state-owned sugar factories operate intermittently due to several reasons including shortage of sugarcane and management challenges. Food processors include Peche Foods that processes Nile Perch for the export market, United Millers that mills and distributes maize flour and wheat flour in the region, Swan Millers, Numerous light industries and cottage industries such as handicrafts, boat building, and tailoring thrive in the city.

Kisumu is quickly developing into a major tourist destination in the western Kenya tourism circuit. In addition to the sunset view across the lake, other tourist attractions include Ndere Island National Park, *God Mesa* (translated as Hill table) Viewpoint with a panoramic view of Nyando plains and the lake, Kisumu Museum, and Impala Park. Kisumu International Airport connects the City to Nairobi and to the rest of the country and other international destinations. Kisumu is growing as a regional centre for conference tourism, as evidenced by the growth of the hotel and hospitality sector. The City hosted the Africities Conference in 2022, and a permanent convention centre is currently under construction at the Africities Convention Centre.

Kisumu's is the regional hub for the service industry that drives the city's economy. Key service industries include wholesale and retail, banking services, car and bicycle repairs, and entertainment. Higher education institutions with campuses in Kisumu include Maseno University, University of Nairobi, KCA University, Jaramogi Oginga Odinga University of Science and Technology, Uzima University and Great Lakes University. In addition, there are several public and private middle level colleges, secondary, primary, and pre-primary schools. Kisumu is also home to leading private and public health facilities in the region. Public hospitals include Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu County Hospital, Lumumba Hospital, and several sub county hospitals and health centres. Private hospitals include Agha Khan Hospital, Avenue Hospital, Kisumu Specialist Hospital, among others. Rapid urbanisation has come with development challenges that impact living conditions, human dignity, and environmental sustainability. Due to ineffective urban planning and a weak legal and policy framework, investments in urban infrastructure in Kisumu have not matched population growth, resulting in inadequate access to housing and efficient transport services. In general terms households in Kisumu face reduced economic opportunities. Informal work dominates livelihood strategies, but the income-generating potential of these activities remains constrained. The poverty situation in the City is complicated by high levels of unemployment and poor access to basic urban services: water, housing, sanitation and transport (Wagah et al., 2019).

City Infrastructure report

Kisumu is located at the confluence of a major transport hub. Kisumu City has a robust road network connecting the City centre to sub urban areas and satellite towns. Minibus shared taxis (*matatus*), three-wheeler taxis (*tuk-tuks*) and motorcycle taxis (*boda-bodas*) form the major means of road transport. A study by the Institute for Transportation and Development Policy reported that within the city, 53% of daily trips are by foot, 4% are by bicycle or bicycle taxi, 13% are by matatu, 3% are by tuk-tuk (rickshaw), 13% are by motorcycle taxi, 6% are by motorcycle, and 6% are by car (Institute for Transportation and Development Policy, 2020). Kisumu relies on a road transport system to bring food from distant production sources within Kenya and the East Africa region to processing locations and markets in the city and satellite towns (Opiyo, et al., 2018).

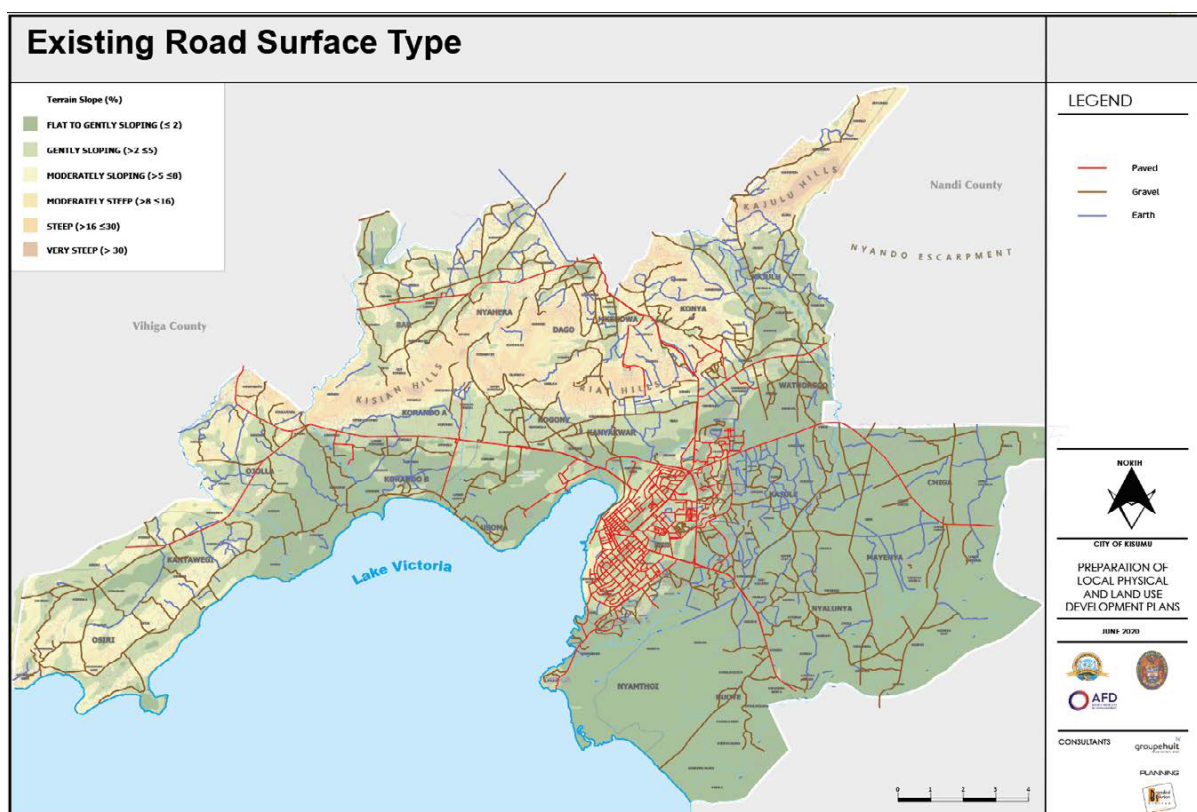


Figure 6:: Kisumu City Road surface types (Source: Kisumu LPLDP 2020)

Kisumu is served by one airport, Kisumu International Airport, with regular daily flights to and from Nairobi. The airport is connected to the city centre via a dual carriageway and taxi services are readily available at the airport. However, the airport has little significance to the city food system, as very little food cargo is handled by the airport. There is a train service between Nairobi and Kisumu, terminating at the recently rehabilitated Kisumu Port. At the port, there are traditional steam and diesel-powered ships that are used for cargo and passenger services between Uganda, Tanzania, and Kenya on Lake Victoria, allowing for cheaper freight services. However, water and train transport both have little contribution to the City's food system even though they have enormous potential.

Kisumu also has bulk grain storage facilities owned and operated by the National Cereals and Produce Board (NCPB). The board buys cereals – mainly maize, wheat and rice from farmers during good harvests and stores for sale to commercial millers. NCPB stores were an initiative by the national government to directly control the prices of cereals. However, since the implementation of structural adjustment programs, the NCPB stores role is limited to grain post-harvest services such as drying, cleaning, storing, warehousing, fumigation, weighing, aflatoxin testing and grading to farmers and other interred parting at affordable rates.

Kisumu Water and Sanitation Company (KIWASCO) is the body mandated to supply water and treat and dispose of sewage in the city. The company has two water treatment plants at Dunga and Kajulu with a total production of 81,6000m³/day. The service scope, however, is confined within Kisumu City and not the extended peri urban areas (County Government of Kisumu, 2023). Residents of the suburban informal settlements still have challenges accessing clean water and sanitation facilities. In the peri urban informal settlements, water is mainly distributed through a delegated model, in which KIWASCO supplies water to an organised community group or private entrepreneur, who then sells water to residents at a subsidised rate through a water kiosk.

Kisumu has two main municipal markets. Kibuye is the main wholesale market while Jubilee is the retail food market in the centre of the city. Both are the main source of supplies for the smaller markets and informal traders in the city as well as suburban markets. There are smaller markets in residential areas -

Otonglo, Manyatta, Kasawino, Migosi, Mamboleo, Nyalenda, Wath-Orego, Riat, and Kiboswa; and Uhuru and Maendeleo Markets in the Central Business District (CBD.) These markets get most of their supplies from the Kibuye and Jubilee. Street-edge food retail is most common in informal settlements and at the main transport confluences connecting residential areas in the city (Opiyo & Ogindo, 2018).

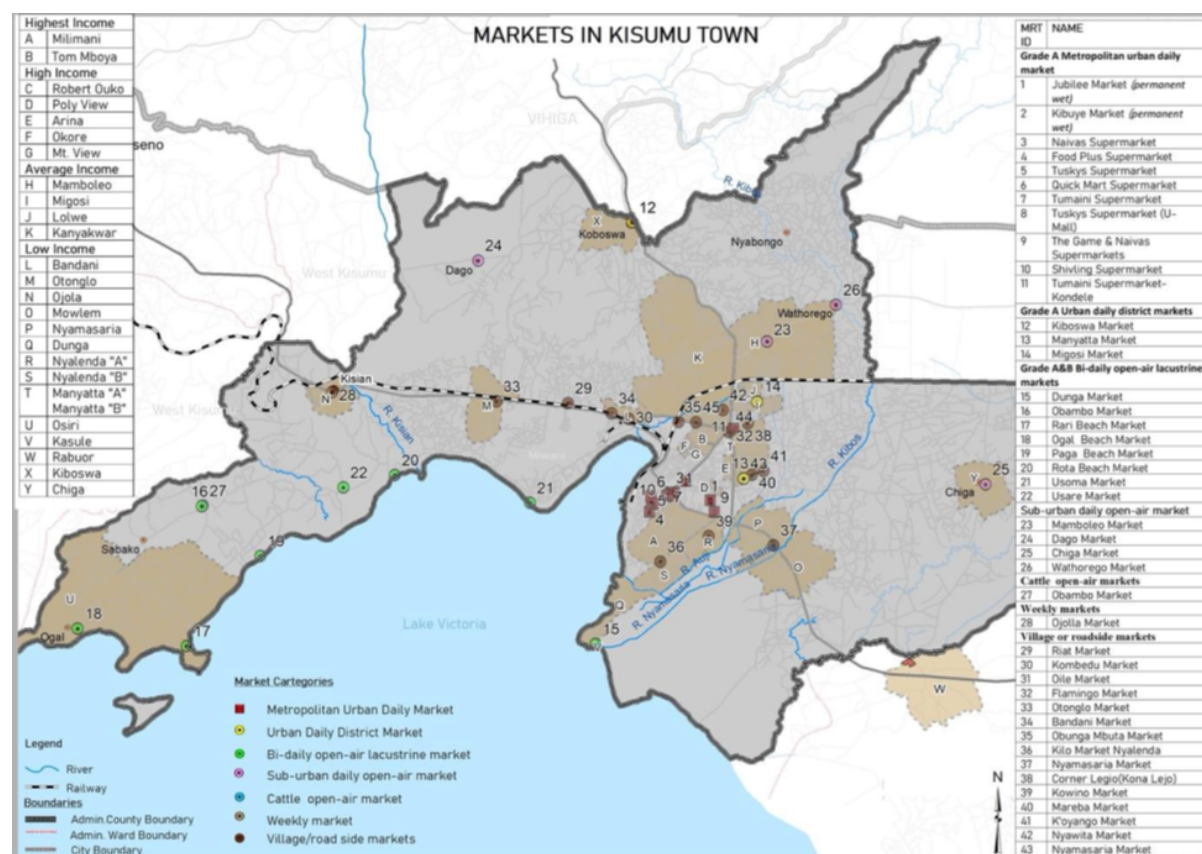


Figure 7: Location of markets in Kisumu (Source: Otieno et al., 2022)

Food and nutrition security

United Nations' Sustainable Development Goal No 2. (SDG2) aspires to "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture". The aim is to ensure that everyone everywhere has enough good-quality food to lead a healthy life. This goal recognizes the inter linkages supporting sustainable agriculture, empowering small farmers, promoting gender equality, ending rural poverty and ensuring healthy lifestyles.

Beyond adequate calories intake, proper nutrition has other dimensions that deserve attention, including micronutrient availability and healthy diets. Inadequate micronutrient intake of mothers and infants can have long-term developmental impacts. Unhealthy diets and lifestyles are closely linked to the growing incidence of non-communicable diseases in both developed and developing countries.

A 2016 household survey across all income categories in Kisumu (using Household Food Insecurity Access Prevalence Scale - HFIAP) revealed that 20% of the sampled households were food secure, while 9% were mildly food insecure. The other 71% were either moderately food insecure (26%) or severely food insecure (45%). These findings imply a high prevalence of food insecurity among households in Kisumu. However, the intensity of food insecurity differs across the different communities (Opiyo et al., 2018). The survey

further used the Household Diet Diversity Score (HDDS) as a proxy indicator for malnutrition. Although all food groups are consumed across the population of Kisumu, the extent of access across households varies. For example, the households surveyed predominantly reported consuming mostly cereal products (74%) and vegetables (79%). Eighty-six percent (86%) of households had a HDDS of six or less, pointing towards high levels of nutritional challenge (Opiyo et al., 2018).

Current food and nutrition security responses

Kisumu County Nutrition Action plan 2020 -2023, follows on the Kenya National Nutrition Action Plan (KNAP) on its Key Result Areas that gives direction to be taken to sustain and achieve a holistic nutrition for all in the County. The Key Result Areas are divided into three categories (Tab. 1):

- Nutrition specific
- Nutrition sensitive
- Enabling Environment

Table 1 Summary of the action areas for Kisumu County Nutrition Action plan 2020 - 2023

Category of KRA	Focus Area	
Nutrition specific result area	1	Maternal, Infant and Young Child Nutrition (MIYCN) Scaled Up
	2	Nutrition in older children (5-9 years) and adolescents (10 – 19 years) promoted
	3	Nutrition status of adults (20 – 59 years) and older persons (60 and above) promoted
	4	Prevention, control and management of Micronutrient Deficiencies in the County
	5	Prevention, control, management and rehabilitation of Diet Related Non-Communicable Diseases (DRNCDs).
	6	Integrated management of acute Malnutrition strengthened
	7	Strengthened Clinical and Community Nutrition and dietetics
	8	Nutrition in emergencies strengthened
	9	Nutrition in TB and HIV strengthened
Nutrition Sensitive result area	10	Scaled up/ Strengthened nutrition in Agriculture, WASH, education department and social protection
Enabling Environment	11	Sectoral and multi-sectoral nutrition governance including coordination and legal/regulatory frameworks strengthened
	12	Sectoral and multisectoral nutrition information systems, learning and research strengthened
	13	Advocacy, Communication and Social Mobilization (ACSM) strengthened
	14	Supply chain management for nutrition commodities and equipment's strengthened

Kisumu also recently launched *the Kisumu County Food Systems Strategy 2023 - 2027* that aims at integrating the efforts of all other stakeholders in contributing towards a sustainable food system. The strategy is aligned to the National Food and Nutrition Security Policy of 2011 that directs governments, both County and national levels to work toward ensuring that all Kenyans, at all times, have access to safe, healthy food, water in sufficient quantity and quality to satisfy their nutritional needs for optimal health. In

addition, the strategy identifies the critical subsystems including the farming system, waste management system, input supply system and how they interact with other key systems such as energy, trade, infrastructure and health.

The expected developments in the Kisumu County Food Systems Strategy are programmed to yield results in Food System Governance; Production, Post-harvest handling and Value Addition; Infrastructure Development; Market access and ICT; Nutrition, food safety and Health; Mainstreaming cross-cutting issues (Climate Change, Food loss, Food waste and Gender) within the county. The document lays out the strategies and frameworks that will be implemented by the County Government, stakeholders and development partners to address the gaps in the food system to assure the County of consistent and adequate amounts of safe, affordable, accessible and nutritious food.

State of nutrition transition

Nutrition transition is a term used to describe the shifts in diets, physical activity and causes of disease that accompany changes in economic development, lifestyle, urbanisation, and demography. One consequence of nutrition transition has been a decline in undernutrition accompanied by a rapid increase in obesity. In all age groups, there is evidence of a rapid increase in obesity and also an array of dietary excess and body composition-related health outcomes, such as glucose intolerance, diabetes, cardiovascular disease and cancer. Whereas the elderly population still consume more traditional foods, there is a growing trend of preference of processed foods by younger people.

Nationally, the Kenya Demographic Health Survey (KDHS) 2022 reports that 5% of women aged 20–49 in urban areas are thin compared with 9% in rural areas, and 12% of men aged 20–49 in urban areas are thin compared with 16% in rural areas. Fifty-three percent of women aged 20–49 in urban areas are overweight or obese compared with 39% in rural areas, and 25% of men aged 20–49 in urban areas are overweight or obese compared with 14% in rural areas. In Kisumu County, the KDHS 2022 found that 19.1% of men aged 20 - 49 years were either overweight or obese, as compared to 25% of men aged 20 - 49 years who were overweight or obese in Nairobi County. For women of the same age category 38.7% were found to be overweight or obese in Kisumu County as compared to 56.5% who were overweight or obese in Nairobi County. The variation in figures for Kisumu and Nairobi Counties can be explained by the fact that Kisumu has about half of the County population living in rural areas while Nairobi is fully urbanised. The higher prevalence of overweight or obese adults in urban areas as compared to rural areas is evidence of nutrition transition from wholesome/balanced diets to those high in fats, sugar and salt (highly processed foods) accompanied with minimal physical inactivity. However, for Kisumu City, inadequate urban infrastructure and services is a key driver of low-income dwellers to consumption of unhealthy diets. Other factors such as food advertisements, the lack of convince of carrying healthy food to work, time and energy for preparing healthy foods at home, the easy availability of highly refined and sweetened foods at workplace, and the low price of such foods confound the case for these lifestyle diseases.

Nutritional deficiencies

The Kenya Demographic Health Survey 2022 reported that Kisumu County had children under 5 who were stunted at 9% against national average of 18%; children under 5 who were wasted were 3% against national average of 5%; and children under 5 who were underweight 4% against a national average of 10%; while children under 5 who were overweight was 2 % against a national average of 3% (KNBS, 2022). Kisumu County Nutrition Action Plan 2020 - 2023 notes that more than 80% of the children in Kisumu County consume a diet deficient of iron rich foods, with a bigger proportion consisting of grains, roots and tubers.

Data for the year 2022 aggregated from health facilities in the county (Tab. 2) indicate that Kisumu Central Sub County (which is the most urbanised) has higher incidences of nutritional deficiency among children as compared to Kisumu East and Kisumu West sub counties that have larger areas that are within the city

administrative boundaries but rural in character. This is perhaps an indicator of growing urban food poverty.

Table 2 Nutritional Deficiencies among children across health facilities in Kisumu County in 2022 (Source: County Government of Kisumu).

dataname	Kisumu Central Sub County		Kisumu East Sub County		Kisumu West Sub County		Kisumu County	
		Incidence		Incidence		Incidence		Incidence
MOH 711 Low Birth Weight <2500gms	1117	13%	135	2%	176	3%	2212	5%
MOH 711 Pre-term babies	915	11%	38	0.5%	48	1%	1255	3%
Diabetes	7186	2%	1647	1%	1576	1%	14143	1%
Hypertension	15960	3%	4268	2%	5481	4%	38917	3%
Cardiovascular conditions	1736	0.37%	45	0.02%	72	0.05%	2193	0.15%
MOH 711 Marasmus (0-59 Months) Female	623	8%	80	2%	162	5%	1210	3%
MOH 711 Marasmus (0-59 Months) Male	509	6%	77	2%	152	4%	965	3%
MOH 711 MUAC 6 - 59 months Severe (Red) Female	733	9%	47	1%	204	6%	1179	3%
MOH 711 MUAC 6 - 59 months Severe (Red) Male	742	9%	32	1%	175	5%	1101	3%
MOH 711 Kwashiorkor(0-59 Months) Female	432	5%	69	1%	55	2%	788	2%
MOH 711 Kwashiorkor(0-59 Months) Male	428	5%	78	2%	70	2%	778	2%
MOH 711 New Visits of 0-59 Month Attending CWC Male	8189		4781		3420		36559	
MOH 711 New Visits of 0-59 Month Attending CWC Female	8104		4667		3402		35591	

Vulnerable groups

Kisumu City has several categories of people that are vulnerable and may require special nutritional interventions. These include the elderly, children, persons living with HIV/AIDs, persons with disabilities (PWDs), and the urban poor. The national government has a social welfare programme targeting all citizens over the age of 70 years for a monthly stipend of KES.2000. Both government and non-governmental organisations have several interventions targeting children, PLWAs, PWDs and other elderly persons. The impacts of these programmes on nutritional needs of the vulnerable groups are not fully documented.

Food and nutrition system challenges faced in the city.

Kisumu City and the wider city region is deficient in food production. Even fish stocks and harvests from Lake Victoria are dwindling due to pollution of the Winam Gulf, effects of invasive water hyacinth and overfishing. Lack of or inadequate infrastructure is one of the most important challenges to the food system in Kisumu. Poor road networks and the increasing cost of fuel increases the cost of transportation of food, leading to higher food prices in the city, and therefore limited access to food, particularly by the poor. Despite improvements in recent years, the state of road transport still remains a challenge.

Lack of basic infrastructure for food preservation and storage leads to food loss due to spoilage. A previous survey ranked spoilage as the second highest cost incurred by food retailers after transport. Fifty-four percent of cases lacked electricity, 75% lacked refrigeration facilities, and 94% lacked air conditioning facilities. Other important infrastructural facilities were equally lacking or inadequate. For example, 92% lacked designated parking facilities; 61% lacked secure storage; 70% lacked piped running water; and 57% lacked sanitation facilities. These infrastructural inadequacies reduce accessibility to food and raise food safety concerns (Opiyo & Ogindo, 2018).

According to Kisumu CIDP (2023-2027), approximately 60% of the population of Kisumu County are youth, 41% of whom remain unemployed. In the city, a previous survey estimated that 31% of household members aged 20 years and older were unemployed and most of those employed were confined to low-paying informal sector jobs (Opiyo et al., 2018). Access to food in the city hinges primarily on the individual or household's ability to purchase foodstuffs, which in turn depends on household income, the price of food and the location of food outlets. With rising unemployment, many more people are getting into the food retail business as a source of livelihood, making informality a permanent feature of the food system.

Governance has been identified as a key food system challenge in Kisumu. While licensing procedures are simple for food retailers, compliance with food hygiene standards and financial costs involved drive traders to avoid licensing and therefore inspection (Opiyo et al, 2018). Street vendors and roadside traders are often evicted from their trading places, resulting in violent confrontations with local government agents and the police. Informal governance actors influence the food system, impacting access, affordability, and quality of food. Market traders' associations are established to lobby for the welfare of traders and improve access to food. However, because they control entry, allocate space to their members, and sometimes dictate food prices in the markets, they have been branded as cartels. Middlemen who play a significant role in sourcing and distribution of food in the city, and linking farmers to markets are equally demonized as cartels (Opiyo et al, 2018).

Culture of the City and relationship with its food system

The history and culture of Kisumu is closely linked to the food system. The settlement began as a centre for barter trade among people of different ethnicities and its name originated from the Luo word 'kisuma', meaning a place to find food. Traditionally, while fishing was predominantly done by men, food crop production was a collective and communal socio-cultural exercise by all family members. Food production focused more on grains. Fruit trees such as pawpaw, mangoes, bananas, lemon, oranges were planted and supplemented the staple carbohydrates (maize and sorghum). Crops that have been grown over the years are millet, cassava, sweet potatoes, maize, bananas, beans, peas, ground nuts and vegetables (Odede et al., 2017).

The most common staple food is ugali, accompanied with fish and a variety of vegetables. Many of the vegetables eaten by the Luo were shared after years of association with their Bantu neighbours, the Abaluhya and the Abagusii (Odede et al., 2017). Many foods are purchased, including sugar, bread, and mandazi, which are consumed with tea on a daily basis, a custom known as "tea-time" and derived from the British colonial era. The Luos of Kisumu traditionally drank porridge at 10 o'clock in the morning and then had *nyoyo*, a mixture of boiled maize and beans (Odede et al., 2017).



Figure 8: A meal of ugali, fried fish, and kales(sukuma-wiki)



Figure 9: Nyoyo (boiled maize and beans)



Figure 10: Kenyan Mandazi

Culturally, households used to cook and eat centrally at home. However, there is an emerging culture of people eating or snacking out, as evidenced by the growing number of hawkers selling cooked foods, particularly tea and mandazis; and supermarkets selling cooked foods. Wheat products have also increasingly become available and can be used as snacks in between meals as well as part of a main meal. Moreover, eating in restaurants is also becoming popular, particularly among the working middle class, while informal sector workers rely on foods sold by the roadsides.

AfriFOODlinks City Food System

Baseline Information

Food systems stakeholders

Food system stakeholders include primary producers, primary processors, secondary processors, distributors, wholesalers, retailers, consumers, public catering entities, commercial catering entities, global catering chains, research institutions, government agencies – both at the County and national levels.

Primary food producers in Kisumu are mainly small-scale peri urban and urban farmers. These include crop farmers, livestock farmers, fish farmers and fishermen harvesting fish from Lake Victoria. The Lake fishermen are organised into Beach Management Units, in charge of each of the fish landing sites. Most crop and livestock farmers are small scale, growing food and keeping livestock on 0.2 – 10 hectares for subsistence but also sell some of the surplus to city residents. Poultry farming takes place within the city. There are also large-scale (more than 10 hectares) sugarcane and rice farms in the Nyando River basin within Kisumu County but outside the city boundaries.

Primary processors include small scale rice millers in Ahero and Kibos. Sugar processing is done at Kibos Sugar Factory, which is privately owned, and government owned sugar millers - Miwani, Muhoroni and Chemelil that have not been fully operational in recent years. Peche Foods Ltd processes Nile perch for the export market. United Millers Ltd is the leading miller and distributor of maize flour and wheat flour in the region. There are, however, other smaller millers including Swan Millers and Mombasa Maize Millers. Small scale maize millers (posho mills) located in residential areas, mainly serve domestic consumers.

The state-owned National Cereals and Produce Board (NCPB) operates a grains storage depot in Kisumu. Secondary processors include United and Mayfair, Tosti, Mini Bakeries, Victoria, and Sunblest among others making bread, burns, doughnuts and confectionaries. Some major Supermarkets like Quickmart, Naivas, and Shiling also have bakeries and cafes within their premises, producing and selling their own brands of bread, cakes and doughnuts, and a variety of local foods. There are slaughterhouses at Mamboleo, Rabuor, Otonglo, and Kiboswa from which meat is supplied to the city. The slaughterhouses do not have adequate storage facilities. As such, after the meat is dressed at the slaughterhouse, they are distributed to butcheries in the city, and institutions like hospitals, schools and colleges. The Coca Cola company also has a bottling and distribution plant in the city.

There are wholesale shops and stockists that distribute a variety of processed foods. Small scale traders purchase their stock from these enterprises and transport to their shops and kiosks using boda-bodas (motorcycles) and tuk-tuks (rickshaws). Some wholesalers and distributors deliver to retailers. Some popular wholesale shops include Pramukh Cash & Carry, Appmatt, Aryan Enterprises, BN Kotecha, and Nyanza Wholesalers. National milk processors New Kenya Cooperative Creameries (KCC) Ltd and Brookside Dairies do not have processing facilities in the city but have their own distribution depots and channels in Kisumu, in addition to those channels provided by other wholesalers.

Public institutions offer catering services to their clients. These include schools, colleges, and hospitals. Commercial caterers include hotels, restaurants, and informal eateries, which are a major feature of the city food retail landscape.

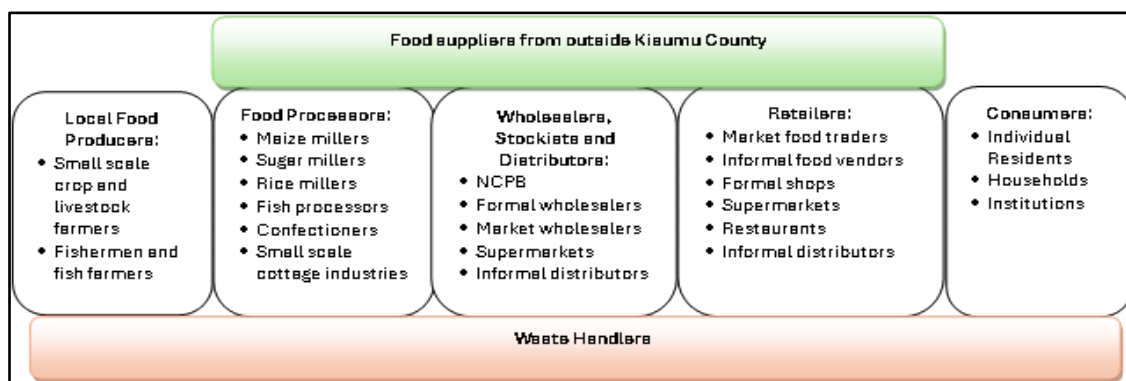


Figure 11: Food value chain stakeholders in Kisumu.

There are small scale informal food vendors around the main municipal markets, transport termini and within residential areas. Those in markets are organised into trader associations with Kibuye and Jubilee Market Traders Associations being the most prominent. Whereas households may get imperishable food items from both formal and informal food outlets, most families get their perishable items like tomatoes, green spices and vegetables from informal traders around municipal markets and within residential areas since these are usually taken in small quantities and are to be prepared within the day or a few days after purchase.

Kisumu has witnessed growth in the number of supermarkets in the last two decades. In the early 1990s, there were only two supermarket brands in Kisumu – Yatin and Foamatt – and by 2016, there were eight major Kenyan supermarket brands, with a total of 15 branches in Kisumu (Opiyo & Ogindo, 2018). The supermarket landscape keeps changing with some retailers exiting the scene and new ones coming up to occupy the spaces left ([Business Today, 2020](#); [Ombre, 2021](#)). In 2023, the leading national supermarkets in Kisumu were Naivas, QuickMatt, and Carrefour, each with several branches in the city. Other local brands include Chandarana, Khetias, Pramukh Cash & Carry, Appmatt, Kibuye matt and Shiving supermarkets.

Policy and regulatory environment

The food system policy and regulatory environment in Kenya is complex due to the many stakeholders involved at the national and County levels. The policy environment has fragmented regulatory bodies and regulations thereby making coordination a bit challenging.

The Kenya Agricultural Policy 2021 affirms the interrelationship between food and health together with insecurity levels that have a definite bearing on personal and national security. The policy emphasizes the need for National and County Governments to commit adequate resources to enable sustainable production of sufficient and diverse nutrient dense foods. National and County governments are expected to ensure compliance with food safety standards and develop capacities for undertaking food safety procedures. According to the policy, the national government is expected to set standards on food safety; provide a coordinated mechanism to address food safety issues anchored in legislations; develop an institutional framework to address food safety challenges; facilitate continuous research and monitoring of food safety risks across the various food value chains; and ensure capacity building of actors in the food value chain. The national government agencies with mandates on the food system include Kenya Plant Health Inspectorate Service (KEPHIS), Kenya Bureau of Standards (KEBS), and Agriculture and Food Authority (AFA).

The County government is expected to promote dissemination of food safety information to producers and consumers; and implement and enforce food safety legislations and standards. The county government regulates food trade, including licensing of traders, restaurants, and other actors in the food system. The Departments of Agriculture Livestock and Fisheries are mainly concerned with food production. Traders are licensed by the County Department of Trade, while the County Department of Public Health is concerned with food hygiene and safety.

The Public Health Act CAP 242 (Revised 2012) regulates the construction of buildings used for storage of foodstuffs; prohibits residing or sleeping in kitchens or food stores; prohibits sale of unwholesome food; prohibits collection, preparation, manufacture, keeping, transmission, or sale of any foodstuffs without taking adequate measures to guard against or prevent any infection or contamination thereof. The Act further provides rules for protection of food and water supplies.

Agriculture, Fisheries and Food Authority Act No 13 of 2013 provides for the consolidation of the laws on the regulation and promotion of agriculture generally, to provide for the establishment of the Agriculture, Fisheries and Food Authority, to make provision for the respective roles of the national and County governments in agriculture excluding livestock and related matters. The Act establishes the Agriculture, Fisheries, and Food Authority (AFA) with a mandate to promote best practices in, and regulate, the production, processing, marketing, grading, storage, collection, transportation, and warehousing of agricultural and aquatic products excluding livestock and livestock products as may be provided for under the Crops Act 2013, and the Fisheries Management and Development Act, 2016.

The Crop Production and Livestock Act Cap 321 (Revised 2012) empowers local governments – municipalities and urban areas (with the approval of the minister in charge of animal husbandry) to make by-laws for prohibiting the keeping or grazing of any livestock on any agricultural land in such area and for regulating or controlling the numbers and kinds of livestock which may be kept on any such agricultural land.

The Urban Areas and Cities Act No 13 of 2011 (Revised 2012) provides for the classification, governance and management of urban areas and cities; provides for the criteria of establishing urban areas, provides for the principle of governance and participation of residents and for connected purposes. The Physical and Land Use Planning Act No. 13 of 2019 provides for the principles, procedures and standards for the preparation and implementation of physical and land use development plans at the national, county, urban, rural and cities level; and the administration and management of physical and land use planning in Kenya, amongst other things. The Law mandates that any person engaged in the physical and land use shall foster principles for the overall public good, for instance the physical planning and use shall promote the sustainable use of land and that shall integrate economic, social and environmental needs of present and future generations. Enforcement and compliance with physical and land use planning regulations poses a challenge as cities expand beyond their conventional boundaries. In Kisumu, land parcels within the original planned city is leasehold, while land owners in extended areas of the city hold freehold titles. Planning of freehold land is a challenge, leading to proliferation of unplanned settlements and difficulties in provision of urban infrastructure and services.

The Kenya Plant Health Inspectorate Service Act, 2012 (No. 54 of 2012) establishes the Kenya Plant Health Inspectorate Service as a regulatory body for the protection of plants, seeds and plant varieties and agricultural produce. The Act requires Kenya Plant Health Inspectorate Service (KEPHIS) to support the administration and enforcement of food safety measures. The Pest Control Products Act, 1982. cap 346 (Revised 2012) provides for assessing and evaluating pest control products (pesticides) for their safety to human, animal and environmental health. It also ensures pest control products used in food production are of high quality and efficacious.

The Fertilizer and Animal Feedstuff Act 1985 Cap 345 (Revised 2012) regulates the importation, manufacture and sale of agricultural fertilisers and animal foodstuffs and substances of animal origin intended for the manufacture of such fertilisers and foodstuffs. Meat Control Act 1977 Cap 356 (Revised 2012) was enacted to enable control to be exercised over meat and meat products intended for human consumption and over slaughterhouses and places where such meat is processed. It also provides for import and export control over meat and meat products. It provides for regulations specifying standards to be observed in respect of the manufacture of meat products, including the name or description, composition, additives, or contaminants, labelling and packaging of such products. It is also a common practice for individuals, families, people at a celebration or mourning to slaughter livestock for consumption without the meat necessarily being inspected by an authorised person.

Here are the links to some of these policy and regulatory documents affecting the food system in Kenya:

[The Kenya Agricultural Policy 2021](#)

[National Food and Nutrition Security Policy 2011](#)

[Agriculture, Fisheries and Food Authority Act No 13 of 2013](#)
[Crop Production and Livestock Act Cap321 \(Revised 2012\)](#)
[National Food Safety Policy 2021](#)
[Public Health Act 2012](#)
[Urban Areas and Cities Act No. 13 of 2011 \(Revised 2012\)](#)
[Physical and Land Use Planning Act No. 13 of 2019](#)
[The Meat Control Act. 1977](#)
[The Fertilizer and Animal Feedstuff Act 1985](#)
[The Pest Control Products Act, 1982](#)
[Kenya Climate-Smart Agriculture Strategy \(2017-2026\)](#)
[Agriculture Sector Transformation and Growth Strategy \(2019-2029\)](#)
[Bottom-Up Economic Transformation Agenda \(2023-2027\)](#)

Production environment

Kisumu City has very little primary food production activities that take place within the city boundaries. However, some food consumed in the city is produced in some parts of the county beyond the city boundaries. Kisumu City is divided into two topographical areas, the hilly north and the southern plain, that extends into the Kano Plains and have rich alluvial soils which favour horticulture and rice production. The southern plains of the city borders Lake Victoria, which is the second largest freshwater lake in the world, providing a big potential for fisheries. The lake shores are generally swampy and offer fertile ground for horticulture and fish breeding (County Government of Kisumu, 2023).

The climatic conditions are generally warm and humid. The county has a tropical climate, with temperatures ranging from an average high of 33 degrees Celsius to an average low of 23 degrees Celsius. The county experiences two rainy seasons, the long rains from March to June and the short rains from October to December. The dry seasons are from July to September and January to February. The county also experiences high humidity levels throughout the year, with an average humidity of around 80% (County Government of Kisumu, 2023).

Small scale peri-urban crop farmers in the West and North of the city mainly grow maize, beans, cabbages, kales and a variety of indigenous vegetables. Small scale peri urban livestock farmers mainly keep local zebu cattle, sheep and goats. Poultry farming is practiced both within the city and suburban areas, supplying chicken and eggs to the city. Horticultural farming is practiced in the south eastern suburbs producing kales, cabbages, tomatoes, and onions. Sugarcane and rice are grown in the Kano Plains to the East of the city.

The location of Kisumu at the shores of Lake Victoria makes it a major fish producing area. The main varieties of fish available in Lake Victoria are Nile perch (*Lates niloticus*), tilapia (*Oreochromis variabilis*), and silver cyprinid (*Rastrineobola argentea*). The population of other fish species has steadily declined ever since the introduction of Nile perch into Lake Victoria in the 1970s. Some fish farmers farm Tilapia in cages (fish cage farming) in the lake thereby reducing the pressure of harvesting fish from the lake and the effort in harvesting fish for food.

Kisumu City and the wider City Region is deficient in food production and heavily relies on food imports from other counties and countries to meet the deficit. An insignificant proportion of the food consumed in Kisumu City is produced in the immediate neighbourhood (Opiyo & Ogindo, 2018).

Food diversity and staple foods

The main staple food of most Kisumu residents is maize meal (corn meal), popularly known as *ugali*. This is the leading source of starch, and is common in nearly every household's dinner table, accompanied with

vegetables - kales or cabbages, and occasionally eggs, milk, Silver Cyprinid, fish, meat, or poultry. The variety of fish include Nile perch, tilapia, and the most popular Silver Cyprinid, locally called *Omena*. Wheat products particularly bread, chapatis and fried burns (*mandazi*) are also common (Opiyo & Ogindo, 2018). Legumes e.g. green grams and beans taken with rice or chapati are popular dishes. For breakfast, most households drink tea (with or without milk) or porridge (made from a mixture millet, sorghum and cassava) accompanied with wheat products (bread, mandazi, chapati) or local starch sources - sweet potatoes, Irish potatoes, boiled maize, rice or *nyoyo* (a mixture of boiled maize and beans, and sometimes groundnuts). Peanuts are occasionally available as a snack. Table 3 details the City's common food items from other food categories.

Table 3 Common food items consumed by Kisumu residents

Food category	Specific name of food	Production source	Major local outlets	Staple	Indigenous and novel foods
CARBOHYDRATES	Maize Wheat Rice Sweet and Irish potatoes and cassava	Rift Valley, Ahero, Mwea, Imports, South Nyanza Nakuru	Markets, Formal and informal retailers	Maize	None
MEAT	Beef Goat Sheep and rabbits	Kisumu rural and neighbouring counties	Formal and informal Butchers	Beef	None
FISHERIES	Silver Cyprinid (Omena) Nile Perch Tilapia	Lake Victoria (Sindo, Migori, Usenge beaches) (Smoked from Turkana and Uganda)	Markets	Silver Cyprinid	None
POULTRY	Chicken Eggs	Local and Rift Valley Eggs from Uganda.	Markets	Chicken	None
DAIRY	Fresh or pasteurized milk	National processors (Kenya Cooperative Creameries) Private milk companies Uganda	Formal and informal retailers	Fresh milk	None
FRUITS	Bananas Mangoes Oranges Water melon Pineapples Avocado	Locally grown, Kisii and Uganda Locally grown, Ukambani and Coast of Kenya Ukambani, and S. Africa Locally grown (Homa Bay county) Homa bay, Uganda Vihiga, and Kisii	Markets	Banana	None

Food category	Specific name of food	Production source	Major local outlets	Staple	Indigenous and novel foods
NUTS	Peanuts Cashew nuts Almonds	Homa bay and Western Province Coastal Kenya Imported	Markets Roasted is hawked	Peanuts	None
VEGETABLES	Kales Cabbages Cowpeas leaves Spinach Spider plant Nightshade Jewish mallow Amaranth	Local, Rift valley and central Local and Western Locally grown and from Kisii and Kakamega towns Sourced locally, Western Kenya	Markets	Kales	None
LEGUMES	Beans Green Grams	Locally grown, Uganda, Southern Nyanza	Markets	Beans	None
INSECTS/NOVEL FOODS	Crickets Termites Black ants (Carebara vidua) Grass hoppers Locusts	South Nyanza, western Kenya, Uganda	Markets	crickets	None

Typical food basket for different income categories

Household food choices are determined by many factors, one of which is income. Households with the same income levels, other factors held constant, will tend to have the same purchasing power and tendencies. Thus, their food baskets will tend to be similar rather than different. In this section, we describe the typical food baskets for low-, middle- and high-income earners in Kisumu City. The food basket for low-income households will typically include refined sugar, maize flour, kales, cabbages, legumes (green grams or beans), bread, fried burns (mandazis), flat bread (chapatis), tomatoes, onions, and occasionally omena (silver cyprinid). Fruits and traditional vegetables are rarely purchased because they are pricey. Poor households occasionally purchase boiled maize and beans (*nyoyo*) (Opiyo & Agong, 2020) (Opiyo, et al., 2018).

The food basket of poorer households living in informal settlements is influenced by inadequate access to energy, water, sanitation, and kitchen facilities. Such households purchase food for daily consumption and the fear of losing food to spoilage encourages stocking and consumption of less perishable, usually ultra-processed foods rich in sugar, salt and fat; contributing to rising incidences of non-communicable diseases in the city (Opiyo & Agong, 2020).

Middle income families' typical food basket contains maize flour, rice, wheat flour, bread, eggs, milk, fish, meat, chicken, fruits in season, kales, cabbage, spinach and traditional vegetables. High income households' typical food basket is similar to that of Middle-income families and also includes imported fruits and nuts and processed fruit juices. Middle and high-income households also purchase a wide variety of beverages

and processed foods including tea, herbal drinks, coffee, milk, sugar, bread, carbonated drinks, processed juices, sausages, burns and cakes. Sugared drinks and alcoholic beverages are often associated with celebrations and parties (Opiyo & Agong, 2020). These typical food baskets are summarized in Tab. 4.

Table 4 Typical food baskets for various income categories

Food category	Typical household food basket for different levels of household income			Staple
	Low Income Earner	Middle Income Earners	High Income Earners	
CARBOHYDRATES	Maize Rice Wheat Refined sugar Sweet potatoes Cassava Processed juices and carbonated drinks	Maize Rice Wheat Refined sugar Sweet potatoes Cassava Processed juices and carbonated drinks	Maize Rice Wheat Refined sugar Sweet potatoes Cassava Arrow roots Honey Processed cereals Processed juices and fizzy drinks, Carbonated drinks	Maize meal
MEAT	Beef	Beef Mutton Chevon, sausages Pork	Beef Mutton Chevon, sausages, Processed meats	Beef
FISHERIES	Silver Cyprinid Deep fried fish skeleton (mgongo wazi)	Silver Cyprinid Tilapia Nile Perch	Silver Cyprinid Tilapia Nile Perch Seafoods	Silver cyprinid
POULTRY	Chicken parts (necks, legs, offals) , eggs	Chicken, eggs	Chicken, eggs	Chicken
DAIRY	Milk (Occasionally)	Fresh milk, pasteurized milk, Cultured milk	Milk, Cheese, Ghee, Butter, Cultured milk, Yoghurt	Milk
FRUITS	In season, Bananas Watermelon (slices) Pineapple (slices)	Bananas Oranges Mangoes Apples Avocados Processed Fruit Juices	Fruit juices Fruit jams, Canned fruits Fresh fruits (including imported) Bananas Oranges Mangoes Apples Avocados	Bananas
NUTS	Peanuts (sachets) Ground nuts	Peanuts (processed and whole)	Peanuts (processed and whole)	Ground nuts

Food category	Typical household food basket for different levels of household income			Staple
	Low Income Earner	Middle Income Earners	High Income Earners	
			Other nuts e.g Cashew Nuts, Almonds	
VEGETABLES	Kales Cabbage	Kales Spinach Cabbage Indigenous vegetables	Kales Spinach Cabbage Indigenous vegetables	Kales
LEGUMES	Beans Greengrams	Beans Greengrams	Beans Canned beans Greengrams Exotic legumes e.g. quinoa and lentils, black beans	Beans
INSECTS/NOVEL FOODS	Termites Black ants (Carebara vidua)	None	None	Termites

Nature of the food economy

The food economy of Kisumu is both formal and informal - defined by the kind of trading premises (whether permanent or temporary); location of the business (in approved marketplaces or unapproved markets by roadsides); and the legal status of the business enterprise (whether it is registered/licensed, or unregistered/unlicensed).

Formal food economy

Kisumu City has two main markets – Jubilee and Kibuye – which are the main source of supplies for the smaller markets and informal traders in the city as well as suburban markets (Opiyo & Ogindo, 2018). A majority of the traders in the approved markets pay daily licence fees to the City authorities and are, therefore, considered formal from that perspective (Opiyo, et al., 2018). However, most of them are not registered enterprises. More formal players in the food economy include supermarkets, wholesalers, distributors, restaurants, and retail shops (*dukas*). Most of these players pay annual licenses in the form of a single business permit (Opiyo, et al., 2018). Possession of a single business permit formalises an enterprise in the eyes of city authorities. However, some businesses are licensed to operate in undesignated areas for example by roadsides or on railway reserves, often leading to conflicts with other government agencies like the Kenya Railways Corporation and Kenya National Highways Authority. Such businesses are occasionally demolished to give way for road repair or expansion works, despite being licensed by city authorities (Opiyo & Agong, 2021).

Informal food economy

Kisumu gets most of its fresh food supplies from informal sector distributors. However, processed foods are distributed by formal distributors. Apart from the established municipal markets, food retail often takes

place in temporary structures and in unapproved markets by the roadsides. A recent study established that although a big proportion (57%) of food retailers are licensed, a significant proportion (19%) trade without licenses, a further 17% are unregistered businesses that pay daily vending fees, and 7% indicated that they did not require licenses but paid market operators to run their businesses (Opiyo & Ogindo, 2018).

Informality is driven by the high levels of poverty and unemployment. Informal food trade is a source of livelihood for many and also a source of food for the majority of the poor City dwellers because they provide accessible and affordable food, sometimes on credit and in small quantities (Opiyo & Agong, 2018). A previous survey revealed that 65% of informal food retailers offer credit to customers, and those offered access to credit were mostly regular customers (49%), clients with a good credit history (21%) and well-known locals (10%). Offering credit is a key business strategy in the informal sector, used strategically to attract and retain customers (Opiyo & Agong, 2018). Informal food trade takes place mostly in residential areas and at major transport nodes – areas that conveniently lessen commuting in order to get food. This strategy assists the poor and food insecure, eliminating the cost of travelling to municipal markets and supermarkets (Opiyo & Agong, 2018).

Food access strategies of households

Kisumu City residents have different strategies to access their food. The chief strategy is through purchase since few produce their own food. Since no household is self-sufficient in terms of food, it is reasonable to posit that all households buy some items of food. A survey in 2016 indicated that 88% of the City's residents bought most of their food (Wagah, et al., 2018). Some poor people, when unable to pay on spot for their food, have entered into credit arrangements with traders with whom they have established some relationship. This practice is not uncommon with informal settlements. The same study also indicated that about 7% of the city's populace received food from their relatives in rural areas. Some people practice urban agriculture thereby growing some of their food in their kitchen gardens and keep some livestock for subsistence use. The County Government of Kisumu (2023) also helps parents feed their little children through its Early Childhood Development School Feeding program. In times of Disasters, affected families have received food from well-wishers, and the County Government of Kisumu (The Star Kenya, 2023).

Nutritional deficiencies (2012-2022)

Nutritional deficiencies in children are measured using four indicators: *stunting* (too short for their age), *wasting* (too thin for their height), *underweight* (too light for their age), and *overweight* (too heavy for their age). The Kenya Demographic and Health Survey 2014 reported that Kisumu County had 18% of children under five years who were stunted; 0.8 % were wasted; 7% were underweight and 6% were overweight/obese (KNBS, 2014). In 2022, Kisumu County had 9% of children under 5 who were stunted against national average of 18%; children under 5 who were wasted was 3% against national average of 5%; and children under 5 who were underweight was 4% against a national average of 10%; while children under 5 who were overweight was 2 % against a national average of 3% (KNBS, 2022). Kisumu County Nutrition Action Plan 2020 - 2023 notes that more than 80% of the children in Kisumu County consume a diet deficient of iron rich foods, with a bigger proportion consisting of grains, roots and tubers.

The Kenya 2015 Stepwise Survey confirmed an increasing rate of overweight/obesity and diet-related non-communicable diseases (DRNCs) in adults. Nationally, a total of 28% of adults aged 18–69 years were either overweight or obese, with the prevalence in women being 38.5% and men 17.5%. Non communicable diseases are a major public health concern with significant social and economic implications in terms of health care-needs, lost productivity and premature death (County Government of Kisumu, 2021).

Food Systems Assets

Food processing firms

The major food processing firms in the city are Kibos Sugar Factory, United Millers Limited, Swan Millers, Mayfair Holdings, Peche Foods, and Equator Bottlers. However, there are many small-scale food processors dealing in maize milling, pastries, confectionaries, and other food products.

Food system organisations and trade associations

Kisumu has several organisations involved in the food system. All municipal markets have trader associations, with Kibuye Market and Jubilee Market trader associations being the most prominent. Kisumu also hosts the Western Kenya branch of the Kenya Association of Hotel Keepers and Caterers. Other food system players are members of the local chapter of the Kenya National Chamber of Commerce and Industry. Those involved in fishing and fish trade are organised into Beach Management Units (BMUs). Rice farmers in the Kano Plains are members of the Ahero Rice Farmers Cooperative Society.

Other organisations with influence in the food system include the motorcycle taxi operators, tuktuk operators, and matatu associations and SACCOs, who provide transport services in the city.

Local food production and harvest assets

The City's greatest food harvest asset is Lake Victoria from which natural fish stocks are harvested. Water is also harvested from the lake and streams that discharge into it for crop farming by peasant farmers who live near these resources. The Nyando River basin and Kano Plains to the east of the city are endowed with rich alluvial soils on which rice and sugarcane is grown. However, agricultural activities in the plains are challenged by frequent flooding. Peri urban farmlands to the north and west of the city are used for small-scale farming of maize, beans, poultry, sweet potatoes, vegetables, and livestock, mainly for subsistence.

Food safety

There are concerns about the safety of cooked and fresh foods sold by informal traders by the roadside and from food kiosks in Kisumu City. The main issues have been around the level of hygiene under which food is prepared and sold, and the preservation methods used. This is further compounded by the city's inadequate capacity to enforce regulations on food safety (Opiyo & Ogindo, 2018). Those who handle cooked food and sell to the public are required by law to be screened for certain infectious diseases like typhoid and tuberculosis among others. However, some food vendors do not comply with this thus exposing the public to the risk of contracting these diseases. Food handling premises are also required by law to be clean and free from pests that can contaminate food and spread diseases. However, the general surroundings of some informal food vending premises do not make this possible.

The safety of food is not limited to concerns over hygiene and the potential to transfer diseases from food handlers but also includes the risk to negatively impact homeostasis in the short run and contribute to the occurrence of non-communicable diseases such as diabetes, coronary diseases, cancer and high blood pressure in the long run if those foods are regularly consumed. In Kisumu City, there is an increasing and worrying trend of the consumption of highly processed foods and drinks, particularly among school children and adults with tight working schedules, thereby increasing the risk of NCDs (Opiyo & Agong, 2020). The formal channels of food distribution have significant highly processed foods with high levels of sugar, fat and salt. For the processed and packaged foods there are established standards which might need

to be revised to improve public health of the population. Furthermore, the public will need to be educated in order to have a discerning eye when choosing their foods.

Food infrastructure

The location of Kisumu at the confluence of a major transport hub enables transportation of food by road from distant production sources within Kenya and the East Africa region into the city (Opiyo, et al., 2018). Though Kisumu has an international airport, it has little significance to the city food system, as it currently handles very little cargo.

Water and sanitation infrastructure have an influence in the food system, affecting food hygiene and safety. Kisumu Water and Sanitation Company (KIWASCO) supplies water to the city, though its distribution network is limited. Residents of the suburban informal settlements still have challenges accessing clean water and sanitation facilities (County Government of Kisumu, 2023).

Jubilee and Kibuye markets are the main source of food supplies in the city and satellite towns. There are smaller markets in residential areas - Otonglo, Manyatta, Koyango, Kasawino, Migosi, Mamboleo, Nyalenda, Kiboswa, Kibos, Chiga, and Wath-Orego. These markets lack cold storage facilities and have inadequate sanitation facilities, leading to food losses and contamination. Street-edge food retail is most common in informal settlements and at the main transport confluences (Opiyo & Ogindo, 2018).

Electricity connections to food retail outlets, processing facilities and households has greatly improved nationally in the last ten years due to several national government initiatives. In Kisumu County, 86% of SMEs were connected to the grid and just over 10% used solar by 2020, while 60% of the households were connected to the grid and 39% used solar. As per the 2019 national census, the main fuels used for cooking were firewood, charcoal and paraffin, at 49.6%, 22.2%, and 7.8% respectively. The use of LPG in the county stood at 18.7%. (ICLEI Africa, 2020). Though electricity connection to food infrastructure and households has improved, the high cost of electricity and intermittent power outages continue to be challenges in the food system.

Food and nutrition system interventions (2012-2022)

Food and nutrition interventions listed here include programmes and plans put in place by the County Government of Kisumu and other stakeholders. A program is a set of activities or initiatives that are designed to achieve a specific goal or objective. It is a comprehensive and structured approach that involves a series of coordinated actions, often involving multiple stakeholders and resources, to achieve a desired outcome. Programs are typically long-term in nature and require ongoing management and monitoring to ensure their success. On the other hand, plans are methods for doing or achieving specific objectives, usually involving a series of actions or stages, or pre-arranged actions.

Programmes

There are several government and nongovernment led food system programmes and projects that have been implemented in Kisumu in the last ten years: 2012 – 2022. The County Government of Kisumu's Department of Agriculture, Fisheries, Livestock Development, and Irrigation runs programmes to achieve food and nutrition security and commercially sustainable agriculture. The priorities of the sector are biased towards improving crop, livestock, and fisheries production, particularly in the rural areas of the county. Such programmes include provision of agricultural extension services, enhancing agricultural inputs and credit access, and enhancing market accessibility (County Government of Kisumu, 2018).

Some of the agriculture and food system projects implemented in the last ten years are presented in table 5.

Table 5 Some food system projects implemented in Kisumu in last ten years

	Project	Period	Funding Agency	Implementing Agency	Key Objectives
1)	Consuming Urban Poverty – Governing Food Systems to alleviate poverty in secondary cities in Africa	2015 - 2018	UK - Foreign Commonwealth and Development Office (FCDO)	Kisumu Local Interaction Platform (KLIP) in partnership with African Centre for Cities (ACC)	<ul style="list-style-type: none"> To generate an understanding of the connections between poverty, governance, urban space and food in secondary cities in Africa.
2)	Nourishing Spaces - Urban Food Systems Governance for NCD Prevention in Africa	2018 - 2020	International Development Research Centre (IDRC)	KLIP in partnership with African Centre for Cities (ACC)	<ul style="list-style-type: none"> To develop urban-scale responses to diet-related NCDs to harness the potential power of urban government to reshape the food system so as to reduce NCDs in African cities.
3)	Urban Food Agenda - Integrated Actions for Innovative Food System Actions across Rural- Urban Communities	2019 - 2022	FAO and Italian Agency for Development Cooperation (AICS)	County Government of Kisumu & Practical Action	<ul style="list-style-type: none"> To develop sustainable food systems. To develop Evidence-based food system strategies and the promotion of participatory food governance mechanisms. To support the integration of food systems into local plans and innovative food system actions that promote urban-rural linkages and ensure food systems sustainability.
4)	ASDSP - Agricultural Sector Development Support Programme	2017 - 2022	SIDA, European Union, and GoK	County Government of Kisumu & GoK	<ul style="list-style-type: none"> To enhance the capacity of different Priority Value Chain Actors at different levels to tackle the problems that hinder commercialization of Agriculture.
5)	KCSAP - Kenya Climate Smart Agriculture Project	2017 - 2022	GoK, World Bank	County Government of Kisumu & GoK	<ul style="list-style-type: none"> To increase agricultural productivity and enhance resilience /coping mechanisms to climate change risks in the targeted smallholder farming and pastoral communities in Kenya.
6)	Veggies for People and Planet (V4PP) Enabling Vegetable Business Development in East Africa for more jobs and better human and environmental health	2020 - 2025	IKEA Foundation	World Vegetable Centre (WVC), SNV Netherlands,	<ul style="list-style-type: none"> To engaging women and youth in vegetable production and distribution networks to close the 'vegetable gap' and improve livelihoods and nutrition in Ethiopia and Kenya.

Plans

There are current and previous plans addressing food system issues that have been developed in the last ten years. These include:

- [Kisumu County Agri Nutrition Implementation Strategy 2023 – 2027](#);
- [Kisumu County Food System Strategy 2023 – 2027](#);
- [Kisumu County Nutrition Action Plan 2020 -2023](#)

City and regional scale development challenges and current responses

Kisumu City is characterized by a fast-growing and predominantly youthful population. A 2016 survey established that 36% of household members were children younger than 16 years of age, while cumulatively 73% members of the sampled households were younger than 30. Unemployment levels were high at 31% for household members aged 20 years and older (Opiyo & Agong, 2018). The Kisumu County Integrated Development Plan 2023 -2027 recognises that there is a significant decline in economic activity resulting in high unemployment rates, reduced consumer spending, and low production outputs (County Government of Kisumu, 2023).

Poverty is prevalent in the county and manifests itself in other socio-economic outcomes such as poor nutrition, health, and education, as well as a lack of access to basic services. Unemployment is a major challenge in the county, especially among youth. The youth aged 18 – 35 years account for more than half of the labour force. However, they are challenged by unemployment, drug abuse, unwanted pregnancies, and HIV/AIDS. (CIDP 2022 – 2027).

The majority of the employed population in the city are engaged in the informal sector – in trade, small scale industry (jua-kali), transport (boda-boda subsector), construction, and other commercial ventures. The county government has prioritised technical and vocational education and training to enhance the skills of the youth to create more jobs in the informal sector.

Agricultural losses due to the increasing frequency of flood, drought events and pests and diseases present a major obstacle in alleviating food insecurity and poverty. Flood- and drought-related crop failures are three times higher in Kisumu County compared with other regions and cost households an average of US\$ 2000 annually. Both acute and prolonged food insecurity put children at risk of stunting and chronic illness. In 2015, stunting rates in children under 5 years old in Kisumu County was around 18% (WHO, 2022). In 2022, the stunting rate of children under 5 years old dropped to 9% against the national average of 15% (KNBS and ICF, 2023). Despite these gains, malnutrition is still a leading cause of death and disease in the county (WHO, 2022).

The lowlands of Kisumu are prone to flooding, due to variable rainfall patterns and rising lake levels. These negatively impact the quality of water sources, leading to increases in incidence of cholera, typhoid and other waterborne diseases and deaths. Kisumu's informal settlements, which have poor sanitation systems and lack easy access to health care facilities are particularly at risk of waterborne diseases (WHO, 2022).

More than sixty percent of the urban dwellers within the city reside in the informal settlements Nyalenda A and B, Manyatta A and B, Bandani, Manyatta Arab and Obunga (County Government of Kisumu, 2023); (Opiyo & Agong, 2018). The residents of these informal settlements live in poor housing conditions with inadequate access to urban infrastructure and services including water, sanitation, electricity, transport, educational institutions, and health facilities. Despite its location on the shores of Lake Victoria, Kisumu City is characterised by shortages of safe water and environmentally sound sanitation facilities, particularly among residents of informal settlements and peri-urban areas. The Kenya Demographic and Health Survey 2022 found that the household population in Kisumu County with access to at least basic drinking water

service was 72%; basic sanitation service was 35%; and household population relying on clean fuels and technologies for cooking, space heating, & lighting was 15% (KNBS, 2022).

There are initiatives by both the national and county governments to respond to the issues of poor and inadequate housing, water, and sanitation. These initiatives include the National Government Affordable Housing programme, SACCOs, Financial Institutions, Public Private Partnership arrangements and interventions by development partners (County Government of Kisumu, 2023).

Kisumu City is among urban centres with the highest population growth rate in Kenya, bringing with it associated complexities in urban planning such as pressure on land demand for urban development. The problem is further compounded by the fact that the government alienated land in the urban area that is either unsuitable or too small and scattered to be of any substantial and adequate use for urban development (Wamukaya & Mbathi, 2019).

Fishing industry around Kisumu has been negatively affected by dwindling fish stock due to overfishing, the invasive water hyacinth and environmental pollution (Njiru, et al., 2008). The fisheries sector is further challenged by post-harvest losses of fish due to inadequate fish preservation facilities.

Kisumu County has a high disease burden, with a higher prevalence of malaria, tuberculosis, and HIV compared to the national average. Kisumu is an endemic zone for malaria due to its location in the Lake Victoria Basin with a malaria prevalence of 19% among children aged 6 months to 14 years against the national average of 6% in 2020 (WHO, 2022). The prevalence of TB was 306 (per 100,000) against a national figure of 251 (per 100,000) in 2021, according to the World Bank collection of development indicators. The HIV prevalence rate in adults 15 -49 years was 16.3%, against a national average of 4.9% in 2017 (NACC, 2018). There have been several interventions by both governmental and nongovernmental organisations targeting malaria, TB and HIV.

Kisumu has been the hotbed of opposition politics in Kenya for decades, with violent protests experienced almost after every election cycle since 2007. The 2007/2008 post-election violence led to widespread riots, destruction of property, and disruption of the food system. Similar trends were witnessed after the 2013, 2017, and 2022 general elections. In 2023, there were nationwide protests regarding the cost of living and electoral injustice, with Kisumu bearing the brunt of the confrontations between protestors and state agents.

The state of multi-stakeholder food governance and processes

Modes and practices of food governance

Governance of food systems can facilitate resilient and just food system transformations to advance access to safe and healthy diets. Stakeholders involved at all stages of decision-making influence policies, legislation, planning, finances, monitoring and coordination, hence the implementation processes. The modes of food systems governance in Kisumu include both formal and informal actors. Formal actors include national government and local government agencies, civil society organisations, trade associations, and private sector lobby groups. Informal actors include some influential individuals and groupings with diverse interests at the various stages of the food value chain.

Key urban food systems governance actors

National Government

Ministry of Agriculture, Livestock and Fisheries oversees formulation of policies and regulations governing the agriculture sector nationally. The strategic objectives of the Ministry are to create an enabling environment for agricultural development; increase productivity and outputs in the agricultural sector; enhance national food security; improve market access and trade; and strengthen institutional capacity.

Local Government

Kisumu City is managed by a city board established as per the provisions of the Urban Areas and Cities Act 2012. The board exercises delegated authority from the County Governor. This complicates food governance arrangements as there is no clear definition of tasks between the city and the County. The city, therefore, functions as a department under the county, with several County departments involved in governing food systems both at the County and city levels. For example, the department of trade exists both at the County and city levels, with the City trade department exercising delegated authority. The department manages markets and licenses traders. Similar delegated authority exists in the department of public health that oversees food safety and licensing of the food outlets operators and food handlers. The department of trade issues a 'single business permit' that includes both a trading license and food handling license.

The Directorate of Environment is responsible for the management of Municipal Solid Waste, including food waste from markets, homes, restaurants and other sources within the city. It is also in charge of city greening programmes, including planting and growing of fruit trees; protection and conservation of wetlands. All these present opportunities for promoting food production, which however, is not within the mandates of any city directorates.

City planning department develops land use plans, including areas set aside for agriculture, food markets, and other infrastructure. Development applications are coordinated and approved through this department. The City Inspectorate Department enforces county laws and city by-laws, including those relating to food trade, both formal and informal.

City Directorate of Social Services is responsible for social welfare of city residents focusing on community development, public/citizen engagement and participation, issues of children welfare and safety, registration of CBOs and community groups, sports and social services within the city.

The County Department of Agriculture, Irrigation, Livestock and Fisheries oversees agricultural and food policies, regulations, programmes and projects. The department also coordinates the work of development partners working in the agricultural sector in the county.

Kisumu County recently developed a Food Systems Strategy for 2023 – 2027 with the support of development partners namely Food and Agriculture Organization of the United Nations (FAO) under the *Integrated Actions for Innovative Food System Actions across Rural Urban Communities Project* and Practical Action under the Change Ambition – “*Farming that Works*”. The Strategy aligns to the National Food and Nutrition Security Policy of 2011 together with its implementation framework of 2017-2022. The Strategy identifies six thematic areas key to supporting the food system. These are strengthening the food systems governance, production, post-harvest handling and value addition, infrastructure development, market access and ICT, nutrition, food safety and health, and mainstreaming cross cutting issues (County Government of Kisumu, 2023). The Kisumu County Food System Strategy is for the whole County. There is no policy document or strategy that is specific to the city. The current strategy is domiciled in the department of agriculture. It is however worth noting that the city has no department of agriculture in its administrative structure.

Kisumu City has no multi-stakeholder platform responsible for advisory and decision-making regarding the formulation and/or implementation of food policies and programs. However, there are two bodies at the County level: Food Liaison Advisory Group (FLAG), that is currently in the process of transforming itself into Food Liaison Advisory Council of Kisumu (FLACK); and Kisumu County Agricultural Sector Steering Committee (KCASSCOM). Both bodies were initiated by donor funded projects. The formation of FLAG was spearheaded by the FAO funded project - *Integrated Actions for Innovative Food System Actions across Rural Urban Communities Project* while the formation of KCASSCOM was spearheaded by the SIDA funded national government project, Agricultural Sector Development Support Programme (ASDSP). Both platforms are chaired by the County Executive Committee Member in Charge of Agriculture, Irrigation, Livestock and Fisheries; and have members drawn from relevant government departments and agencies responsible for agriculture, livestock, fisheries, trade, co-operatives, public health and nutrition; research institutions; civil society representatives; residents’ associations; farmer associations; and the private sector. There is no clear mechanism for coordination between FLAG and KCASSCOM, despite the overlap in membership. On research and collaborations at various different levels of governance, Kisumu Local Interaction Platform (KLIP) led by researchers from local universities, has also continued to work on issues of urban sustainability, that include urban food security and alternative livelihood opportunities within the city of Kisumu. KLIP, by its formation and design, presents a conducive neutral setup enabling different stakeholders to participate in research activities geared towards the design of strategies and co-creation of knowledge and skills necessary in addressing urban challenges.

International Development Agencies

International development agencies play an important governance role in shaping Kisumu’s food system. The Swedish International Development Agency (SIDA), the World Bank, and Agence Française de Development (AFD) have supported the development of market infrastructure, roads, footpaths, water, and sanitation facilities in the city. These developments contribute to improved accessibility and sanitation in the markets. AFD funded the re-development of Kibuye market that was completed in 2022; SIDA through ASDSP funded construction of a fish processing facility at Jubilee market that was commissioned in April 2023, and the World Bank funded the construction of footpaths and walkways in the city, as part of the Kisumu Sustainable Mobility Plan (KSMP) which is an ambitious plan aimed at prioritizing walking and cycling, and increasing the accessibility to public transport.

Non-Governmental Agencies

Non-governmental entities, both legal and illegal, shape the local food system. Legal entities include formal trader or market associations and farmer or producer cooperatives while illegal ones include informal groupings which sometimes operate like cartels. The legal entities organise services that the city cannot

satisfactorily provide like cleaning of market spaces and toilets, planning for the storage and security of their goods, maintaining order in the markets, setting price ranges for their goods, resolving conflict among traders, and forming a united front to dialogue with the city management on issues of interest to them (Hayombe et al., 2019).

Informal governance structures exist in the food system as informal market groupings, middlemen, transporters, and service providers. Some of these informal groupings and structures play a role in enabling food availability and accessibility in the city and providing services in the markets. However, some of them have turned into cartels - dictating who trades where and when; and dictating prices in the markets. Some charge trader's protection fees or other levies that are illegal in the eyes of the city authorities and exploitative to the traders. However, they are tolerated by other food system stakeholders because they fill some service gaps that city authorities are unable to provide.

Historical shifts in food systems governance

There has been little explicit focus on food in Kenya's cities by the government, as the food question has often been framed as an agricultural question, which, therefore, meant that it has no urban mandate. This has a root in historical colonial governance structures that allocated high potential areas for white settlements for commercial agriculture and low potential areas for native settlements for subsistence farming. The rural was and is still imagined as the site of production and the urban solely as the site of consumption (Hayombe, et al., 2019).

After independence in 1963, the Sessional Paper No. 10 on African Socialism and Its Implication to Planning in Kenya (Republic of Kenya, 1965) aimed to address food security issues through increased agricultural production and economic access. It was stipulated that production would be improved through provision of quality plant and animal seeds, land consolidation, extension services, development credit, provision of agricultural supplies like fertilisers, and training in modern technologies (Hayombe, et al., 2019).

In the 1990s, Structural Adjustment Programmes (SAPs) were introduced in order to secure loans from the International Monetary Fund and/or the World Bank. Part of the reforms included reduction in the government wage bill, which resulted in massive retrenchment in the civil service. Agricultural extension services were greatly affected, as experienced extension officers left the service and were never replaced. Some agricultural extension services were privatized and the government advocated for 'demand-driven' public extension services, meaning any farmers who required extension services would go look for it as opposed to extension officers looking for farmers who may need support. Public health and nutrition programmes too were affected by the SAPs.

In 2010, Kenya enacted a new constitution, creating a devolved system of governance, with a national government and 47 county governments. Some functions, including agriculture and health services were devolved to the counties. The management of urban areas and cities was also devolved, and the Urban Areas and Cities Act was enacted in 2011 to facilitate the administration of urban areas. There are food system policies at both the national and county levels.

Viability and efficacy of urban food systems governance

Like in other secondary cities in Africa, urban food system governance modes and practices are still inadequate to ensure a sustainable food system for Kisumu City. National government policy largely still views food as an agricultural, and therefore a rural issue. The national government has inadequate governance practices specific to urban food systems. At the county level, food system governance issues are the purview of the Department of Agriculture, Livestock and Fisheries, which has a mandate for the whole county, and no specific mandate for the city. Kisumu City Board is limited in capacity, because it only

exercises delegated authority, and food issues have not been delegated to it. Recent efforts to create a food council - the Food Liaison System Advisory Council of Kisumu (FLACK) from Food Liaison Advisory Group (FLAG) is a positive move towards realization of an effective multi-stakeholder food systems governance platform.

Kisumu County governs the urban food system by licensing traders, and providing market infrastructure and services. However, the infrastructure and services are inadequate, and some are located in areas not suitable for traders and customers. For example, the markets that were built in residential areas of Nyalenda, Migosi and Manyatta remained underutilized for a long time as traders continued selling food by the roadsides. Uhuru Business Complex, a new market that was built close to the CBD, too remains underutilized. Attempts to relocate traders to the market have not succeeded.

The city authorities have also been trying to enforce food safety and hygiene regulations. However, there is inadequate capacity to enforce these regulations, leaving some food retail outlets uninspected and operating below set standards and without required licenses. Additionally, some traders avoid inspections by either closing their businesses until the inspectors leave their areas or paying bribes (Opiyo et al. 2018).

Market trader associations and business associations exercise some level of informal governance in the food system. They allocate trading spaces in markets and on roadsides, determine prices, and provide security and sanitary services in trading areas. They provide some services that can never be approved by city authorities. Market associations also lobby for the welfare of traders, facilitating negotiations with the county government and city authorities.

Urban food systems governance opportunities and threats

Nationally, the many numbers of actors involved and disjointed regulations governing the urban food system is a challenge. The Agriculture, Fisheries and Food Authority Act No 13 of 2013 attempted to consolidate the laws on the regulation and promotion of agriculture. It provided for the establishment of the Agriculture, Fisheries and Food Authority (AFFA) to promote best practices in, and regulate, the production, processing, marketing, grading, storage, collection, transportation, and warehousing of agricultural and aquatic products. However, the efficiency and effectiveness of AFFA has not been fully realized in the urban food system. The establishment of multi-stakeholder platforms provides an opportunity for consolidation of urban food system governance issues and developing mechanisms for coordination and interactions among key stakeholders.

At the County and city levels, there is an opportunity for urban food system governance through legislation at the county assembly. Legislation should make licensing procedures simple for food system players and reduce the cost of compliance with the regulations. Single business permit was aimed at achieving this, but it is not effective, as there are other regulatory requirements other than the single business permit.

Provision of food system infrastructure and services is the mandate of the county government. These are either inadequate or not conveniently located. There is an opportunity to consider the food system in urban planning to minimize conflict between street vendors and roadside traders and city authorities as they try to relocate traders to designated places. Informal actors influence access, affordability, and quality of food, and should be engaged to facilitate negotiated solutions to food system challenges.

Multistakeholder governance processes enables all round understanding and participation of diverse stakeholders in food systems policy dialogue for better health, livelihoods, and environment outcomes. It facilitates consideration of the food system as a central component of the city food system. Food and nutrition affect health and livelihoods. The urban food system is a source of employment and livelihoods for a large proportion of urban residents. There are

opportunities for investments in the food system to spur economic growth and improve the urban environment.

Urban agri-food systems entrepreneurial and trade context

Nature of food systems economy

Nature of food systems economy in Kenya

Kenya Food Security Act, (2017) explains that urban food systems analysis provides local decision-makers with a holistic understanding of how food systems work: where the food comes from, how it is distributed and utilized, and where, how and for whom the systems create food insecurity and consumption patterns especially among the urban households. The demand for food in the cities of Nairobi, Mombasa, Kisumu, and Nakuru is growing and requires quantities of food that rural and peri-urban areas may not be able to supply. Moreover, the existing market, storage and transport infrastructure is not able to cope with the growing quantities of foodstuffs. Therefore, the informal sector expands to provide low-income families with their means of livelihood.

A Policy Brief from Tegemeo Institute of Agricultural Policy and Development (2019), noted that the food system in Kenya shows changing trends on the consumption patterns among urban households with maize, though still the most dominant staple, declining in importance while rice, potato, wheat and plantain increasing in importance. This means urban households are embracing food diversification. Even though wheat and wheat products consumption increase among the urban population, the high-income earners are shunning wheat products because of the gluten content. This was corroborated by the report from Food Trends in Kenya (2007).

As the urban population increases, conscious and deliberate effort from the government and other stakeholders should be made to ensure steady supply of these common and staple foods to make them accessible and affordable to the urban population. Due to dwindling income of the urban population and inaccessibility of the food, most urban populations source their food, especially maize, potato and plantain, from the rural areas which is transported via buses and other courier companies. There is lack of data on the changing consumption patterns and how much food is sourced from the rural to assist the food entrepreneurs make decisions on which food business to venture into. Lack of this data also leads to lack of policy regarding the consumption patterns.

The demand for food in urban populations is increasing which does not correspond to the supply. This affects the food system; therefore, urban households largely depend on food produced from the rural areas. From the Ministry of Agriculture 2021 report,

“Urban-rural linkages have always been an important part of urbanisation processes in Kenya. There is no doubt that many Kenyan urban households have rural components to their livelihoods and retain strong links with rural areas. With the current economic hardships, many urban dwellers in Kenya are increasing their reliance on rural food and income sources. Rural links have become vital safety valves and welfare options for urban people who are particularly vulnerable to economic fluctuations”.

The Kenyan urban population often get their food supplies from the informal food outlets like kiosks, small shops, groceries, roadside traders and open air markets. More often than not, the small shops and kiosks are convenience stores located within urban and peri-urban residential neighbourhoods. They sell fast-moving lower-order goods needed on a daily basis by the neighbourhood residents. Examples of stock include milk, bread, sugar and maize meal, roasted maize, and African Leafy Vegetables (ALVs).

The Kenyan economic situation is resulting in a very high rate of unemployment and rise of low-income earners working in the informal sector. This is fuelling the informal food economy. Most consumers believe that the informal food economy offers a wide range of products at a cheaper price than in the formal food outlets. However, the choice of formal or informal food sources depends on the household's perceptions of a range of factors including affordability, variety, flexibility, proximity, convenience, credit facilities, health risks, freshness, and quality.

A small proportion of the urban population, more so, the working class, prefer to eat out in food kiosks and restaurants. Other sources of food for a minority of households and their members include meals at school and the workplace and various forms of social interaction such as sharing a meal with neighbours, obtaining food from friends and relatives, food donations and borrowing.

It is important to understand urban food system diversity in order to understand opportunities and challenges of urban food systems. This helps in formulating planning strategies to mitigate the challenges in the food system. These include household food sourcing, consumption, and disposal. This is very crucial because urban households overwhelmingly purchase, rather than produce their foods. The strategies enable the policy makers to understand sources of food, consumption patterns, and food waste management. In various cities, households may buy vegetables from the open air, meat from a local butcher, milk and bread from a supermarket. Purchase in the formal sector is made even more convenient with emerging technologies in distribution like use of Glovo, and Jumia, which does door to door deliveries. This means that both the formal and informal sectors are important sources of food to the households. Although urban agriculture is seen as an important source of food and livelihood strategy in the context of escalating poverty and rising food prices, access to plots in town is an important determinant of whether or not a household practices urban agriculture. However, with emerging urban agriculture technologies, urban households need capacity building on how to maximize space. This should be embedded in urban planning and food security policies (Report of 2015/16 Kenya household and Budget Survey).

Kenya has an expansive transport system including roads, rail, water and air transport. Most food distribution to urban households is done using *bodaboda*, *tuk-tuk*, hand cart (*mkokoteni*), *matatu*, railway and bicycle. These are used by traders as well as the consumers for transportation of food.

Nature of food systems economy in Kisumu

Where does food come from?

The Annual State of the County Report (2021) reported that the food system in Kisumu City is made up of diverse stakeholders from the informal and formal sectors. Food production (agricultural, aquaculture, fisheries, and livestock) is done at commercial and small-scale levels. Wholesaling and retail are done through urban markets, supermarkets, kiosks and street vendors. Consumption happens at different platforms as consumers have access to a diverse range of foods through various retail and catering outlets such as hotels, restaurants, canteen and street food. Kisumu food markets consist of Kibuye, Jubilee, Municipal Fish Market, Obunga, Otonglo, and Kowino (Nyalenda) markets. According to the traders, the price of food fluctuates depending on the weather patterns and seasons. Food items that are in season are cheaper as there are more quantities available than food stuffs that are not in season. The traders have the option of buying directly from the farmers but the transportation costs make the food stuff more expensive.

Kibuye market: Established in the 1970s, this world-famous market is the largest and busiest open-air market in Kisumu. It is a hub for trade in fresh produce, fish, meat, clothing, footwear, furniture, metal works, and other consumer goods. It provides an outlet for both raw products and manufactured goods. The market houses approximately 7000 traders who operate from early morning till late at night (Onyango, George G. Wagah, Omondi, & Obera, 2013). This market is so complex in nature as there are so many unregistered networks which control the market operations. These networks determine the price of food, who sells and distributes the food in the market. Most of the food vendors are not registered and only pay

daily dues to Kisumu municipal council which ranges between KES 30-50. Most of the traders are women who have formed informal groups that support their members with savings and loaning dubbed as “table banking”. Few are men who concentrate on timber work and metalwork/fabrications. A variety of goods can be purchased at both wholesale and retail units. There is a mix of shops, kiosks, stalls and open-air traders within the market. Kibuye market has so many food system players which ranges from food agents, brokers, distributors, wholesalers, retailers, waste collectors and consumers. Each of these players depend on each other for successful market operations. However, there is low level coordination among them as there is insufficient data on how they are linked to each other within the system. This presents an opportunity to examine how the groupings can link up and coordinate to address some of the pressing challenges faced by the traders, e.g. ineffective financing mechanisms and communication.

Jubilee market: Built in 1930s, Jubilee market is one of the main markets in Kisumu and has about 2000 traders (Onyango et al., 2013). The main produce sold is fish, cereals, fresh vegetables and fruits. Located next to Kisumu main bus stage, it offers fresh food, fruits and vegetables to travellers and residents of Kisumu City. This market also comprises informal and formal traders and is female dominated. The market is more structured and less informal as compared to other markets in Kisumu City and has full control of municipality. It is divided in sections as showed in the figure below.



Figure 12: Kisumu Municipal Market aka Jubilee Market

Source: Kevine Omollo (2022)

Municipal Fish market: The fish market is an offshoot of Jubilee market and houses approximately 250 traders (Onyango et al., 2013). The market is located within close proximity to the Central Bus Station, enabling easy access for traders bringing fish to the market. Urban households are able to get fresh fish - mainly tilapia, Nile perch, mudfish, omena, and kamongo (African lungfish) among others from this market. These fish are from the expansive Lake Victoria although some tilapia is imported from China while other supplies come from other counties in Kenya. It is speculated that fish from China are more affordable than the ones from Lake Victoria. The full cycle of fish processing takes place in this market such that every waste from each process is converted into a useful product. For example, fish scales are processed for

chicken feed. In addition to the 2000 traders, this market offers employment opportunities to approximately 500 casuals on a daily basis. Municipal market is less structured as compared to Jubilee market. Despite the high returns on revenue, there is high informality and unstructured way of operations.

Kowino market (Nyalenda): Kowino market is located in Nyalenda which is one of the largest informal settlements in Kisumu (Frediani, Walker, & Butcher, 2013). Surrounding Kowino market, are various small markets along the roadside and stall markets in front of homesteads. This market is composed of small informal traders and targets households from Nyalenda informal settlement. In this market, food is sold in small quantities depending on the amount of money the consumer has. Many times, food is sold on credit because of trust developed over time among the players.

Otonglo market: Located about a kilometre or so from the Kisumu International Airport, Otonglo Market is a vibrant, old trading centre in Kisumu. The name derives from commerce as Otonglo means “cent,” or money in Luo. This is an ultra-modern market which sits along the busy Kisumu – Busia Highway and hosts about 500 traders with safe, secure, clean and dignified trading spaces which has now improved the business environment of the centre. This market provides food to urban households that have settled within this region. It also provides a ready market for the peri-urban farmers who bring fresh food/produce like African Leafy Vegetables as well as fruits, fresh maize for roasting and boiling and fresh fish from Lake Victoria.

Obunga Market: Obunga Market is located on Pamba Road, near Kamakowa SDA church and Obunga Chief’s camp. Fishmongers in Obunga mainly deal in “fish leftovers”, which refer to the remains after filleting by the nearby fish factories. Poor residents of Obunga informal settlement who can't afford whole fish resort to turning these remains into useful and valuable products for their consumption as well as for sale. In this market, the fish skeleton “*mgongo wazi*” is dried, fried and sold as food, the fish skin is also dried and fried and sold to low-income slum dwellers or processed to produce leather. The scales, fish intestines and other components are processed for animal feed. There is a complete fish value chain with waste from each process sold as a product after value addition. Some of the fish products from this market are exported as far as West Africa where they are considered a delicacy and thus fetch a lot of money. The women traders here are creative and innovative, utilizing the locally available scarce and rudimentary resources/skills to informally create opportunities for their livelihood.



Figure 13: Recycling food waste at Obunga Market, Kisumu Kenya

Supermarkets: Kisumu City hosts a number of supermarkets which are mainly a source of food for middle- and high-income households. The supermarket sector is quite unstable, with some large players dominating

for a few years and then falling away to be replaced by new players in the same spaces. Some of these supermarkets offer online shopping and food items are delivered at the customers' doorstep using boda-bodas. This service bridges an important gap for busy urbanites in Kisumu. The supermarkets include Naivas, Quickmart, Kibuye Mart, Carrefour, Chandarana and Quick Mart. Middle class prefer supermarkets because of convenience and availability of a variety of food items under one roof. This group of people majorly buy dry goods in bulk once at the end of the month but top up whenever they run short of supplies. However, the frequency of purchase of fresh produce from these supermarkets is higher than dry goods because of storage issues at home. Fresh produce have short shelf lives and thus must be regularly supplied by supermarkets and bought by consumers. Besides government cereal silos, supermarkets are increasingly playing the traditional role of granaries for urban dwellers.

General market operations: In all markets, traders pay license fees to Kisumu County government. The fee differs in each market, and for each category of goods. For instance, in the fish market, traders pay a monthly fee of 600 Kenyan shilling per stall and in Jubilee market the monthly fee is 500 Kenyan shillings. In Kibuye market, traders can pay a monthly fee of KES 300 or a daily fee of KES10. In addition to this fee, all delivery vehicles pay a fee to the council for each delivery. The fee is determined according to the size of the truck or can be according to the quantity of produce being brought in. Therefore, the food market forms a good percentage of the county's revenue. In both Kibuye and Jubilee markets, there are middlemen who act as gatekeepers to the markets and play a large role in determining the price of food. The middlemen often connect the farmers to the market traders.

Creation of food

Kisumu City is termed as a consumer city. From plant to animal-based foods, Kisumu relies on its neighbours to meet the food demand in the city. Milk, onions, garlic, capsicum, broccoli, tomatoes, and lettuce come from Nandi and Kericho counties, while eggs and bananas are ferried in from as far as Uganda. With Lake Victoria's fish stocks dwindling, Tilapia from China has been imported and can be found in Kisumu's markets since March 2016. Smoked and dried fish, which are always available, come from Turkana County, further consigning Kisumu to a rather uncomfortable position of a consumer county despite having a freshwater lake, permanent rivers and ample farmlands.

Watermelons and red peppers sold at Jubilee market are grown under irrigation in Ahero. But even these foods are also brought in from Marigat in Baringo County. Slow-moving rice from Ahero Irrigation Scheme is also sold but it can hardly compete with varieties from Tanzania and Pakistan. Locally produced food only meets a small portion of the food demand in Kisumu County. This puts the city in a precarious situation concerning its food security should the supply chain be disrupted as has been in the past during post-election violence. The existing political will should be tapped into to drive the change desired in the City's food system.

Households access food in a variety of ways. A household may produce food when it has the resources to do so; thereby having direct access to food. The ability of farmers to produce food in adequate amounts and sufficient variety depends to a large extent on their access to resources - chiefly sufficient and fertile land, labour, tools, seeds, draught power, credit and other essential agricultural services - as well as the knowledge to grow crops and raise animals that provide beneficial nutritional outcomes and sustain the household's livelihood on a continuous basis. Few urban households are embracing urban farming to supplement food supply though this is not sufficient to make the city food secure and sustain the daily food requirements of urban households. A lot still needs to be done on sensitising the population on best urban farming technologies to boost food production.

Indeed, most urban and peri-urban households purchase food depending on need and affordability. Urban households sometimes receive food as gifts or transfers from rural relatives. These means of access are also prone to risk, especially if jobs are lost, transport costs increase, incomes fall, food prices rise, harvests in the rural areas are hampered or relatives move into town. The interest in whether and how people acquire food is closely associated with the concept of vulnerability as connected with the relative distribution and control over resources or access to employment.

There have been developments of various urban farming techniques to utilise the minimum space while maximising their output. The techniques include the use of vertical gardens and hanging garden techniques, which are compacted gardens piling upward and occupying the free upward space to grow mostly kales and onions. This kind of farming is championed in the informal settlements of Nyalenda, Obunga and Manyatta. However, there is also farming in the peri urban areas of Kajulu, Kano, Kanyakwar, and Kanyamedha that supply food to the urban households. Small scale farmers around the city produce sorghum, millet, sweet potatoes, and cassava, while rice is grown in Kano Plains. The vertical garden techniques have helped a number of urban farmers produce vegetables since its inception in 2015. However, for increased uptake, there is need for seamless coordination among the food producers within the city and also to encourage the upper- and middle-income households to embrace food production.

Food distribution

In Kisumu City, road transport is the primary mode of transportation. A significant number of roads especially in the residential areas and informal settlements are gravelled or earthed. Most foodstuffs



Figure 14: Motorcycle and tuk-tuk transport in Kisumu

(namely maize, millet, sorghum, cassava and vegetables are transported by road to the markets. Different modes of transport are used depending on the quantities of the foodstuff. Lorries and trucks are used to transport bulky items and large volumes while buses, public taxis and small vehicles are used for smaller quantities. Motorcycles (commonly referred to as boda-bodas) are also used to transport food especially within the city boundaries. The current increase in the cost of fuel makes food transportation to be quite expensive which translates to high food prices and reduced economic accessibility by poor families. This affects the livelihood of the vulnerable groups in society.

Railway infrastructure offers transport particularly for bulky goods. However, the infrastructure had depreciated due to poor maintenance especially after the collapse of the East African Community. However, after its rehabilitation in 2020, there is hope that it will be increasingly used to transport bulky food items from other Counties into the city. Air transport provides easy access to the region and external markets. This mode of transport is used mostly to transport high value exports and imports especially perishable food items. However, there are no cargo flights from Kisumu airport to regional and international destinations. As such, most of the food is flown into Nairobi and then transported by road to Kisumu.

Currently, lake transport is not used extensively to transport goods or people. This is largely due to the degraded infrastructure. However, the government recently rehabilitated a large ship known as *MV Uhuru I* which has a capacity of 1260 tons and recommissioned Kisumu port for transportation of goods and food items from Kisumu City to other countries in East Africa. The Kenyan built ship known as *MV Uhuru II* with capacity of 18000 tons which was launched this month (October 2023) will further improve the status of transportation of goods and food items in and out of Kisumu City via Lake Victoria.



Figure 15: Water bus and boat engine transporting fish from Mbita to Kisumu City



Figure 16: Hand carts (Mkokoteni) transporting water for use in food kiosks in Kisumu.

Most urban households who practice urban farming produce foods to supplement their food requirements, but the produce is hardly enough. This calls for distribution of foods from the peri urban farmers and other Countries. The distribution often takes the form the third level strategies depending on the nature of the product. However, most foods are perishable hence the need for strategies to shorten the levels and have a warehouse for storage of these highly perishable foods to prevent losses and motivate food producers to upscale their production.

Some of the food value chain can be presented as follows.

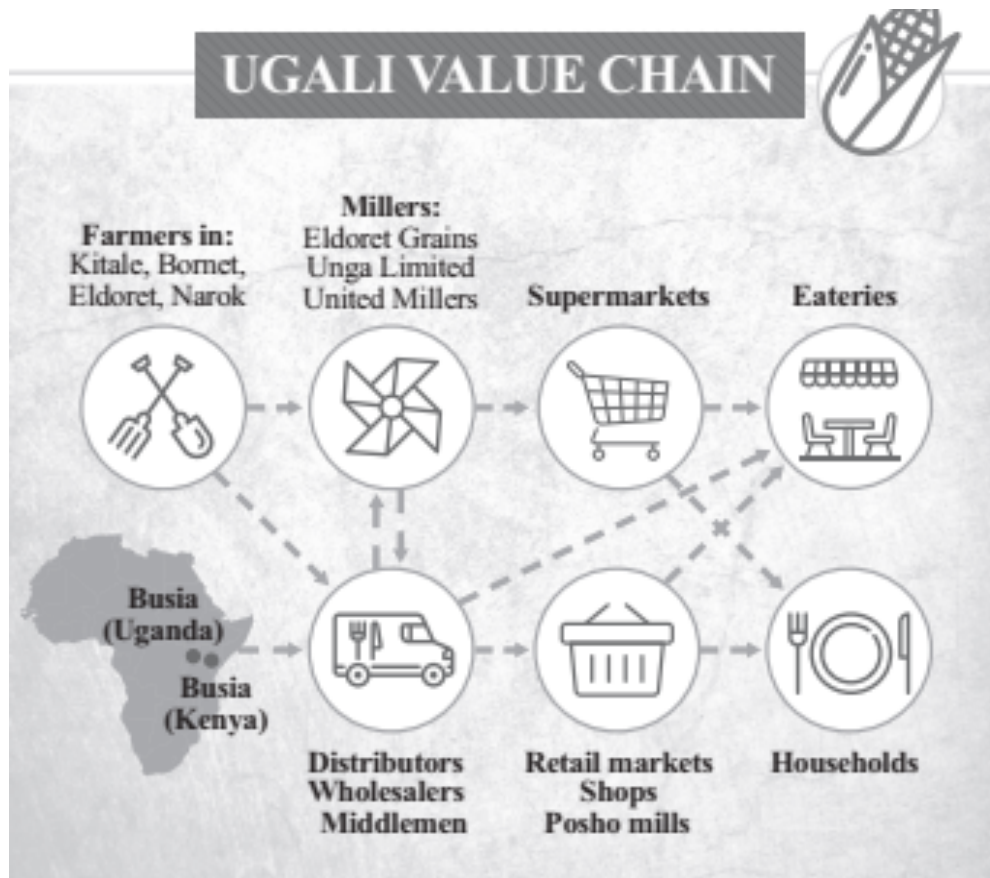


Figure 17: Ugali Value chain.

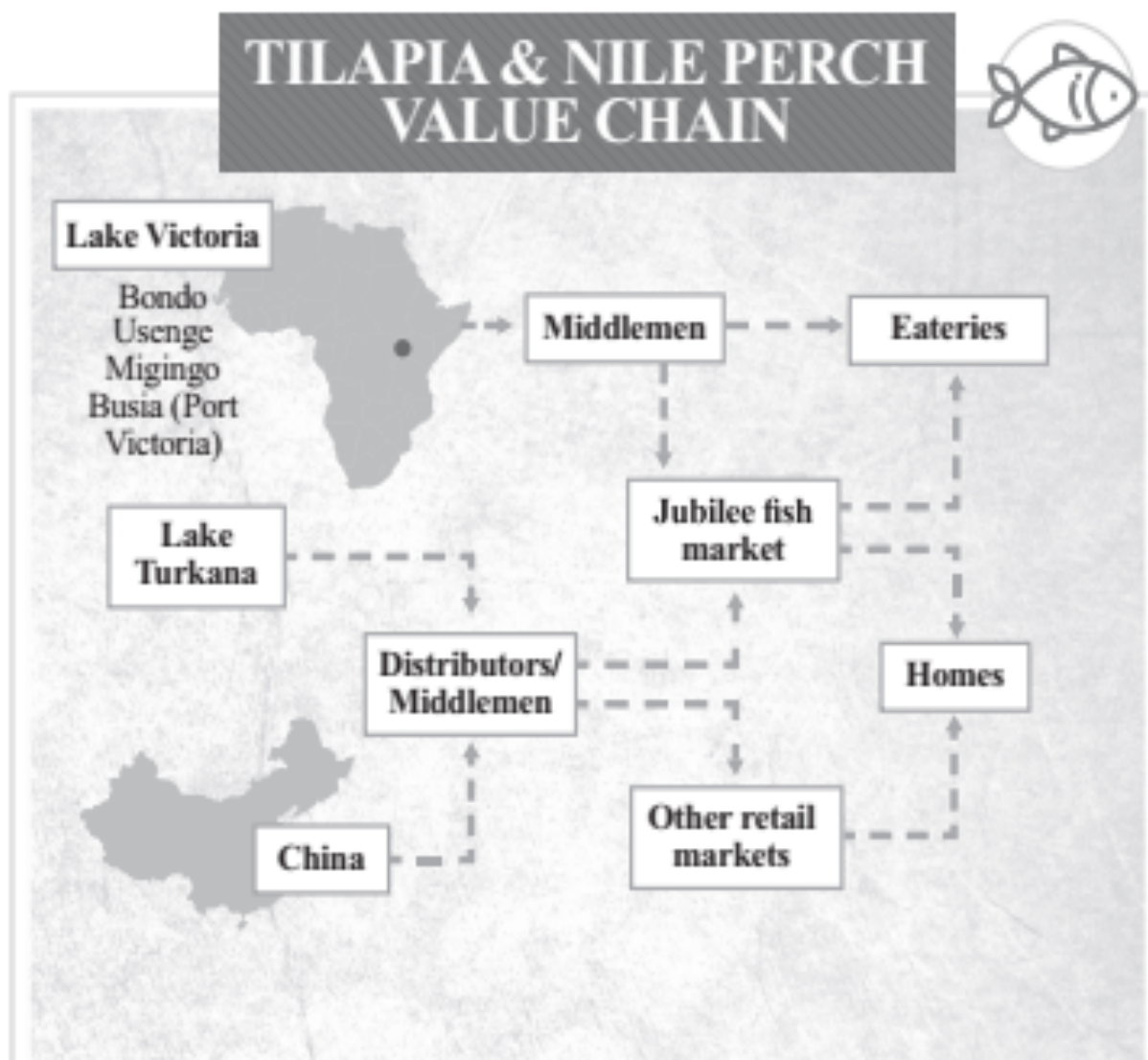


Figure 18: Fish Value chain

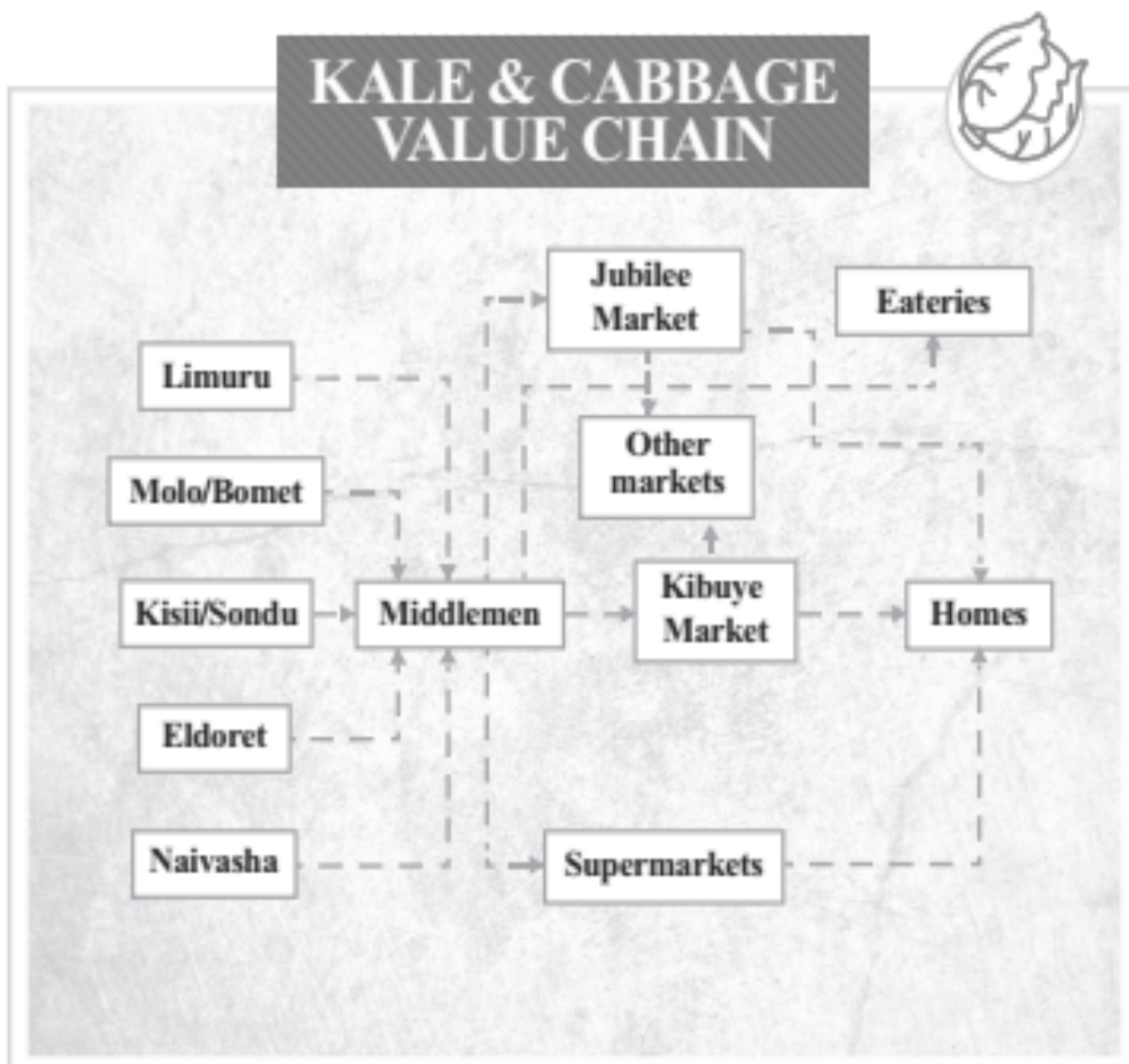


Figure 19: Vegetables value chain.

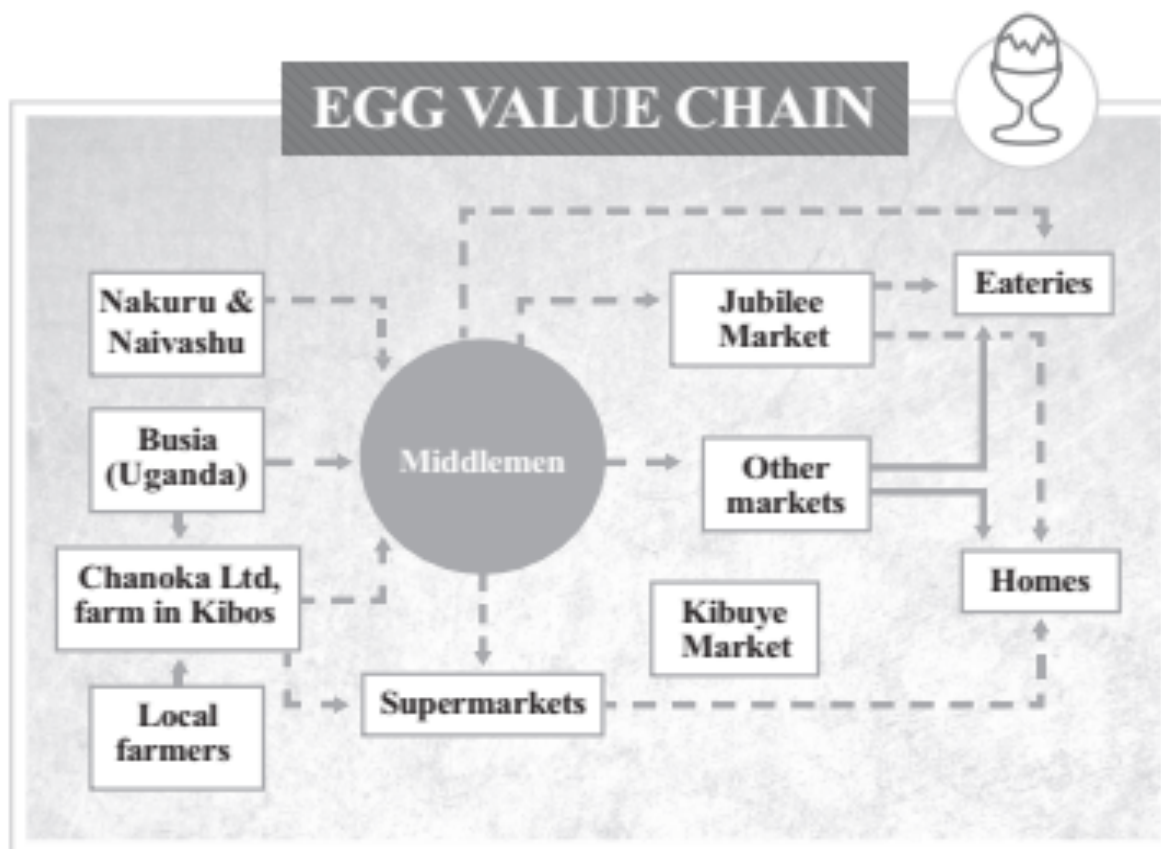


Figure 20: Eggs and poultry value chain.

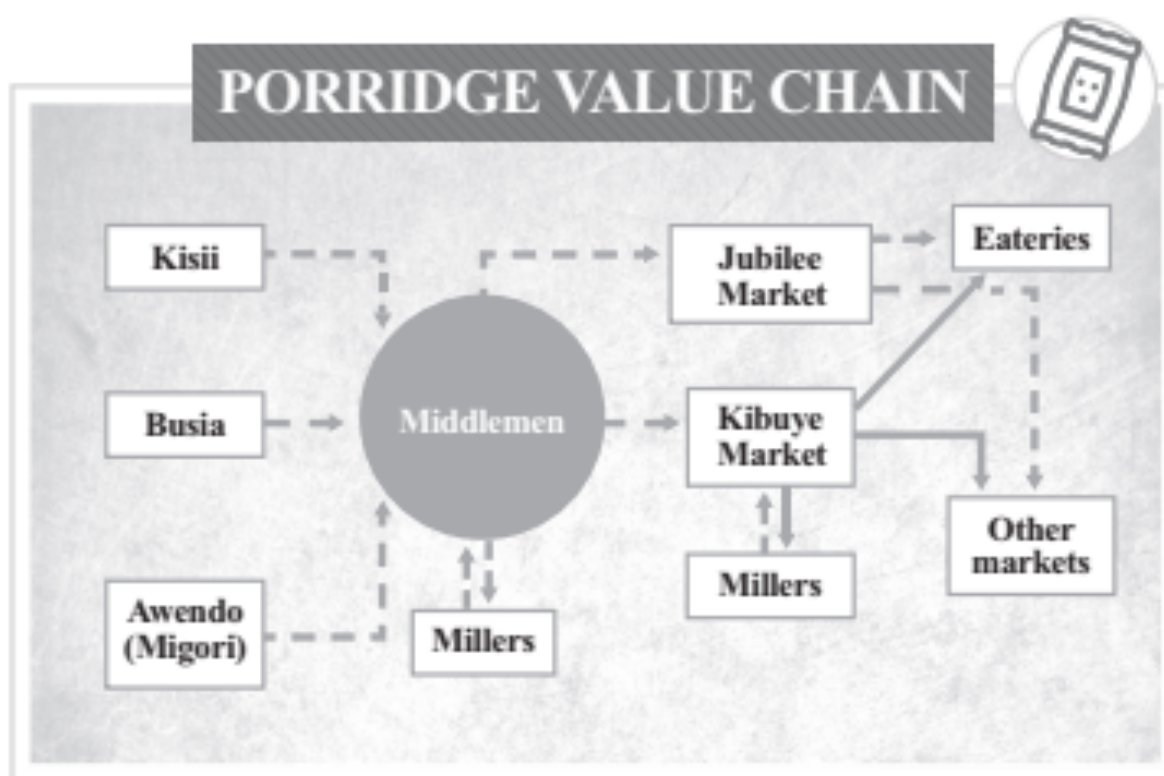


Figure 21:Maize value chain

Viability of agrifood economy

Viability of the agrifood economy in Kenya

Agrifood systems encompass the entire range of actors, and their interlinked value-adding activities, engaged in the primary production of food and non-food agricultural products, as well as in storage, aggregation, post-harvest handling, transportation, processing, distribution, marketing, disposal and consumption of all food products including those of non-agricultural origin (FAO, 2021). It is imperative to discuss how each actor in the food system benefits and the value they attach to the food system economy. In Kenya, there are both informal and formal food markets. This begs the question, is the food business viable? To answer this question, there is a need to understand activities or approaches that are making the food system economy viable. It is also imperative to understand the players in the food value chain.

Regulatory and political framework

Food businesses are governed by many food laws and sometimes this doesn't stand out as an enabling environment for trading in Kenya. Businesses are required to work with multiple regulators to ensure that they are compliant to food safety standards. The number of licenses required to run a food business are many and all of them cost the traders. This in the end discourages food business start-ups as the capital for starting this business is exaggerated.

Most of the time, the stakeholders are not taken through training, nor are they involved in the formulation of these regulations. Many a times, there is a lack of sensitization on the requirements of this kind of business. For sustainability of food business, it is imperative to hold discussions/training on standards and compliance to informal food traders as the majority of the urban population get their daily food supply from the informal food vendors. Hence, it is important to train this group of actors on the importance of food safety and adhering to these regulations.

Kenya has a fragmented food control system. This means there are various food control agencies charged with specific areas of control in the food industry. Sometimes the agencies are totally independent, or work in collaboration with each other. The existence of several regulatory bodies in the country on food business drives most food actors into the informal food market making it the largest sector in the country. Such factors include food vendors, food kiosks, "street eating" begs questions on food safety. With this informality, it is difficult for this business to expand because they cannot access credit facilities from established loaning facilities and at the same time, the country also misses on their tax targets because of lack of documentation on business turn over.

Stakeholders' analysis

It is important to appreciate that there are several actors in the food system economy from the farm to fork. These stakeholders can make the business viable. It is important to understand the players in each stage of the food business. Food economy starts with food production, this includes farmers both rural, peri urban and urban farmers, agrovets, an irrigation system and harvesters. A person will be motivated to engage in such ventures if the returns on investments are higher than available alternatives. In Kenya, production costs are quite high because of high costs of inputs and labour costs. The government has tried to offer subsidies on fertilizers and farm implements but even this is very little effort to cushion farmers from the losses and motivate more players to venture into the food business. It is important to provide evidence-based data on how to make farming a viable business in order to guide in policy formulation.

The second stage and most crucial is food storage. This stage is crucial because poor handling of food may lead to food contamination and even fail food safety tests from KEBS and other regulatory bodies in the formal food businesses. However, informal food systems are not regulated hence are less concerned about food safety. Many businesses are formed at this stage but again start-up costs are exorbitant which discourages food players from venturing into this business. Therefore, data is needed on the indigenous knowledge on food storage to come up with community driven storage solutions. There are food losses and food waste because of lack of storage (Agoko, P. K., Awuor, F.O. and Oloko, M.O., 2020).

The third stage is the food distribution stage where food reaches the consumers, the distribution step consists of transportation and storage of product. During this process, various modes of transport are used to supply food to various markets which depend on the nature of the food items and the costs of transportation. This is the stage that has the largest players in the food industry and employs thousands of youths and women. Distribution directly affects food prices and with the increase in cost of fuel, food becomes unaffordable for most urban populations and at the same time lowers the profit margin for traders. The entry of brokers and middlemen in the food chain complicates the business further and therefore, there is need to provide data on various distribution strategies in order to enlighten actors in the food system on how to remain afloat in the food system economy.

The next stage is the retailing stage. At this stage, food is sold to the consumers in small portions. This is the stage with the highest informal traders in the country. This includes food vendors, food kiosks, roadside sellers, estate vendors etc. Most of the time, consumers tend to buy from informal traders as opposed to established chain stores or supermarkets. One of the reasons for this shift is the notion that the supermarkets are more expensive (affordability) than the informal traders. There is a belief that the vendors sell more fresh produce than the supermarkets. Accessibility is another reason that makes informal traders preferred. A transect in various towns in Kenya provide evidence on the popularity of informal food traders, this justifies the fact that the agrifood system economy is a viable business venture though there is need to develop policies that makes formality of food business seamless.

The consumption stage, also known as the fork step, is when food products are prepared or eaten at home or in eateries. At this stage, the business here could include the food waste actors that collect the food waste and recycle to be a resource in another business. The food waste disposal and waste management is a new venture in Kenya which is gaining popularity among urban population though there is scanty data on the total food waste produced per household to make the business attractive to many players. Other businesses could be in transportation because most formal traders have door to door food deliveries, for example, use of Glovo, Jumuia, Kilimall as well as use of bodaboda to deliver food to the customer. Many urban households live from “hand to mouth” meaning that food should be made accessible and affordable, hence, most urban households prefer buying food in the neighbourhood to enjoy services like buying on credit, price bargaining and possibility of buying in small portions.

Other stakeholders include government and research institutions. These bodies will engage in food discourse if such talk helps them achieve their goals and mandate as an institution. For the government, registered or formal food business helps in boosting a country's GDP and to meet other obligations, hence, their involvement in the food economy not only makes the business viable but also makes the business environment favourable for many actors. The research institutions also are engaged in this sector because of the outreach programs which is a mandate of the universities and other research institutions. Their involvement in the food economy provides data which can be used for policy formulation and decision making in the food industry.

Business environment

The food business environment is complex. There is no denying that the food industry is one of the strongest in the world since everyone needs to eat! Indeed, there are some interesting dynamics at play in this space, like rising labour costs, transport cost and start-up cost which make it unclear just how profitable food businesses will continue to be. This requires food entrepreneurs to navigate through these murky waters to remain afloat in the business.

A look at the effect of the political environment on the food industry shows that Kenyan Governments have expansive regulatory frameworks for every aspect of the food industry. This ensures that consumers are not exposed to poor quality nutrition, but the complexities of regulation certainly take away the margins of the food business. This requires a paradigm shift in policies on the food industry to help the entrepreneurs leverage on these vast opportunities in the food industry.

A closer look at the Kenyan economic environment, it is evident that a wider population is becoming unemployed with unemployment rate standing at 5.50% (Trading Economics report, 2023) and majority of the employed population are in the informal sector earning less than a dollar a day. This is an indication that the vast urban population is living below the poverty line but this population must also eat, according to Economic Review (2022). This leads to an increase in informal traders to serve this population. With this trend expected to worsen, it is imperative to delve deep into how to curb food insecurity and to rethink or reengineer the urban food system.

The technological environment has not spared the food industry and it is important to train the entrepreneurs to leverage the technological advancement to be able to reach the wider population. There are new and contemporary urban farming techniques that can be exploited to realize food security and improve the urban food system. The techniques like Backyard Gardens, Tactical Gardens, Street landscaping, Forest gardening, Greenhouses, Rooftop gardens, green walls and vertical farms. According to the Kenya Agribusiness and Agroindustry Alliance (2022) report, urban farming is on the rise, with Nairobi alone contributing 50,000 bags of maize and 15,000 bags of beans annually and up to a quarter million chickens, about 45,000 goats and sheep, and 42 million litres of milk. It is important to provide data for other cities to understand the contribution of urban agriculture to the food system.

Availability of data on food business

Data on urban food systems or general viability of the food industry in Kenya is scanty. With this trend, it is difficult to formulate policies to govern this sector. Lack of data also makes it impossible for upcoming entrepreneurs to make decisions to venture into the food business. Government institutions have the mandate to provide data and information for every sector, however, because of resource limitations; this is done after every five years during census which may not be sufficient for decision making. This is the reason why the universities are tasked with the responsibility to provide accurate and reliable data to the public and to supplement government effort. Universities, for example, are knowledge hubs where the public and upcoming entrepreneurs should get all the information about any business venture. This requires continuous elaborate research, collaborations, and partnership with various organisations. In most cases, the focus is on the formal businesses as this is where the government gets revenue. However, with the current economic distress, it is urgent that data on urban food systems and especially the informal sector should be made available to address the issue of food security.

Analysis of Agrifood system actors

To understand the viability of the agrifood system, it is important to analyse the food actors and their contribution to the viability of the system. Food system research requires an understanding of system actors and activities. It is worth noting that these actors can be identified in the entire food value chain and their roles in ensuring sustainability of the food system economy. These actors could include but not limited to the government, farmers, agents, distributors, universities, NGOs, consumers etc. Data on their roles is scanty and lack of data implies that there is no basis for decision regarding agrifood system economy. The role of each actor needs to be well defined such that there is seamless coordination between them.

Viability of the Agrifood economy in Kisumu

Agrifood economy in Kisumu City is vast and dynamic as Kisumu City is the third largest city in Kenya, with a population of over 500,000 residents, experiencing unique food security challenges. The city depends on

distant supply sources of food, despite being surrounded by rich agricultural lands supporting large-scale sugar and rice production. As indicated in the city report (2022) Kisumu City has 3 major informal settlements with the majority of households in the informal settlements living below the poverty in deprived conditions. In most cases access to quality food is a dream which rarely comes true and therefore promotion of agrifood business can alleviate the current situation.

Regulatory and political framework

The Agrifood industry is the most regulated business to ensure safety of food consumed. In Kisumu and the country in general, there are several bodies tasked to ensure that safety standards are met in the food system. The functions of these agencies include sensitization and implementation of codes of hygiene and agricultural practices by stakeholders throughout the food chain. Nonetheless, these regulations are only focusing on the formal food system which discourages the informal food traders from formalizing their food businesses. However, with easy and transparent regulations, agrifood systems become a sector that can transform livelihood for urban households.

The informal sector in the food industry comprises small and medium size enterprises (SME) and food vendors, which supply at least 80% of the food products to domestic markets, including meat and milk, under rudimentary hygiene controls. With so many regulations, it becomes difficult to join the registered food business, hence, the rise of informal food traders in the city. It is important to provide data on the factors that promote informal food business establishments such that they are incorporated in the mainstream business for ease of monitoring.

Business environment

Kisumu City has over 60% of the urban population living in informal settlements. This implies that the population does not have steady income flow and therefore cannot make their daily food purchase from the supermarkets or retail stores and wholly depends on the informal sector. This makes the informal sector not only be an economic activity, but also an essential food access point for most urban residents. While supermarkets represent a key player in the food system, they are generally accessed less frequently, and are often used mostly for staples, not fresh goods.

Food is generally available in the city through trade, and the food system can supply adequate food for the city. However, many households are challenged by poverty, and therefore cannot afford to purchase food in the market. When food is accessed, the primary source of food for most residents of Kisumu is the so-called informal food sector, including municipal market traders, street vendors, house shops and shore-side fish vendors because of accessibility, convenience, and availability of credit facility (Opiyo et al. 2018). This population provides a ready market for food entrepreneurs in the food value chain. It is important to provide data on the distribution and food requirements of informal settlement.

In the political arena, for the last two political dispensations, there has been political good will and the County government has developed a 50-year plan for greening Kisumu City. The plan has been enacted by the county assembly and proposed demarcation of specific areas for aggressive fruit and agroforestry tree planting that will provide fruits, fuel, flowers, and other products to city dwellers. This will only provide business opportunities in the food industry as the food entrepreneurs are involved in this initiative. It is important to carry out rigorous awareness campaigns on such initiatives to enable entrepreneurs, that is, women and youth to be actively involved. This will be leveraged if the regulatory environment is made simple for the new entrants.

The Kisumu County government has come up with various urban agriculture innovations that make it possible to do urban farming within the city. The green home technologies such as moist gardens, shade net, micro gardens, keyhole garden, hanging gardens, multi storey garden and greenhouses are progressively emerging as sources of nutrition and food security in the urban and peri-urban settlements. However, it is not clear how the food system ideas are nurtured and incubated for commercialization to bring meaningful income to the entrepreneurs. Information about uptake of urban farming and its

effectiveness in boosting food security in Kisumu City is scanty and needs more research.

There is also a need to establish strong collaborations among farmers and the other actors in the food system which will enable them to have ready markets for the products and hence encourage them to increase production scale.



Figure 22: Urban agriculture in Kisumu City in Kauothe area of Nyalenda informal settlements

Social environment favours the agrifood economy as the unemployment rate in the city increases and the urban population continues to swell, there is pressure on the city to provide food for its occupants hence keeping in mind that “everybody must eat” this brings about business opportunities for the existing and upcoming entrepreneurs. However, there seems to be a lack of data on urban population as the data available span over six years ago during the last census in 2019. The urban population has developed coping strategies of supplementing their food requirements. This includes doing poultry farming on a small scale for both eggs and meat, rabbits, dairy goats, pigs, fish and dairy cows. A walk in the city, grazing cows are spotted along the roads and in the estates. These small, fragmented initiatives need to be upscaled such that there is joined and combined effort to provide business opportunities for the youth and women in the food system.

Availability of data on food business

The value of the academia in the multi-stakeholder working group is to influence policy through research and knowledge co-production. Knowledge co-production is a unique form of research where knowledge production moves beyond the academic register – it brings together different stakeholders, such as government officials, civil society and researchers from different disciplines and sectors, to collaboratively undertake research on real problems and jointly produce knowledge that is both useful for policy and practice and which makes a valuable contribution to academic knowledge. Other than the universities, other research institutions should be brought on board to co-develop and disseminate simple technologies and models for sustainability of agrifood systems. This collaboration provides data which helps in policy formulation and decision making. Currently, there are fragmented efforts to provide data on the food system, but this is not sufficient hence the urgent need to unify efforts and research on viability of the agrifood system. Kisumu County government should have working relationships with research institutions and the universities like JOOUST to fast-track this process. It is important to get data on the businesses along the

food value chain such that the entrepreneurs can make informed decisions backed by data on which stage of the value chain they will establish their food businesses.

Analysis of Agrifood system actors and stakeholders

Food retail is a key component of the informal sector, which is an important source of livelihood for many residents of Kisumu. Kisumu's urban economy hinges on the vibrancy of the informal sector. The food system has enormous potential for employment creation in Kisumu, given the primacy of food in household expenses for all classes of the population. Informal food trade provides employment to both traders and their employees. The informal food system not only improves physical access to food, but also creates opportunities for income generation, which is critical in a city where access to food depends on cash income. The informal food sector in Kisumu provides an opportunity for low-skilled workers to make an income and enhance their food security situation.

County government plays a key role in agrifood business and to some extent ensures viability of the business. The government develops strategies to enhance food accessibility. For example, in 2023, Kisumu launched the 2023-2027 food system strategy which was coming from a background where 71.3% of the county residents are food insecure resulting from lack of diversification of food production. With this strategy in place, there is an enabling environment for the food business making it a viable venture. However, strategic implementation, monitoring and control is urgently needed in order to realize the full potential of this sector.

A closer look at major markets like Kibuye reveals that food agents set or determine the price at which food is sold and are often given commission on the total sales. This practice, more often than not, pushes the prices higher. Therefore, it is important to determine pricing structure for agrifood that makes it affordable to the wider urban population. Stakeholders and actors also need to be linked in a forum where each stakeholder understands how his business benefits from another stakeholder. Through the coordination and bringing together of all the relevant stakeholders, there will be well coordinated working groups which will be able to assist in connecting players and building relationships along the food value chain from input acquisition, production, post-harvest handling, distribution, and consumption, to management and disposal, enabling transition from a linear to a circular food economy.

Challenges faced by Agrifood system economy

Challenges faced by Agrifood economy in Kenya

Over the last several years, the Kenyan Agrifood systems economy has faced serious challenges that have threatened food security. Among them are climate change; poor infrastructure; poverty and inequality; use of outdated technology; diseases and pests; soil fertility and low/lack of nutrients; high cost of farm inputs among others.

Climate change and environmental degradation: Recurrent flooding and droughts associated with changing climatic and weather patterns have negative effects on the agrifood economy in Kenya. Flooding damages productive farmlands and agricultural infrastructure. For example, after prolonged droughts in most parts of Kenya from 2020 to 2022, UNICEF reported that 4.4 million people were acutely food insecure due to drought and 970,214 children 0-59 months required treatment for malnutrition (including 242,567 severely wasted) by February 2023, up from 3.5 million and 884,000 respectively in July 2022 (UNICEF, 2023). The long rains of 2023 caused flooding in most parts of the country. According to Relief web International, heavy rains caused floods and severe weather-related incidents resulted in casualties and widespread damage in March 2023. At least 12 people died, thousands of people were displaced, and several houses damaged. ([ECHO, 30 Mar 2023](#)). UNICEF Kenya Humanitarian Situation Report for April

2023 indicated that heavy rains resulted in flash floods across 32 counties, displacing 15,021 households (UNICEF, 2023).

Pests and diseases: These remain a major barrier to crop and livestock production in Kenya. Climate change has led to the emergence of new pests and diseases, complicating farming activities. The Agrochemicals Association of Kenya recently expressed concern that the emergence of new diseases and invasive pests are destroying agricultural crops and forest cover, hence threatening food security and the environment ([The Star, 11th December, 2022](#)).

Political Conflicts: Internationally, politically instigated wars such as the Ukraine and Russia war have intensely caused increased logistical costs for agricultural inputs and exports. Kenya previously imported mineral fertilizers from Ukraine and wheat from Russia. The war has had a direct impact on the prices of wheat products (Central Bank of Kenya Survey, 2023). Locally, demonstrations called by the opposition to protest about the cost of living and electoral injustice in 2023 often turned violent thereby disrupting agrifood economic activities in most parts of Kenya.

Economic challenges: Increasing cost of farm inputs such as fertilisers, herbicides, fuel, seeds, and pesticides lead to inaccessibility hence decline in food production. (Central Bank of Kenya Survey, 2023).

Inadequate / poor infrastructure: Inadequate and poor state of roads and markets in most rural and urban areas; energy and water sources are a limitation to food production, storage, processing and distribution. Many rural areas lack proper roads, storage facilities, and refrigeration systems, which means that farmers are forced to sell their crops at low prices, leading to reduced incomes and less investment in agriculture.

Poverty and inequality: Food production, distribution, and consumption is negatively affected by poverty and inequality. The number of the urban poor who cannot afford adequate and nutritious food is growing. Poorer households in Kenya spend a larger proportion of their income on food as compared to wealthier households.

Use of outdated technology: Farming in Kenya is mainly subsistence, characterized by rudimentary technologies. Further, high costs of transition to modern methods of food production, processing, storage and distribution is prohibitive to most small-scale farmers.

Urbanization: It is projected that by 2030, urban population in developing countries will double while areas covered by cities will triple. In Kenya, the urban population increased from about 5 million people in 1999 to 12 million in 2009, and over 14 million in 2019. This increase in population has caused the reduction of the peri-urban agricultural land and increasing demand for food in urban areas.

Population migration: The youthful population in Kenya presents an opportunity to increase food production. However, the country continues to experience migration of young people from the rural areas where agricultural production takes place to urban areas leaving behind the elderly and children. Majority (62 percent) of the urban population in Kenya consists of an economically active population (15-64 yrs) (Bremner, 2012). This threatens availability of labour in the rural agricultural sector and consequent reduction in food production.

Land tenure systems: According to Kenya Agriculture and Livestock Research Organisation (KALRO), the increasing population of the country, and the land tenure system forces land subdivision into smaller parcels. Smaller parcels produce less and therefore have to be exploited with less downtime between crops. Soil nutrients are, thus, not given the chance to be restored leading to poor yields, weak plants and more fertilizer expenses (KALRO, n.d.).

Challenges faced by Agrifood economy in Kisumu City

There are challenges that affect the country and eventually trickle down to affect various cities within Kenya. Kisumu is affected by some of the challenges discussed above namely: climate change; inadequate

and poor infrastructure; poverty and inequality; outdated technology, pests and diseases, and land tenure systems.

Changing climatic and weather patterns: The frequency and severity of droughts and floods associated with climate change affect the agrifood economy of Kisumu. Crop failures in the peri-urban areas, and destruction of crops due to flooding are common in Kisumu County. For example, the National Irrigation Board (NIB) estimated that about 1,500 acres of rice was destroyed by floods in Ahero Irrigation Scheme within Kisumu County in 2020 (People Daily, April 28th, 2020). In the same year, the Kenya News Agency reported that rice worth KES.800 million at Ahero and West Kano Irrigation Schemes was destroyed by floods (Kenya News Agency, April 25, 2020).

Inadequate / poor infrastructure: Despite Kisumu City being at the shores of Lake Victoria, inadequate infrastructure affects availability of safe water for household, commercial and agricultural purposes. The city water supply infrastructure adequately serves the core city with 83% of the city covered (KIWASCO *Annual Report 2021*). However, the informal settlements and peri-urban areas still have inadequate access to water. In 2020, 86% of SMEs and 60% of the households were connected to the national electricity grid. However, intermittent power interruptions are still a major challenge, affecting the agri food economy. The transport system too is a challenge due to the poor state of the road network linking the food production areas to the city. Food markets also lack refrigeration and adequate sanitary facilities, resulting in food losses and contamination.

Environmental Pollution: Factories and agricultural activities in the entire catchment area of Lake Victoria emit pollutants, which affect the quality of water in Lake Victoria. The fisheries sector is severely hampered by water hyacinth, an invasive weed, associated with eutrophication of the lake. The Kenya Marine and Fisheries Research Institute attributed the mass death of fish experienced in the lake in 2022 to heavy pollutants and discharge of raw sewage into the lake (Ochieng, 2022).

Land tenure and management: Ancestral land issues and unclear boundary demarcations have frequently caused unnecessary disputes over arable land in the rural areas of Kisumu. Common land use practices like cattle herding, has often led to crop damages as boundaries are not properly noted. Land tenure issues also discourage investments in agriculture as people shy away from investing in assets with unclear ownership rights. Population growth and traditional cultural beliefs lead to subdivision of land into smaller pieces, negatively affecting the agrifood economy.

Food loss and food waste: Global estimates indicate that 54% of the world's food losses and waste occurs 'upstream' during production, post-harvest handling and storage (Bellu, 2018). Accurate data is not available on quantities of food lost 'upstream' in Kisumu. But there is evidence that there are food losses at production stage in the farmlands neighbouring the city often caused by flooding, pests and diseases, and contamination (Opiyo et al., 2021). The hot and humid climate of Kisumu makes fresh products spoil unless kept in suitable preservation facilities. For example, inadequate handling facilities and delay between catch and distribution contribute towards fish spoilage (Opiyo et al., 2021). Naturally occurring aflatoxin in maize is a long-standing problem in Kenya, leading to losses if maize is not properly dried and is exposed to humid conditions. At the retail stage, a study done in 2018 confirmed that municipal waste from Kibuye market was mainly spoiled fruits and vegetables, with an average of 1,214 kg of vegetables, 477kg of fruits, and 157 kg of maize collected from the market to the dumpsite daily, excluding some food waste that was recovered to feed animals (Agoko et al., 2020).

Inadequate financing: Most of the key players in the agrifood systems economy decries the lack of adequate financing for their business ventures. It is difficult to be sufficiently productive without enough resources to achieve this. The city falls short in proper budgetary allocations to support the agrifood systems in order to amply meet the needs of the rapidly growing population. Additionally, most financing institutions are yet to adopt the culture of incorporating major sustainable development plans that epitomize a stable agrifood systems economic set up.

Marketing and distribution: In a world that is moving aggressively towards adopting digitization for most ventures, it would be important to note that Kisumu City does not have very robust platforms that would

enable this growth. The majority of players still rely on the traditional physical markets. More still needs to be done to embrace technology in the agrifood economy.

Governance Issues: Policies that properly qualify the management of agrifood economic systems are greatly deficient in the city setting. This leads to poor guidelines that cannot strongly promote the sustenance of Agrifood systems economy within the city. Relevant stakeholders lack a strong forum that would unify them towards development of the agrifood economy of the city.

Trends and shifts in agrifood systems economy

According to FAO the agricultural sector is the backbone of the Kenyan economy, contributing approximately 33 percent of Kenya's Gross Domestic Product (GDP). The sector also employs more than 40 percent of the total population and 70 percent of the rural population (FAO, 2017). However, agricultural productivity has stagnated in recent years, with small scale enterprises facing challenges growing their businesses.

Trends and shifts in agrifood systems economy in Kenya

Food consumed in both rural and urban areas in Kenya is mainly purchased: The Kenya Poverty Report 2021 indicated that nationally, the main source of food consumed was from purchases, accounting for 80.2 per cent of total food consumed. Similarly, a significant share (93.5%) of food consumption in the urban areas was from purchases, while rural areas reported a higher share (20.0%) of food consumption from own production. On the other hand, Nairobi City County reported the lowest share (0.5%) of consumption from own production followed by Mombasa (1.4%). In Kisumu County, 83.6% of total food consumed was purchased and 13.1% was from own production. The same report indicates that households in the rural areas spend more than half of their income (63.0%) on food while households in urban areas spend less than half of their income (42.2%) on food expenditures. (KNBS, 2023).

Urbanization and ageing: More people now live in urban areas than in rural areas, and this is projected to increase as population grows. Urbanization has been accompanied by a transition in dietary patterns and has had great impacts on food systems. As a whole, the world population is growing older. Ageing is now also accelerating in low-income countries including Kenya, where the process tends to start earlier and is becoming more pronounced in rural areas. Urbanization and ageing will have important repercussions on the agricultural labour force and the socio-economic fabric of rural communities. (FAO, 2017).

Trans-boundary pests and diseases: Food security is threatened by an alarming increase in the number of outbreaks of trans-boundary pests and diseases of plants and animals. These pests and diseases jeopardize food security and have broad economic, social and environmental impacts. A worrying trend is the upsurge in zoonotic diseases, such as avian influenza and swine flu, which can also have serious repercussions on human health. Climate change is, in part, responsible for food chain emergencies arising from trans-boundary threats. However, while there is clear evidence that climate change is altering the distribution of animal and plant pests and diseases, the full effects are difficult to predict. (FAO, 2017).

Structural change and employment: The Kenya Economic Survey 2022 notes that there is increase in the mobility of labour across economic sectors. Where structural changes in production brought about improvements in income, a modification in consumption patterns occurred as well. This shift has been reflected in a number of ways, including dietary choices which have increased demand in dairy and meat products. (FAO, 2017).

Trends and shifts in agrifood systems economy in Kisumu

The agrifood system economy of Kisumu is rapidly shifting with new production, distribution, and retail methods and practices emerging. Though urban agriculture is not widespread in the city, new trends are emerging, particularly in the informal settlements where households use hanging gardens and other innovative practices to be able to grow food to supplement whatever they can buy from the market. The food grown by such households are mainly green leafy vegetables, contributing to healthy diets.

The agrifood economy of Kisumu City is not only linked with rural areas through trade, but also through 'dual residency' of both urban and rural areas. Many households living in Kisumu have a rural home elsewhere, apart from the original inhabitants in the peri urban areas. Those households with rural homes produce some food in their rural homes, which they bring into the city whenever they travel to their rural homes, or sometimes the food is sent by their relatives. The culture of the predominant Luo ethnic group encourages this 'dual residency'.

The Kisumu population is experiencing a rapid transition towards ready to eat foods, sold by both formal and informal traders. Apart from processed and packaged foods, ready to eat cooked foods are growing in popularity, either because people do not have time to cook, or they lack the culinary skills. Also, the high cost of energy and inadequate kitchen facilities contribute to the popularity of ready to eat foods. Cooked foods are now a permanent feature of most major supermarkets and are also widely sold by roadside traders in informal settlements and transport confluences in Kisumu.

The food economy is dominated by informality. Due to the high rates of unemployment, many residents are starting agrifood enterprises to earn a living. The informal sector is dominated by women, perhaps due to their traditional role of food provisioning. However, men are also joining informal food trade (Opiyo et al., 2018). The ease with which ready to eat foods are available away from home has contributed to more people eating away from home.

Resource recovery and conservation: Many players are now coming up to address issues of food loss and waste. Some community groups and individuals have started enterprises involved in waste recovery for animal feeds and other products. Others are involved in the promotion of clean energy and technologies for conservation of land, water and energy in the agrifood system.

Key Agrifood systems actors and their roles

Kisumu has many actors involved in the city's agrifood system. The stakeholders and their roles is presented in Table 6.

Table 6 Key food system stakeholders and their roles

Key Stakeholders	Roles/Responsibilities
Kisumu County (Department of Agriculture, Livestock and Fisheries)	They are in charge of promoting all crop, livestock and fisheries production and marketing activities taking place within the county and city.
Kenya Association of Manufacturers (KAM)	It is a representative body of manufacturing and value-add industries in Kenya. It is a dynamic, vibrant, credible Association that unites industrialists and offers a common voice for businesses.
Kenya Industrial Research and Development Institute (KIRDI)	KIRDI undertakes research, development and innovation in industrial and allied technologies. It also

Key Stakeholders	Roles/Responsibilities
	disseminates research findings to support industrial development.
Food and Agriculture Organization of the United Nations (FAO)	FAO's works with the Government of Kenya (GoK) to help build a food-secure country, free of hunger and malnutrition, where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner.
German International Development Agency (GIZ)	GIZ supports the County Government of Kisumu in promoting agricultural practices that promote employment and provide food security.
Food for Education	Provides subsidized nutritious meals to primary school children improve nutrition education outcomes.
National Environmental Management Authority (NEMA)	Ensures sustainable management of the environment through exercising general supervision and coordination over matters relating to the environment.
Practical Action	It works to ensure that smallholder farmers can earn a decent living while working in harmony with the environment as well as working towards parents' ability to cook nutritious family meals without risking their health.
WISE	Supporting women and young people build sustainable enterprises in the Lake region
JOUST and Maseno universities	These provide University education and research and community outreach for sustainable development in food systems.
Beach Management Units (BMU)	Beach Management Units (BMUs) in Kenya were established to ensure sustainable utilization and management of the fishery resources.
City Market Management	Organized by county governments to coordinate market activities in the food value chains
Market Management Committees	Organized by market traders to coordinate the day to day operations within the markets
Formal Traders (Millers, Twigas, Mshami, etc)	These are registered players in the food value chain
Informal Traders (Farmers, food vendors, food Hawkers, etc)	These are unregistered players in the food value chain
Water Service providers (Kiwasco, Gulf Nyanas)	They provide clean potable water and to collect, treat, and dispose of sewerage (wastewater) within the jurisdiction of Kisumu City.

Alternative and emergent agrifood systems players

Food processing players: While urban population growth has increased the demand for agricultural products that stimulates farming activities, urbanization requires food to be easily stored and transported. Thus, food processors have become key players in the agrifood systems.

Motor-cycle taxis: To meet the logistical demands of supply and distribution of the diversified retail channels, transportation and logistics service providers are now key players in the agrifood system economy. In Kisumu, motorcycle taxis are emerging as key stakeholders, providing transport for farm produce, packaged foods, and even ready to eat food deliveries in the city.

Agricultural venture capitalists: Agricultural mechanization is key for large scale production to satisfy growing demand for food worldwide. Due to the high cost of agricultural mechanization, venture capitalists

have become new players in the agrifood systems, providing the much-needed capital required for investment in the agrifood economy.

Digital Service Providers: Digitization has become a key component of the agrifood system. Digital technologies have the power to transform agrifood systems by accelerating the work of participants across the value chain, including input players, producers, distributors and retailers. In Kenya, the government has developed digital tools for distributing fertilizer subsidies to farmers. KALRO has also developed digital tools that help smallholder farmers increase productivity through weather predictions, dissemination of information on good agricultural practices and market information. In food retail, transactions on digital apps are picking up though adoption is slow.

Alternative and emergent agrifood systems trends

Migration of smallholder farmers: Many smallholder farmers have become landless agricultural workers, or have migrated to towns and cities in search of employment, accelerating urbanization.

Automation of large-scale processing: Due to high demand for processed food, automation of labor-intensive processes is emerging as a trend, to be able to feed the growing population.

Transboundary food trade: Traditionally, cities were fed from agricultural activities in the hinterland. Currently, due to developments in international transport and logistics systems, food trade takes place across borders and continents. For example, oranges produced in South Africa and Egypt are easily available in retail outlets in Kisumu, just as fish from China.

Diversified retail channels: Retail channels have become diverse, from the traditional municipal markets, supermarkets, house shops, restaurants, roadside traders, fast food outlets, and even online platforms.

Urban Food Environment

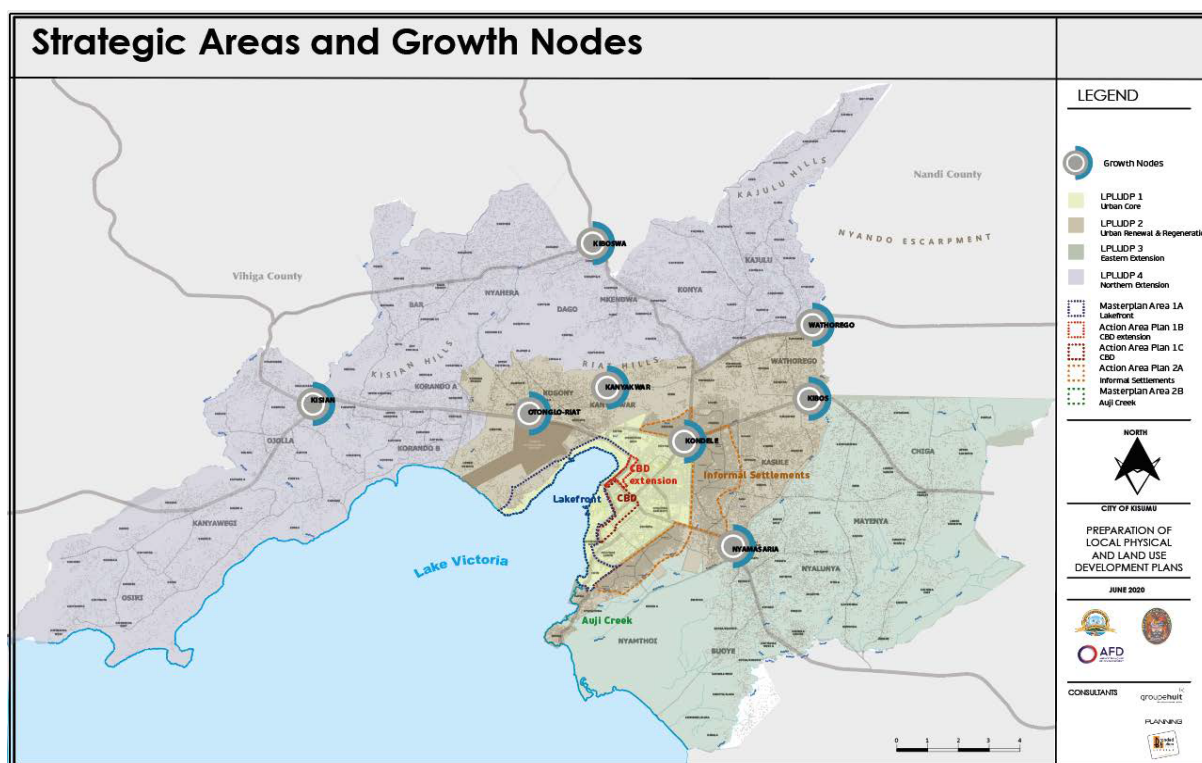
State of food environment

The aspirations of both the national government and the County Government of Kisumu in the County's long-term development blueprint, Vision 2030, aim to enhance the efficiency of the food marketing system by increasing the market share of products sold through supermarkets. However, the food environment in Kisumu remains mixed and unbalanced due to the food behaviour of residents as driven by discrepancies in wealth, resources, and other outcomes. The residents use formal channels, majorly supermarkets, every month to augment the daily food-sourcing strategies of households from informal food channels including neighbourhood street traders, house shops, and markets, and central city street traders and markets (Battersby, 2019). Many residents of low-income areas have very good access to fresh produce from the many informal vendors in their neighbourhoods, open-air markets and the central city areas. Non-perishable food items are often purchased from supermarkets or shops located adjacent to fresh produce open-air markets. The formal channels of food distribution have significant highly processed foods with chemical preservatives which gives them the longer shelf lives than those sold in the informal food economy. These are often preserved through the method of preparation and cooking (often sun drying, heat drying, roasting, deep frying, smoking, salting). Deep drying repeatedly with the same oil is not good for human health yet it is increasingly becoming a common method of preparing food sold in the streets.

Whereas the formal food channels enjoy government and developers' planning in terms of their expansion and provision of water, sanitation, drainage and regular rubbish and waste collection, the informal food economy, on the other hand, lacks exclusive attention despite the popularity of its utilisation, by exclusionary governance actions and plans such as forced street clearances and removals, and lack of integration into neighbourhoods planning (Skinner, 2019). Informal food channels endure poor infrastructure, limited waste and sanitary facilities, and inadequate provision of electricity and water that hampers household utilisation. Consequently, most informal food vendors and households cope with the infrastructural and service deficiencies through purchases in relatively small units to ensure regular throughput of products and food safety.

Nature of urban planning, design and spatial considerations and its role in food environment

The urban form of Kisumu City has been strongly shaped by its colonial past. The city expanded without proper planning leading to uncontrolled physical development and pressure on services and infrastructure. Following the recent enactment of the Physical and Land Use Planning Act, 2019 (No. 13 of 2019), the Kisumu City management in collaboration with the stakeholders has prepared a Local Physical and Land Use Development Plan (LPLUDP) consistent with the Integrated City Development Plan as envisioned in the Urban Areas and Cities Act, 2011 (No. 13 of 2011). The LPLUDP zones the city in four areas: Urban Core including the Lakefront (LPLUDP 1); Urban Renewal and Regeneration Area including the Informal Settlements and Auji Creek (LPLUDP 2); Eastern Extension (LPLUDP 3) and Northern Extension (LPLUDP 4) (Fig. 8).



Within the Urban Core including the Lakefront (LPLUDP 1), food is sold mostly in supermarkets and designated market spaces. However, there are numerous informal vendors hawking outside the designated food trading areas. In the recent past, a number of planned interventions have been undertaken by city stakeholders to upgrade designated market spaces and improve the food environment (Smit, 2018).

Urban Renewal and Regeneration Area including the Informal Settlements and Auji Creek (LPLUDP 2) is dominated by high density human settlements, with some small-scale food production activities taking place including livestock rearing, small vegetable gardens, and hanging gardens. Some areas around the growth nodes of Otonglo, Kanyakwar, Kibos and Nyamasaria that were formerly rural have completely shifted in character. The slum belt including Bandani, Obunga, Manyata, Nyamasaria, and Nyalenda have informal food traders dominating the food retail landscape. The challenges of poor hygiene and sanitation abound in these informal settlements.

The Eastern Extension (LPLUDP 3) was previously rural and currently in transition, with both urban and rural characteristics. The area has fertile alluvial soils but is prone to flooding, hindering farming activities. There have been efforts to control flooding and promote horticultural farming in Nyamthoe around the Auji Creek. The eastern extension has market centres in Chiga, Nyalunya, and Buoye, where food trade takes place in the markets and small shops.

The Northern Extension (LPLUDP 4) includes agriculturally rich hilly areas of Kajulu, Mkendwa, Nyahera, Kisian and Ojolla; and the lowlands of Korando, Kanyawegi, and Osiri Beach. These are basically rural areas that have been included in the city administrative boundaries. A major concern is the loss of agricultural land due to urban sprawl, as the land is subdivided into smaller parcels for human settlement to accommodate the growing city population. Wealthier residents are moving from the city to settle in the northern hills, pushing up land prices. However, crop and livestock production still take place in this zone, particularly among the original inhabitants. Food trade takes place in the markets centres of Wath-Orego, Kiboswa, Dago, Nyahera, Bar-Union, Kisian, Ojolla, and Osiri Beach.

Built environment plans that consider food environment

The built environment plan of Kisumu City was influenced by the historical 1931 Town and Country Ordinance and the Town Planning Act of 1948. These resulted in three concentric segments including the city centre, informal settlements and peri-urban areas. However, due to rapid urbanization, the informal settlements and the peri-urban areas continue to densify haphazardly with very little undeveloped land to locate new developments. This calls for urban renewal to optimize the use of spaces and accommodate new uses within the city.

The LPLUDP recognizes eight emerging needs of the city which are related to land use and human development; transport, infrastructure, health and health facilities, tourism development, landscape and heritage, environment, climate change and social considerations, governance, and local economic development. Whereas the city's LPLUDP see it necessary to include food in urban planning, it hardly considers how the needs impact or interact with the food environment. The only element of the food system stated incidentally in the LPLUDP is physical access through urban farming and economic access to food, thus evidencing an inadequate programmatic response derived from a partial interpretation of the food system by both the city management and stakeholders.

The road network and transport services are underdeveloped and often in poor state despite their significant influence on food distribution in Kisumu City. Road management, development, rehabilitation and maintenance in Kisumu City just like other parts of Kenya are the responsibilities of three state corporations: Kenya National Highways Authority (KeNHA), Kenya Rural Roads Authority (KeRRA) and the Kenya Urban Roads Authority (KURA), depending on the classification of roads. However, these state corporations, like many planning agents, aim to clamp down on informality and fail to allocate trading space notwithstanding the habitual existence of informal food vendors in temporary structures encroaching on the poorly managed road reserves. Relatedly, the transport services managed entirely by the private sector also take little notice of their role in the food system and consequently fail to invest in specialized food transportation equipment.

Nature and trends of the urban food environment

The FAO High Level Panel of Experts on Food Security and Nutrition (HLPE) defines the food environment as “the physical, economic, political and socio-cultural context in which consumers engage with the food system to make their decisions about acquiring, preparing and consuming food.” Some of the elements that influence consumer food choices, food acceptability and diets are physical and economic access to food (proximity and affordability); food promotion, advertising and information; and food quality and safety.

Nature and trends of the urban food environment for the entire city

The physical food environment is dominated by informal traders in all areas of the city. Household food choices are generally influenced by proximity and affordability. Residents of Kisumu majorly consume the foods that are easily accessible in the local formal and informal markets and that they can afford. For the poor, economic access is often prioritized over nutritional value. Some fruits and vegetables are seasonal and are thus available in the city when in season and supplies dwindle when out of season.

The socio-cultural environment also determines food baskets and dietary patterns. Culturally, residents consume food heavy in starch, mainly ugali, rice and chapatis; with animal proteins and vegetables as accompaniments. However, there is an emerging trend of ‘eating out’ particularly among the working population who do not have time to prepare meals at home, and this has fuelled the consumption of fast foods and sweetened drinks. Additionally, since food provisioning is culturally women's role, they have influence in food related decision making of households. Men may have limited choices other than what is

availed by the women at home. For the younger generation who live alone, food choices are also determined by culinary skills (or lack of it) and individual lifestyles.

Food promotion, advertising and information do influence food choices. Fast food multinationals and sweetened beverage companies usually advertise in the city through billboards, mass media, social media, and roadshows to influence food choices. Some food companies promote their products through convenient distribution outlets and delivery services.

Food Environment in different economic/income zones of the city

In the lower income areas of Nyalenda, Manyata, Obunga and Bandani, consumers develop relationships with food outlets owners, to the extent that they can be offered food on credit. This practice is also growing in middle income residential areas of Mamboleo, Migosi and Lolwe, and the city owned low-income residential areas of Shauri Moyo-Kaloleni. Some of the traders in lower income areas also sell food in smaller units, that ordinarily would not be available in supermarket shelves. This practice is locally called the *kadogo economy*. This enables daily wage earners to divide their earnings to meet different food and cooking energy needs (Opiyo et al, 2018).

Some supermarkets have expanded into transport confluences in low-income residential areas - e.g. QuickMart in Kondele and Nyalenda; and Shivling in Kondele. These aim to drive up sales by increasing the volumes sold to residents of the informal settlements who use public transport and need to cut on transport costs to supermarkets and other retail outlets in town. However, roadside traders still dominate the landscape in the informal settlements.

In high income residential areas like Milimani, informal roadside traders are rare. They are often associated with insecurity and unhygienic practices and are not allowed to build informal structures on the roadsides. Most residents of the high- and middle-income residential areas buy food from supermarkets and municipal markets while others do online shopping from supermarkets and get home deliveries. The wealthier residents have a wider choice of foods and consider the nutritional value of the foods they consume. However, this category of residents is also influenced by advertising by multinationals promoting noodles, sweetened beverages, fizzy drinks, and fast foods. They form a bigger proportion of the clientele of multinational fast-food chains in the city, that are promoted as classy.

Opportunities to address food environment limitations

There have been attempts by the national and County governments and non-governmental organisations to address food environment limitations. However, these interventions have mostly been biased towards improving food production and provision of market infrastructure. Other aspects of the environment that influence people's food and beverage choices have not been fully explored, and there are opportunities to address these.

Food crops production in Kisumu and neighbouring areas is heavily reliant on rain-fed systems that are vulnerable to droughts and floods. This leads to abundance of some foods e.g. vegetables in some seasons and scarcity in other seasons and therefore price fluctuations. This is important as price is a key determinant of food choices in Kisumu. There is an opportunity to improve off-season local production of vegetables.

The government and development partners have invested in markets and other food systems infrastructure. However, some of these markets are located in areas not convenient to food traders and their customers. Previous studies have shown that a majority of the residents prefer to purchase food

around major transport confluences and in residential areas because of the convenience in transportation. There is an opportunity for integration of the food system in urban planning to locate food outlets in areas such as with a bus terminus or near a populous neighbourhood that are convenient to traders and consumers. Additionally, inadequacies and high cost of energy, water, sanitation and cold storage facilities have an influence in food choices. For example, the high cost of energy discourages consumption of foods that require more energy to prepare / cook. There is an opportunity to improve urban infrastructure and services and reduce food loss and waste.

Demand and consumption of some foods and drinks that are considered unhealthy are promoted as stylish and trendy through advertising. Opportunity exists for promotion of healthy foods through advertising, improving display in retail outlets and hygienic practices. This can be achieved by organizing and incentivizing informal traders to produce, advertise and sell healthy foods.

Culturally, most of the residents of Kisumu consider vegetables as a side dish rather than a main meal. Most residents eat a diet heavy on starch. Also due to lack of culinary skills, there is a growing tendency among the youth to consume more processed foods and sweetened beverages. There is a general inadequacy in culinary skills required to prepare healthy foods among the youth e.g. indigenous vegetables. More can be done to improve culinary skills to promote consumption of healthy foods.

The city's food system: Examining unseen aspects

Overlooked and underutilized urban food systems knowledge

In the face of urbanization and technological advancements, traditional methods of food preservation have been overlooked. It is interesting to note that modern technologies remain largely inaccessible to the majority of the urban poor. As the older generations die, they exit the scene of food security with their



knowledge.

Figure 24: Traditional food preservation methods.

Another overlooked and underutilized food system knowledge is traditional and organic pests and diseases control methods. These are often safer and cheaper than the inorganic pesticides that are commonly used by farmers. Some commercial farmers spray their crops with chemicals and harvest them for the market before the pesticides are naturally cleaned of the produce.

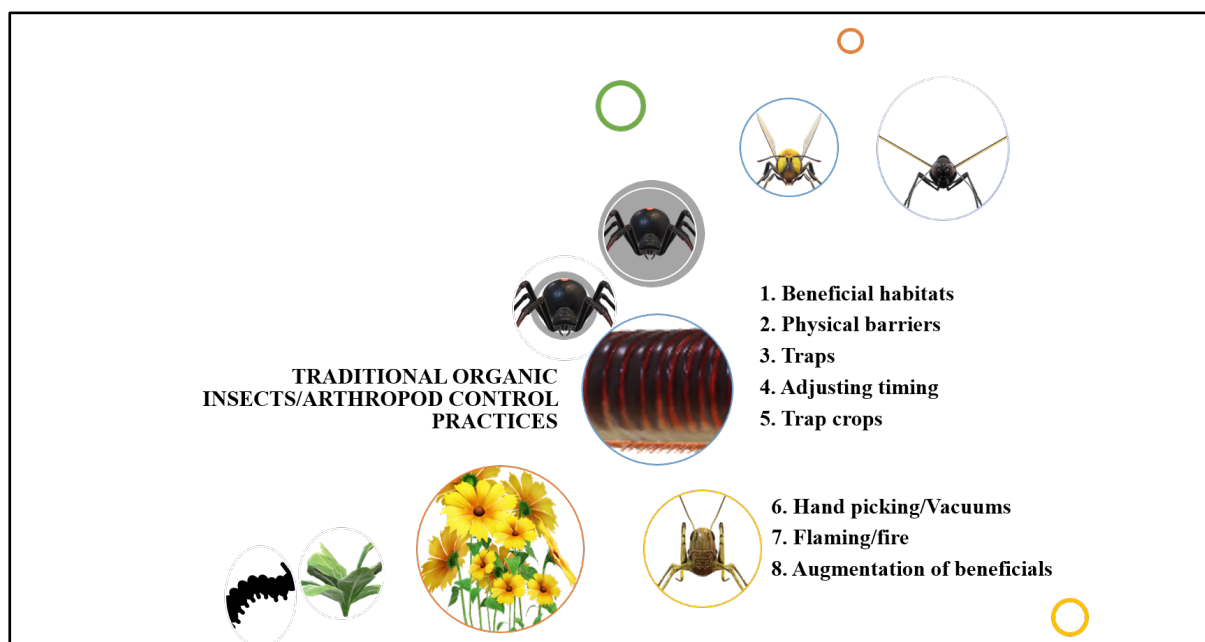


Figure 25: Traditional pest control methods.

What makes the city's food system unique?

Several things make Kisumu's food system unique. First, Tilapia fish is a delicacy in the city. Guests who visit the city will seek it as a culinary delicacy, and locals would feel that their guests were not well honored if they were not served a well-prepared plate of fish. There are even tourism events named after fish such as Fish night and Fish Fiesta (County Government of Kisumu, [2023](#)). Second, the city is next to Lake Victoria which is a natural food stock.

Even though the fish stock has dwindled over the years, one can always have the pleasure of eating fish from the wild, which is acclaimed to be tastier than fish from farms.

It would be interesting to note that fish in Kisumu City is served with other traditional foods. These food varieties are indigenous vegetables, brown meal (usually composed of millet, sorghum and cassava) as well as white maize meal.



Figure 26: Kisumu fish delicacies and a fish event dedicated to celebrating this delicacy.

Note: From left to right :- Deep fried tilapia, deep or shallow fried Silver cyprinid, deep fried and heat dried fish and Fish fiesta of fish night which celebrates the fish delicacy of Kisumu city.

Third, Kisumu City has rural areas within the city's jurisdiction. Consequently, food production does take place within it than would not be possible were the city fully urbanized. Finally, the governance system for Kisumu City is unique when compared to other Cities in the Country. Nairobi and Mombasa are City Counties for the cities occupy the whole geographical space that their counties cover. Consequently, the Governors of these two counties are also the heads of the two cities. However, Kisumu City is smaller than Kisumu County in which it is situated. Hence, its management is different with some City functions being hosted at the County level.

Discussion

Kisumu City's food system geographically spans beyond the boundaries of the City and County Government of Kisumu to include other counties within the Country and other countries even beyond the continent of Africa from which oranges, apples, grapes, rice, fish among other food items are imported. The City is thus a net importer of food to supplement local productions.

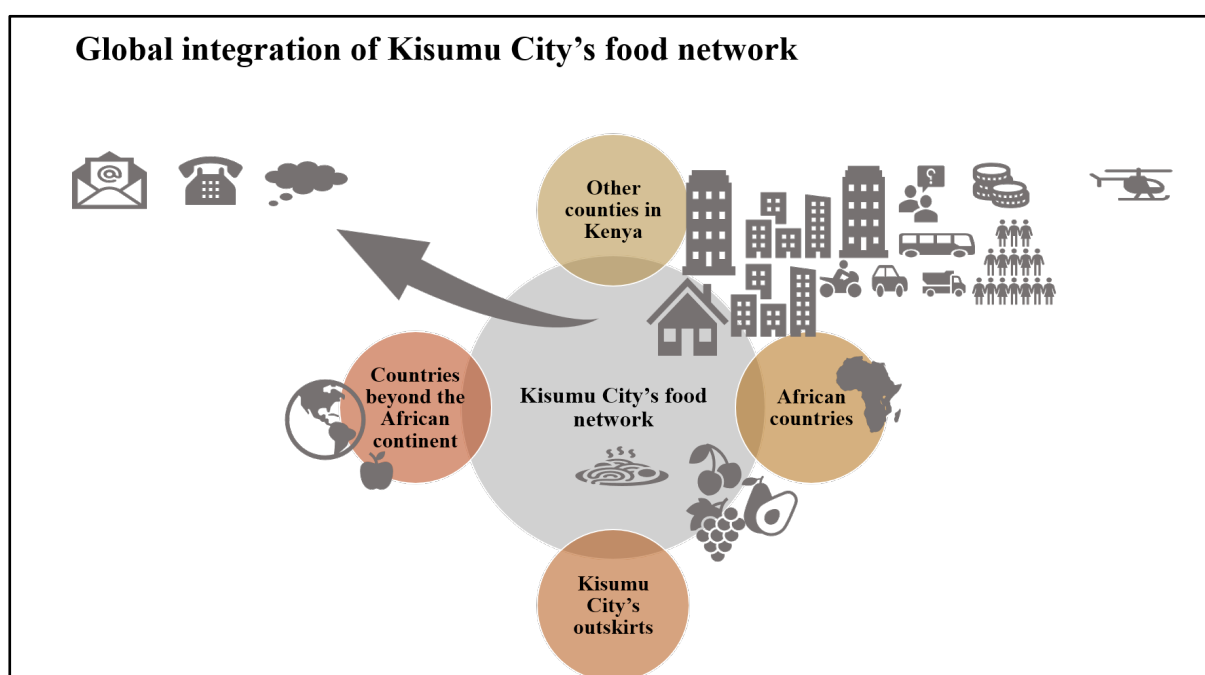


Figure 27: Global integration of Kisumu City Food Network

Urban agriculture is practiced within the city even though it is outlawed except for small livestock and vegetables and fruit trees. Enforcement of the regulations is however challenging and other forms of urban agriculture are practiced silently. Since urban agriculture improves physical access to food, this issue needs consideration by stakeholders to improve the food security of the City. Urban agriculture also comes with great benefits that would boost the overall growth and progress of Kisumu City.

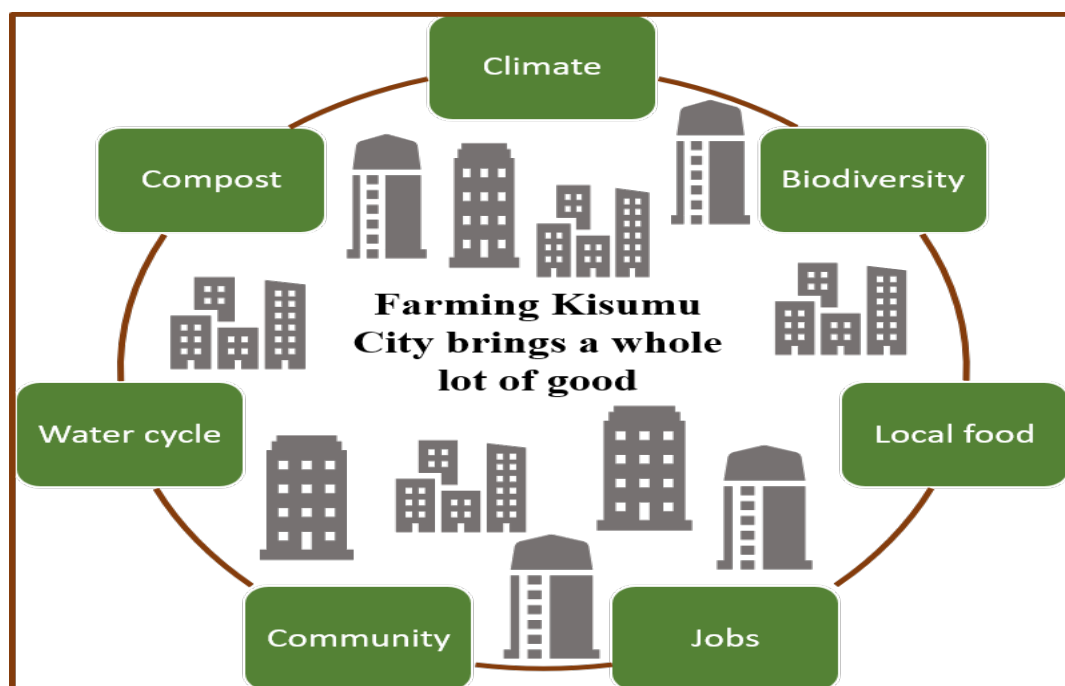


Figure 28: Benefits of farming in Kisumu City

As is common with urbanizing settlements, the consumption of highly processed foods with high levels of sugar, salt and fat is increasing in the city. In addition to the high inactivity rates occasioned by busy work schedules, little time and/or fuel to cook healthy food, costliness of healthy food, easy availability of highly processed foods, lack of or little awareness of the dangers of these foods, lack of regulations to put in check the nutritional value of these foods among others. These conditions pose health risks to the population of Kisumu City. Already there are concerns over stunting of children due to malnutrition and concerns have already been raised at the national level over lifestyle diseases due to malnutrition in adults (County Government of Kisumu, [2023](#)). More awareness training is required not merely to keep this in check but to reduce it. Legislation and good governance are also required to transform the City's food system into a healthy one and help people make wise decisions regarding their food.

Even Though there is no department at the city level that is dedicated to food system issues, there is an ongoing process of transforming the Food Liaison Advisory Group (FLAG) into a Food Liaison Advisory Council of Kisumu (FLACK). This process should include all key stakeholders of the City's food system so that it is an inclusive process. There should also be specific food policies and regulations that target the City's food system with a view to making it more sustainable and that promotes healthy food choices and lifestyles. These should target the content of sugar, fat, salt and kind of preservatives used in the food, food labeling, food advertisement, awareness creation and training on all aspects that would promote a healthy and sustainable urban food system. It is praiseworthy that [Kisumu County has developed Agri nutrition Implementation Strategy](#) and [Food System Strategy](#) both spanning from 2023 to 2027. These are steps in the right direction.

Kisumu City is privileged to have rural areas in which food production can actively be pursued at a profit to feed the city. Even within urban areas, urban farming technologies can be used to produce food for the respective households. This will help meet some of the City's food demand at low food mileage which has benefits for the environment. Transportation costs are known to raise food prices. Local food production will avail food at low prices to some of the urban dwellers thus increasing economic accessibility for those households. There might be a need to start programs to promote smart, safe and sustainable food production within the County and thereby create employment for youths. This will impact on food prices and influence the sociocultural setting of the City's and County's residents.

Conclusion

As earlier discussed, more than production of food is needed to transform Kisumu City's food system. There will be a need to establish and strengthen multi stakeholder governance platforms as well as policy and regulatory frameworks. The food business environment will also need to be influenced to provide healthy foods and awareness and training provided to influence people's choices towards healthy foods and lifestyles.

References

- Agoko, K. P., Awuor, F. O., & Oloko, M. O. (2020). Situation Based Solid Wastes Source Characterization: The Kibuye Market and Other Peri-urban Ward Units—Kisumu City (Kenya). *International Journal of Emerging Technology and Advanced Engineering*, 10(1).
- Aguilo, P., L'Esperance, A., Mbau, E., Palmer, P., Patel, A., & Sparkman, T. (2007). Attracting investment to Kisumu: Opportunities and challenges. Columbia University, New York, USA.
- AHADI. (2020, September). *County Governance Toolkit*. County Governance Toolkit. [Available here:] <https://countytoolkit.devolution.go.ke/>
- Bellu, L. G. (2018). *Food losses and waste: Issues and policy options*. FAO, Rome. <https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1153217/>
- Business Today, (2020). The Collapse of Supermarket Chains: Evidence and Lessons for Retail Giants. [Available at: <https://businesstoday.co.ke/the-collapse-of-supermarket-chains-nakumatt-collapse-ukwala-supermarkets-nakumatt/>]
- County Government of Kisumu (2021). 4th Annual State of the County Report December, 2021
- County Government of Kisumu. (2021). *Kisumu County Nutrition Action Plan 2020-2023*.
- County Government of Kisumu. (2023a). *Kisumu County Integrated Development Plan 2023-2027*.
- County Government of Kisumu. (2023b). *About us*
- Economic Survey (2022). Kenya National Bureau of Statistics. ISBN: 978-9914-79987-3-3
- FAO. (2021). *The State of Food and Agriculture 2021*. [Available at <https://doi.org/10.4060/cb4476en>]
- Geissler, P. W. (2013). Stuck in Ruins, Or Up and Coming? The Shifting Geography of Urban Public Health Research in Kisumu, Kenya. *Africa*, 83(4), 539–560. <https://doi.org/10.1353/afr.2013.0054>
- Government of Kenya (2011). Urban Areas and Cities Act No.13, (2011), Revised 2012. [Available at : http://www.parliament.go.ke/sites/default/files/2017-05/UrbanAreasandCitiesAct_No13of2011.pdf]
- Institute for Transportation and Development Policy. (2020). *Kisumu Sustainable Urban Mobility Plan*. [Available at: <https://www.kisumu.go.ke/wp-content/uploads/2020/12/Kisumu-Sustainable-Mobility-Plan-200716.pdf>]
- KARI. (n.d.). The Major Challenges Of The Agricultural Sector In Kenya [Available at <https://www.kari.org/the-major-challenges/>]
- Kenya Agribusiness and Agro-industry Alliance (2022) report
- Kenya Integrated Household Budget Survey 2015-2016. KEN-KNBS-KIHBS-2015-2016-v01
- Kenya National Bureau of Statistics (2019). *2019 Kenya Population and Housing Census Reports Vol. II*. [Available at : <https://www.knbs.or.ke/2019-kenya-population-and-housing-census-reports/>]
- Kenya News Agency (2020). Agony as Ahero floods destroy Sh.800 million rice, displace villagers. [Available online: <https://www.kenyanews.go.ke/agony-as-ahero-floods-destroy-sh-800-million-rice-displace-villagers/>].
- Kenya Trading Economics Report, (2023)
- Kisumu Water and Sanitation Company (2022). *Annual Report 2021*. (2022). [Available at. <https://kiwasco.co.ke/wp-content/uploads/KIWASCO-Annual-Report-2021.pdf>]
- KNBS and ICF (2023). Kenya Demographic and Health Survey 2022. Key Indicators Report. Nairobi, Kenya, and Rockville, Maryland, USA: KNBS and ICF.
- KNBS and ICF. (2023). *Kenya Demographic and Health Survey 2022: Volume 1*. Nairobi, Kenya, and Rockville, Maryland, USA: KNBS and ICF.
- KNBS. (2023). *The Kenya Poverty Report—2021*. [Available at. <https://www.knbs.or.ke/download/the-kenya-poverty-report-2021/>]
- Mireri, C. A, Atekyereza, P, B, Kyessi A, C, Mushi, N. (2007). Environmental risks of urban agriculture in the Lake Victoria drainage basin: A case of Kisumu municipality, Kenya. <https://doi.org/10.1016/j.habitatint.2007.06.006>
- National Aids Control Council (2018). Kenya HIV estimates report 2018.

- Njiru, M., J. Kazungu, J., Ngugi, C. C., Gichuki, J. and Muhoozi, L. (2008). 'An overview of the current status of Lake Victoria fishery: Opportunities, challenges and management strategies'. *Lakes & Reservoirs: Research and Management*. 13: 1-12.
- Ochieng, A. (2022). *Pollution blamed for mass fish deaths in Lake Victoria*. Daily Nation, October 23. [Available at : <https://nation.africa/kenya/counties/kisumu/pollution-blamed-for-mass-fish-deaths-in-lake-victoria-3994978>]
- Odede, F. A., Hayombe, P. O., & Agong, S. G. (2017). Exploration of food culture in Kisumu: A socio-cultural perspective. *Journal of Arts and Humanities*, 6(7), 74–86.
- Omoll., K (2022). Jubilee Market; Where Kisumu residents first interacted with money. Available at <https://lakeregionbulletin.co.ke/2022/01/02/jubilee-market-where-kisumu-residents-first-interacted-with-money/>
- Onyango, G. M., George G. Wagah, Omondi, L. A., & Obera, B. O. (2013). Market Places: Experiences from Kisumu City. Consuming Urban Poverty Project: Field Report Series, No. 1
- Opiyo, P. O., & Agong, S. G. (2018). *The importance of the informal food sector in the Kisumu food system* (Policy Brief 2; Consuming Urban Poverty Project Policy Briefs). African Centre for Cities, University of Cape Town.
- Opiyo, P. O., & Agong, S. G. (2020). *Household Consumption Patterns and NCDs in Kisumu, Kenya*. (Working Paper 2; Nourishing Spaces Project Working Paper Series). African Centre for Cities, University of Cape Town. [Available at : <https://www.africancentreforcities.net/wp-content/uploads/2020/12/Kisumu-Food-Consumption-WP2.pdf>]
- Opiyo, P. O., & Agong, S. G. (2020). *Household Consumption Patterns and NCDs in Kisumu, Kenya*. (Working Paper 2; Nourishing Spaces Project Working Paper Series). African Centre for Cities, University of Cape Town. [Available at : <https://www.africancentreforcities.net/wp-content/uploads/2020/12/Kisumu-Food-Consumption-WP2.pdf>]
- Opiyo, P. O., & Ogindo, H. O. (2018). The characteristics of the urban food system in Kisumu, Kenya. In J. Battersby & V. Watson (Eds.), *Urban Food Systems Governance and Poverty in African Cities* (pp. 183–194). Routledge.
- Opiyo, P. O., Agong, S. G., Awuor, F. O., & Gilani, M. (2021). Urban Dynamics of Food Loss and Waste: Challenges and Opportunities for Improving Food Security in Kisumu, Kenya. *Journal of Food Security*, 9(1), 1–7.
- Opiyo, P., Obange, N., Ogindo, H., & Wagah, G. (2018). *The characteristics, extent and drivers of urban food poverty in Kisumu, Kenya*. (Working Paper 4; Consuming Urban Poverty Working Paper Series). African Centre for Cities, University of Cape Town.
- Opiyo, P., Ogindo, H., Otiende, F., & Fuseini, I. (2018). *Characteristics of the Urban Food System in Kisumu, Kenya* (Working Paper 5; Consuming Urban Poverty Working Paper Series). African Centre for Cities, University of Cape Town.
- Otieno, A., Obange, N., & Onyango, G. M. (2022). *Rapid Urban Food System Appraisal, Kisumu Kenya 2021- 2022* [Project Report]. FAO and County Government of Kisumu.
- Owiti, N. (2020). 'Coronavirus bug bites Ahero Irrigation Scheme farmers'. In People Daily, Tuesday, April 28th, 2020. [Available at : <https://www.pd.co.ke/business/agribiz/coronavirus-bug-bites-ahero-ahero-irrigation-scheme-farmers-34593/>]
- UNICEF. (2023, June 5). *UNICEF Kenya Humanitarian Situation Report No. 4, 3 June 2023 (Reporting Period 1 to 30 April 2023)–Kenya* | ReliefWeb. [Available at : <https://reliefweb.int/report/kenya/unicef-kenya-humanitarian-situation-report-no-4-3-june-2023-reporting-period-1-30-april-2023>]
- Wagah, G. G., Obange, N., & Ogindo, H. O. (2019). Food Poverty in Kisumu, Kenya. In J. Battersby & V. Watson (Eds.), *Urban Food Systems Governance and Poverty in African Cities* (pp. 223–235). Routledge.
- Walker, J., Frediani, A., & Butcher, S (2013). Participatory Informal Settlement Upgrading and Well-Being in Kisumu, Kenya. Corpus ID: 19257505
- Wamukaya, E., & Mbathi, M. (2019). Customary system as 'constraint' or 'enabler' to peri-urban land development: Case of Kisumu City, Kenya. *Town and Regional Planning*, 75, 77–90. <https://doi.org/10.18820/2415-0495/trp75i1.9>
- World Health Organisation (2022). Health and Climate Change Urban Profile Kisumu County



AfriFOODlinks



Funded by
the European Union



Coordinated by
ICLEI Africa