

**THE IMPACT OF URBAN GARDENING ON HOUSEHOLD FOOD SECURITY IN
MUKURU KWA NJENGA, NAIROBI CITY COUNTY**

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DECLARATION

This Project Paper is my original work and has not been presented for a degree in any other University.

Signature..... Date.....

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This Project Paper has been submitted for examination with my approval as the University supervisor.

Signature..... Date.....

Dr. Jared Siso

DEDICATION

This work is dedicated to my family and many friends. A special feeling of gratitude to my loving husband Zachary Nyaribo, whose words of encouragement and push for tenacity ring in my ears, for his continued support throughout the process.

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ABSTRACT

This study sought to establish the impact of urban gardening on household Food security as well as to identify different types of food crops grown in the urban gardens of Mukuru. The study looked at the contribution of urban gardening in household food security in that area and, finally, to explore the role of men and ladies in urban gardening to improve family unit sustenance security.

The rapid urbanization that is taking place goes together with a rapid increase in urban poverty and urban food insecurity. People living in the informal settlements face all of these challenges, thus exposing them to malnutrition, illiteracy, and hunger among other problems. Most of the people have difficulty to cope up with the challenges experienced, therefore they seek for alternative measures to be able to put food on the table and meet other basic needs. The study's main objective sought to examine the impact of urban gardening on household food security in the informal settlement of Mukuru Kwa Njenga.

The study was carried out in Mukuru Kwa Njenga informal settlement, Embakasi Sub-County, Nairobi City County. The study gathered data using both qualitative and quantitative methods which include; In-depth interviews with participants practicing urban farming, 12 key informant interviews and use of observation method. The study established that many residents of that area prefer growing of vegetables for consumption and also for commercial purposes, the findings also concluded that a larger percentage of ladies practice urban gardening as compared to men. The study recommends that urban gardening be integrated into urban planning and development, thus promoting local food systems and improving the value chain in the urban agriculture sector.

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANADEGES	Autonomy, Decentralization, and Negotiation
CBOs	Community Based Organizations
COOPI	Italian organizations Cooperazione Internazionale
CURI	Centre for Urban Research and Innovation
FAO	Food and Agriculture Organization
HIV	Human Immunodeficiency Virus
NGOs	Non-Governmental Organizations
SPSS	Statistical Package for the Social Science
TB	Tuberculosis
UN	United Nations
UPA	Urban and Peri-urban Agriculture

CHAPTER ONE: BACKGROUND TO THE STUDY

1.1 Introduction

Agriculture remains the backbone of Kenya's economy due to its significant contribution to the country's economic growth. Kenyans engage in small scale and large scale farming of crops and livestock. As the cost of living is on the rise and the Kenyan economy experience harsh times, many informal settlements are coming up. Nairobi is the biggest city in Kenya with a population of 3.138 million people (Kenya National Bureau of Statistics, 2009) with a growth rate of 32.4% from 5.2% this has attracted development of informal settlements which include Kibera, Mukuru, Korogocho, Mathare, and Dandora. According to World Bank, Kenya has a populace evaluated at 46.1 million, which rises by approximately one million a year.

According to the United Nations Environment Programme (UNEP, 2005), "cities in Africa are growing fast due to the introduction of urban gardening or agriculture. The International Livestock Research Institute (ILRI) in Nairobi notes that one in eighty Dagoretti households keeps cattle, with an average of three per household." This is one of the indicators of the prevalence of urban gardening in Nairobi (Clarendon, 2006).

Urban gardening contributes to urban sustenance security and destitution eradication. Vegetable farms have become a nutritional necessity. In five of the largest cities the UN Food and Agriculture Organization has helped structure the growth of this sector through its ten-year-old Growing Greener Cities programme. Resourceful urbanities have raised to the opportunity, feeding not just their families, but also the entire cities of Kinshasa and Lubumbashi, among others (Foeken & Mwangi, 2000).

Urban gardening seems to grow amid monetary emergencies, for example, those actuated by equipped clashes and basic modification, highlighting its utilization as a way of dealing with stress. Urban gardening adds to nourishment accessibility in urban communities and along these lines to the eating regimen of urban shoppers. It likewise creates wage for urban families engaged in the production process, advertising and dispersion of these nourishments, permitting them to purchase sustenance and face different costs, in this way adding to family nourishment security and nourishment. Then again, negative wellbeing impacts, specifically connected to poor sustenance quality, may detrimentally affect nourishment (Republic of Kenya, 2010).

Nairobi is estimated to have around 50,000 sacks of maize and 1,500 sacks of beans emanating from its urban farmers annually. There are up to a quarter million chickens, about 45,000 goats and sheep, and 42 million litres of milk. There is also a high production rate of dairy cattle, eggs, and sukuma wiki (Agaya, 2004). This has improved the state of household food security in the city and as a result most organizations are promoting this feature of urban gardening. Different NGOs and CBOs operating in informal settlements such as Mukuru Slums Development projects have urban gardening as part of their development programme.

Urban gardening and urban agriculture have been utilized reciprocally to allude to the developing of sustenance yields and organic product trees, and the raising of creatures, poultry, fish, honey bees, rabbits, pigs and other stock considered palatable locally inside urban neighborhoods. Having the capacity to deliver nourishment not just makes slum populaces less subject to the Government and the NGOs sponsorships and assistance however, makes them less powerless against the fluctuating costs of the worldwide sustenance market.

1.2 Statement of the Problem

A great part of the third world countries, including Kenya, is quickly urbanizing. Rising sustenance and fuel costs lately have put the food security of the urban poor in an unsafe position. Challenges such as lack of employment and proper education have led to high levels of poverty especially in the cities in Kenya. In Nairobi, with five major slums, those living in the informal settlements lack housing, proper sanitation as well as household food security. It is in this regard that household food security is a question of study, as most families especially those living in the informal settlements of Mukuru lack enough to provide food for their household. In order to ensure household food security, ladies and men are engaging in urban gardening wherein they decide what to grow, cultivate their plots, and choose how to dispose of the produce. In the Mukuru Kwa Njenga informal settlements, family units have as of late started another type of urban cultivating known as sack cultivation in which vegetables, for example, kale and Swiss chard are planted into huge sacks loaded with topsoil, while others plant near the railway lines and just besides the road (Clarendon, 2006).

1.3 Research Questions

This study will be guided by the following questions.

1. What types of food crops are grown by residents of Mukuru Kwa Njenga?
2. To what extent does urban gardening contribute to household food security in MukurukwaNjenga informal settlements?
3. What role do ladies and men play in urban gardening?

1.4 Objectives of the Study

1.4.1 General Objective

To examine the impact of urban gardening on household food security in the informal settlement of Mukuru Kwa Njenga in Nairobi city county

1.4.2 Specific Objectives

1. To establish the types of food crops grown in the urban gardens of Mukuru Kwa Njenga
2. To determine the contribution of urban gardening in household food security in Mukuru kwa Njenga
3. To describe the role of ladies and men in urban gardening in MukurukwaNjenga

1.5 Assumptions of the Study

1. Mukuru residents grow various food crops in their urban gardens.
2. Urban gardening contribution to Food Security in Mukuru Kwa Njenga.
3. Men and ladies in Mukuru kwa Njenga informal settlements play different roles in urban gardening.

1.6 Justification of the Study

Food security in African countries and specifically in Kenya is a question worthy of study especially with the rising population and the dynamics of the current climatic conditions. Most people migrate to cities in Kenya in search of greener pastures thus leading to congestion and suddenly the rise of informal settlements in cities. With little or no educational background they lack jobs and this disposes them to more challenges, such as lack of food, employment among others. This forces them to engage in casual jobs to improve their livelihood (Republic of Kenya, 2009). Mukuru is one of the largest slums in Nairobi Kenya with a population of approximately 700,000 non-employed residents, who totally depend on casual labour to provide a meal for their families which, at most times, lacks and the family

ends up taking a meal or none a day. With the engagement of urban gardening where people can grow crops in sacks, such problems of household food insecurity will be solved. Families will have at least a meal a day, and men and ladies engaged in urban gardening would be able to sell their produce and educate their children as well as satisfy other basic needs of the family.

1.7 Scope and Limitations of the Study

The study was conducted in the Mukuru kwa Njenga informal settlement in Embakasi Sub-County, Nairobi City County. Though the study was prepared for, the researcher acknowledges the following limitations. First, because of time limit, the researcher conducted the study in a small population. Second, the researcher had to postpone the interviews with the key informants because of their availability and other commitments to their duties. Lastly, the researcher was not able to use other methods of data collections, for instance the focus group discussions, this was due to the unavailability of respondents at the same time.

1.8 Definition of Key Terms

Food security

Food and Agriculture Organization(FAO) describes Food Security as, all people at all times have physical, social and budgetary access to attractive, protected and nutritious sustenance to meet their dietary needs and bolster inclines for a dynamic and solid life.

Household food security

This alludes to access to nutritious sustenance at all times.

Urban gardening

Urban gardening refers to the practice of gardening a garden in an urban neighbourhood.

Informal settlements

This refers to areas where houses are constructed against planning and building regulations and the occupants have no legal claim. Slum settlements are portrayed by lacking framework, poor access to fundamental administrations, inadmissible situations, uncontrolled and undesirable populace densities, insufficient abodes, poor access to wellbeing and educational establishments.

Gender Roles

Gender roles are a game plan of societal models coordinating what sorts of practices are generally seen as satisfactory, fitting or appealing for a man in perspective of their genuine or perceived gender.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the literature relevant to the research problem. The literature is reviewed using the following subheadings; urban gardening, urban gardening in Nairobi, Urban gardening and food security, the role of ladies and men in promoting urban gardening among others. The chapter ends with a theory that guided the study.

2.2 Urban Gardening

Urban gardening or urban farming is the act of developing, handling and circulating sustenance in and around a city or town. It is arguably one of the oldest of human professions. Urban gardening is a necessary component of a sustainable community – one that has its own food resources and food security. Too often, that message is getting lost in a loaded concept of “farming the land”. The ubiquity of urban gardening has quickly expended many significant metropolitan territories giving numerous urban focuses the nation over quick access to privately produced arugula and heirloom tomatoes. Notwithstanding, insufficient consideration is given to the capacity of urban horticulture to profit bothered and underestimated groups comprehensively. The advantages of group greenery enclosures are regularly associated exclusively to the wellbeing implications they present and in numerous dynamic circles it is additionally noticed that urban gardening has a one of a kind capacity to fabricate group. These are both valid. Be that as it may, a much downplayed advantage of urban agribusiness is additionally monetary. (Parrot et al 2010)

The writing on urban horticulture demonstrates that the practice has been growing since the late 1970s in many parts of the less creating nations because of quick urbanization, incapable rural strategies, injured nourishment dispersion framework, withdrawal of endowments, lessening of wages, swelling, common strife, unemployment, careless urban direction and dry season. In this time, more progressed urban farming is commonly found in Asian urban communities which now and then acknowledge and advance nourishment creation as a basic urban capacity. In creating nations of Africa and Latin America, sustenance frailty is attracting more individuals the prospering routine of urban farming. As indicated by UN report (2010), these days, 15-20% of world sustenance is delivered in the city and the rate will twofold in the following 20 years.

Benefits of Urban Gardening

Urban gardening, also known as urban agriculture, basically alludes to developing plants and keeping creatures that deliver nourishment inside a city. It might likewise incorporate preparing and after that conveying that nourishment all through the city. There are various advantages of urban cultivating, and here we'll plot probably the most important. (3Dponics Hydroponic Benefits, 2014)

1. Increases Food Security

Creating nourishment all alone, undeveloped land is one path for the urban poor to win or supplement their pay. Some urban agriculturists offer or exchange their gather, and others keep it for themselves and their families. In any case, it's valuable. It's moderate, sound deliver as well as a type of pay.

2. Creates a Sense of Belonging

Urban gardening is one approach to unite urban tenants—to build up a feeling of group among individuals generally autonomous and, at times, separated.

For example, a group cultivate has neighboring men, ladies and kids cooperate to keep the plants fit as a fiddle in the city. Family, companions, colleagues and even outsiders meet up and progress in the direction of more noteworthy nourishment security, something positive the whole group will profit by. From this, a feeling of harmony creates

3. Produces Healthy Food You Can Respect

The more urban cultivating and eating locally there is, the less miles sustenance must go before it's on your plate. You get fresher, more advantageous sustenance—herbs, vegetables and natural products—and will probably eat what's in season, when you eat what's created on an urban homestead.

Other than crunching on create pressed with sickness battling vitamins, it's a dependable fact that when you develop your fixings and set up your suppers, you pick up regard for your nourishment. Regarding your nourishment makes it simpler to eat carefully and keep up your weight as well as your association with sustenance.

4. Provides a Learning Opportunity

Urban ranches allow city occupants to deliver their own particular nourishment, and learn all the while. They find out about different cultivating systems, the best supplement arrangements, required daylight, and controlling temperature, in addition to other things.

Since urban gardening requires hands-on support, it's anything but difficult to get tips and traps and really practice your green thumb. This is not something many individuals in the city have the chance to do, given the absence of green space and space for a customary garden.

5. Makes Efficient Use of Land

An increasing populace nearby reducing arable land is an unequivocal concern. Urban cultivating is an incredible approach to productively utilize the land we do need to encourage the general population. Consider housetop gardens: they consume up negligible room yet create huge amounts of crisp, sound deliver.

Taking everything into account, urban gardening or farming is sure in a few ways: it expands sustenance security among the urban poor; makes a feeling of having a place in the group; gives you vitamin-thick nourishments you can regard; gives urban occupants a learning opportunity; and makes effective utilization of the land.

2.3 Urban Gardening in Nairobi

The improvement of urban gardening since the late 1970s is, as it were, grasped as a response to raising desperation and rising sustenance expenses or insufficiencies (Foeken and Mwangi 2000). For instance, urban neediness in Nairobi in the mid-1970s was unimportant: just 2.9% of the families in Nairobi lived underneath the destitution line. In the 1990s, be that as it may, the circumstance changed radically, because of three, interrelated, conditions: (1) quick populace development as an aftereffect of both high regular increment and quickened provincial urban relocation; (2) the on-going monetary subsidence: financial development declined steeply since 1980; and (3) the impacts of auxiliary conformity strategies, for example, a decrease of government spending, expanded tax assessment, coin depreciation, expanding genuine maker costs for farming, and so forth., all measures making life altogether more exorbitant for Kenyans and for the poor particularly. The result is that weak get-togethers like the urban poor have turned out to be increasingly underestimated. Mostly as a

consequence of this, many individuals swung to urban cultivating, "to sponsor their pay" (Foeken and Mwangi 2000).

In the mid-1980s, 20% of the Nairobi family units were developing products inside as far as possible (Lee-Smith et al, 1987). Also, 7% seemed to keep animals inside the city. Albeit urban cultivating was done by families over all financial strata, poor(er) family units had a tendency to be more occupied with urban agribusiness. This pattern has been affirmed by an investigation of the slum territory of Korogocho directed in 1994: which found that 30% of families were named urban ranchers (Mwangi and Foeken 1996).

About; four cultivating frameworks can be recognized in Nairobi, little scale urbanization, trim development, little scale domesticated animals creation, little scale showcase situated yield development and extensive scale expansive scale business cultivating. Little scale subsistence edit development is by a wide margin the overwhelming sort of cultivating. Plots are generally little, on which a wide assortment of yields are developed (with maize, beans and kales being the most well-known ones). The work required is for the most part done by ladies, utilizing exceptionally basic development strategies. Inputs like chemicals and water system are very uncommon. Little scale animals generation is frequently joined with the main sort. Domesticated animals is very normal sight (poultry specifically), particularly in the open spaces in the edges of the city (Lee-Smith and Memon, 1994). Hones like plunging, splashing, inoculating and utilizing veterinary medications are not extremely normal (Mwangi and Foeken, 2000).

Little scale advertise situated yield development is an uncommon marvel in Nairobi in spite of its potential as far as sustenance, work and pay. Little scale edit generation is totally for business purposes. Cases are the development of seedlings and fancy plants. Expansive scale farming is common in the south-western part of the city and is a "leftover" from the pioneer time frame. It includes flooded vegetable fields, battery hen houses and grade dairy steers (Mwangi and Foeken, 2000).

In Nairobi, the development of kales (sukuma wiki), tomatoes, beans, cowpeas, maize, Irish potatoes, sweet potatoes, arrowroots and bananas among numerous others, makes a significant commitment to urban sustenance utilization. For instance, it is evaluated that urban ranchers contribute 50,000 packs of maize and 15,000 sacks of beans yearly and up to a quarter million chickens, around 45,000 goats and sheep, and 42 million liters of drain. This, in monetary

terms, implies that drain alone produces up to KES 800 million yearly if evaluated at KES 20 for each liter. The greater part of it achieves the urban poor as either nourishment or pay. In 1998 there were 24,000 dairy cows in Nairobi, worth approximately one billion shillings. In Kasarani Division, around 180,000 plate of eggs were delivered, worth KES 27 million. Around the same time 110,000 kilograms of sukuma wiki were developed in Dagoretti, 240,000 kilograms in Langata and 260,000 kilograms in Westlands (Agaya, 2004).

Nairobi has various performers in the nourishment supply and showcasing chain. Individual and family unit level ranchers are scattered in many parts of the city. Various NGOs and CBOs which work in Nairobi's slum territories have urban cultivating as a feature of their occupation and neediness destruction segments.

2.4 Food security

Food security, as characterized by the United Nations' Committee on World Food Security, is the condition in which all people, at all times, have physical, social and money related access to sufficient protected and nutritious support that meets their dietary needs and sustenance slants for a dynamic and strong life. The United Nations gauges that around 842million individuals roughly one in eight are undernourished today. The greater part live in creating nations, where more than 14 percent of individuals can't meet their dietary necessities.

Food security is a basic human security's push to guarantee wellbeing from both incessant dangers and sudden disturbances. UNDP perceives sustenance security as one of the seven man dangers to human security and focused on that nourishment security requires not sufficiently only to go round. It requires that individuals have prepared access to sustenance (Macdonald 27,2010)

Very nearly one in seven individuals around the globe are incessantly ravenous, sufficiently lacking sustenance to be sound and lead dynamic lives. This is notwithstanding the way that enough nourishment exists for the majority of the world's population.

1. Agriculture policies, the costs of certain sustenance items, for example, meat and grain and financial advancement colossally affect nourishment security, yet demographic patterns likewise assume a part.

Expanding quantities of individuals frequently drive up interest for sustenance, which regularly brings about extra utilization of arable land and water. This is particularly valid without sufficient sustenance creation innovation and incorporated projects that all the while address group requirements for nourishment and regenerative wellbeing. The Nourishment and Horticulture Association (FAO) extends that by 2050, populace and financial development will bring about a multiplying of interest for sustenance all inclusive.

2. Tending to the wellbeing needs of families in the creating scene, including through expanded access to family arranging, can moderate fast populace development, enhance the strength of families and upgrade their nourishment security (Food and Agriculture Organization)

Financial development is just economical if all nations have nourishment security. Without nation claimed and nation driven sustenance security techniques, there will be impediments and extra expenses to worldwide, provincial, and nation level monetary development. Sustenance security needs to envelop ladies and other helpless and disadvantaged classes. <http://www.ifpri.org/topic/food-security>

2.5 Urban Gardening and Food Security

Urban Agriculture is a great deal more than developing sustenance. It can get numerous advantages wellbeing, social, financial and biological issues. Urban agribusiness improves urban sustenance security and nourishment, neighborhood monetary advancement, destitution mitigation and social consideration of hindered gatherings and supportable ecological administration in the urban communities (Cohen et al., 2012).

Natives can likewise have financial advantages from urban agribusiness. It is a wellspring of self-arrangement found to profit family units. It additionally creates wage for urban family units required underway, preparing, promoting and dissemination of these nourishments, permitting them to purchase sustenance they don't deliver furthermore meet different costs, in this manner adding to family unit sustenance security and nourishment. Then again, negative wellbeing impacts – specifically connected to poor sustenance quality - may detrimentally affect nourishment. Urban horticulture builds sustenance security and abatements hunger, self-created nourishment in urban areas gives nutritious nourishment (Bakker et al., 2000). Individuals are propelled through inclusion urban farming to expend new vegetables and natural products. Urban gardening adds to urban nourishment security through expanded

sustenance accessibility, dependability and, to some degree, openness. Urban and peri-urban agribusiness expands sustenance accessibility and adds to the general urban nourishment supply. The creation of staple sustenance in urban zones is viewed as a method for dealing with stress in circumstances of extreme nourishment uncertainty and is equipped to family unit utilization in many areas of the world (Foeken & Mwangi, 2000).

2.6 Role of Men and Ladies in Promotion of Food Security

Misinformed agrarian and business policies have added to the present sustenance emergency, including the inability to perceive ladies' vital parts in farming generation and family nourishment security. "At the point at the point when ladies are locked in and can ensure their rights and access to land, power, openings and choices, economies create, food security is updated and prospects are upgraded for present and future periods", Michelle Bachelet - Under-Secretary-General and Official Chief of UN ladies. Ladies are the establishment of the change of provincial and national economies. They incorporate 43% of the world's green work oblige. In Africa, 80% of the agrarian era begins from little agriculturists, who are generally country ladies. Ladies include the biggest rate of the workforce in the horticultural division, however don't have entry and control over all land and gainful assets.

Backers of the privilege to sustenance and nourishment sway credit rising appetite to the advancement of enormous agro-mechanical companies and the worldwide exchange nourishment and its adverse impacts on nearby and national nourishment creation, particularly little ranchers. As per the NGO Statement at a late nourishment security meeting in Madrid, Spain, it clarifies that "As the horrible sustenance value emergency develops, a large number of workers will be pushed out of nourishment creation, adding to the hungry in the provincial ranges and the slums of the huge urban areas.

Ladies and men assume essential parts in nourishment security as sustenance makers, attendants of customary learning and preservers of biodiversity, nourishment processers and preparers and sustenance suppliers for their families. As a result of their numerous parts, ladies are enter players in beating sustenance uncertainty. Ladies make key duties to the cultivating and commonplace economies in all making countries. Their parts vary broadly between and inside territories and are changing rapidly in many parts of the world, where fiscal and social forces are changing the provincial division. Natural ladies frequently direct complex families and look for after changed work techniques. Their activities regularly fuse

conveying agrarian items, tending animals, taking care of and prepare sustenance, working for wages in cultivating or other nation endeavours, gathering fuel and water, sharing consequently and showcasing, dealing with relatives and watching over their households (Cheryl 2011,2)

Ladies make a far reaching part of the world's support while men are the proprietors of gigantic tracks of land. Amend data are hard to discover however FAO assesses that ladies are the crucial creators of the world's staple foods: maize, wheat and rice. As a rule, ladies are responsible for around 50 for each penny of the world's sustenance era and, in a few nations of sub-Saharan Africa, ladies give somewhere around 60 and 80 for each penny of the nourishment for family utilization, fundamentally as unpaid workers on family plots.

Ladies are consistently the preservers of customary information of indigenous plants and seeds. As the ones accountable for furnishing their families with sustenance and care, they have an exceptional data of the regard and diverse livelihoods of plants for food, prosperity and compensation. They develop conventional assortments of vegetables, herbs and flavors in their home greenhouses. Ladies likewise frequently try different things with and adjust indigenous species. They are included in the trade and sparing of seeds. This has imperative ramifications for the protection of plant hereditary assets. Sadly, the significance of ladies' information and ability on biodiversity is regularly disregarded or overlooked by improvement organizers.

Ladies are all around in charge of nourishment planning for their families and occupied with different stages and projects of preparing this sustenance. In many societies and nations, men are in charge of arrangement of sustenance and security-if not by delivering it, then by acquiring salary to buy it while ladies are in charge of guaranteeing that the nourishment is readied and kids are sustained. This applies to urban and non-cultivating ladies and also ladies ranchers, and is not constrained to the huge rate of female-headed families on the planet. This sexual orientation division of obligations is frequently unrecognized by advancement organizers. False suppositions about family units as a unit can effectively affect food security

2.7 Theoretical Framework

Modernization hypothesis is depicted as the procedures of change from customary or youthful social requests to present day social requests. "Factually, modernization is the methodology of advance towards those sorts of social, fiscal, and political structures that have made in Western Europe and North America from the seventeenth century to the nineteenth and have then spread to other European countries and in the nineteenth and twentieth several years toward the South American, Asian, and African landmasses" (Eisenstadt 1966,1). Modernization theory has been one of the genuine perspectives in the human investigation of national change and underdevelopment since the 1950s. Basic thought has focused on courses in which at different times pre-current social requests get the chance to cut edge (i.e., Westernized) through techniques of money related improvement and change in social, political, and social structures. Modernization researchers contemplate the social, political, and social results of money related advancement and the conditions that are basic for industrialization and financial improvement to happen.

At its core modernization theory suggests that excellent mechanical advancement produces money related improvement in making social requests and other assistant and social changes. The fundamental qualities that social requests tend to make as they get the chance to be present may balance beginning with one adjustment of modernization speculation then onto the following in the meantime, all things considered, all acknowledge that institutional structures and individual activities end up being more particularly particular, isolated, and composed into social, political, and fiscal structures typical for front line Western social requests.

2.7.1 Relevance to the Study

The theory relates to the economic impact that is industrialization which has led to the migration of people to the urban centre searching for jobs, on the other hand this has increased the number of those living in informal settlements of Nairobi. This has further led to constrain on food security since most of the migrants are not employed and depend on casual labor to sustain themselves. In order to adapt to the harsh environment of poverty, there are certain ways in which scientist have come up with in order to address issues of household food security, Some of the methods used especially in Mukuru Kwa Njenga slum include urban

gardening which is mostly done in sacks or in small sacks. Some residents grow vegetables and arrow roots to feed their households.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

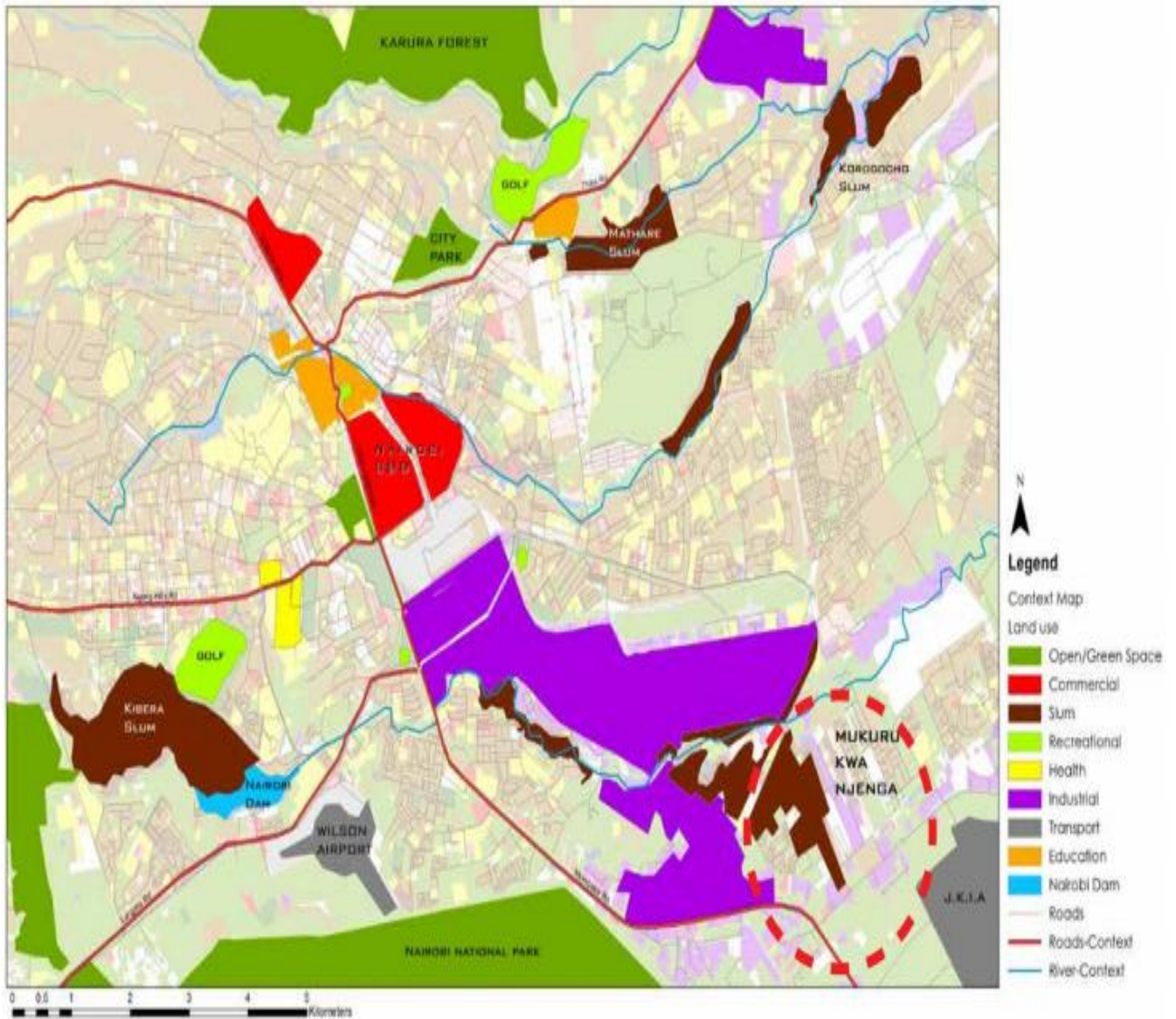
This chapter presents the methodology used in the study. It describes the research site, research design, study population, sample population and sampling procedure, data collection methods and the methods used for data processing and analysis. It ends by describing the ethical issues considered during the study.

3.2 Research Site

The study was conducted in Mukuru Kwa Njenga slum (Fig 3.1) Mukuru Kwa Njenga is part of the larger cluster of Mukuru informal settlements situated about 8 km to the south eastern side of Nairobi's central business district, along the industrial area. It is one of the largest slums in the Nairobi city county with a population of around 700,000 people. Mukuru Kwa Njenga is one of the slums that make up the greater Mukuru. It began in 1958. The land then, was a farm controlled by Reuben, (a white pioneer). The settlement was started by a worker called Munyao in the wake of being removed by Reuben from the farm for having stolen a few creatures. After Reuben passed away, the Government and other private individuals took control over the broad property, provoking to the current Mukuru Kwa Njenga and Mukuru Kwa Reuben sections. Later on Munyao was joined by Mzee Njenga (a youthful then) and together they started fabricating rental structures (shacks) provoking to the easy-going settlement. In the 80s most of the land around Mukuru was given by government to private designers. Bigger piece of land was not made, and people moving from their commonplace homes scanning for openings for work in the city and a sensible place to stay were coolly settled in the private land along the years, near their work environments (CURI, 2012).

The map below presents a view of Mukuru Kwa Njenga.

Map 3.1: Location of Mukuru Kwa Njenga in Nairobi County



Source: University of Nairobi Centre for Urban Research and Innovation (CURI), 2012

There are a total of seven hundred and five structures and four thousand two hundred households in the settlement. Sixty percent of the structures are used for residential purpose while the remaining percentage is for commercial purpose. In terms of building materials, eighty percent of the structures are made up of iron sheets while the remaining twenty percent are made of blocks. Rent for residential structures ranges from KES 500 - 1500 per month while that for commercial ranges from KES 1, 000 - 4,000. The sample frame comprised a list of urban farmers, Mukuru community CBOs, market vendors, landlords, County Government officials. Majority of the people live under poor conditions. Insecurity of tenure drives to constant

threat of eviction preventing inhabitants to improve their households and urban environment. Houses are commonly built in unsuitable areas, for instance, over an open drainage lines, under a high voltage power line, in the railway reserve or in flood-prone areas. Majority of them lack running water, sanitation or garbage collection services as there is no formal infrastructure and services provision. Water and electricity are not always available, are informally provided and most of the households' solid waste goes specifically into the waterway or the lanes, being a concentration of consistent sicknesses crisis (CURI, 2012).

3.3 Research Design

The study used a cross-sectional research design adopting a combination of both qualitative and quantitative methods.

The study was carried out in phases, this involved visiting various slums in Kenya such as Kibera and Mukuru Kwa Njenga and assessing the state of food security and how urban gardening could support in resolution of the problem. The researcher further conducted the actual field survey in the study area, Mukuru Kwa Njenga. A comprehensive field inventory on urban gardening and food security was conducted with assistance from the authorities especially the Nairobi County and residents. Data were collected through the use of key informants' interviews, in-depth interviews and observation. The data was analysed by comparing the differences among the respondents practicing urban gardening and those that do not engage in the practice, findings were presented in form of notes, graphical presentations and tables to reveal the correlation between urban gardening and food security.

3.4 Target Population and unit of analysis

The target population included all the households of Mukuru Kwa Njenga. The unit of analysis in the study included the residents of Mukuru Kwa Njenga practicing urban gardening, the Chiefs and the area chairmen.

3.5 Sample Population and Sampling Procedure

The strategy of achieving the individual respondents to make up the specimen for this study depended on random sampling. Nonetheless, exertion was made to have the sample obtained from a scattered territory, to abstain from getting the sample from one place. The study area itself, Mukuru Kwa Njenga, was selected through purposive sampling. Key informants were purposefully selected while households and business community were selected through random sampling. The researcher selected a sample size to represent the residents of Mukuru

Kwa Njenga because of time and money related imperatives. This was done through purposeful random selection of households from the villages within Mukuru Kwa Njenga.

3.6 Data collection methods

3.6.1 In-depth Interviews

A total of 30 respondents were purposefully sampled for the interviews. They must have lived in Mukuru for at least 3 years, one who is above the age of 20 years old and one who has practiced urban gardening.

The researcher conducted a face to face interview which took about 30 minutes. These interviews followed a pre-arranged interview timetable to gather required data on urban gardening (**APPENDIX 2**).

The goal of the interviews was to get data on variables that advance urban gardening, and establishing the effect of urban gardening on household food security.

3.6.2 Key informant interviews

The key informants included two from the local administration (chiefs), two village elders, three community facilitators who work closely with urban gardeners in Mukuru, and one manager and director of the program of urban gardening in the settlements.

The researcher conducted a face to face interview with the key informants which will last 30 minutes per interview. This aimed at generating knowledge on the factors promoting urban gardening. The researcher used a key informant guide. (**APPENDIX 3**)

3.6.3 Observation

observation is the demonstration of cautious watching and tuning in: the practice of giving careful consideration to somebody or something so as to get data. The researcher used an observation check lists (**APPENDIX 4**) to collect first hand data on what types of crops are grown by residents of Mukuru Kwa Njenga and who practice urban gardening.

3.6.4 Secondary sources

Auxiliary sources help the analyst to get the foundation data of the subject of concentrate fundamentally distributed information (Stewart, 1984). The analyst did a work area audit on project records and a portion of the materials identified with urban gardening and nourishment security in Nairobi. These materials included books, diaries, reports and daily papers. The optional sources were essential in giving a strong literature to the research.

3.7 Data processing and analysis

Data from the study yielded both quantitative and qualitative data. Qualitative data from key informants interviews and in-depth interviews were reviewed at each break of day to get the reasonable translations of the interviewees' records. The notes were then written to the PC, where in the wake of, developing topics was recognized and characterization of the rising subjects done. Characterization is to be persistently altered in light of the developing information from meetings, so that the most significant topics could be built.

The quantitative data from the checklist were cleaned and coded for purposes of entry into the Statistical Package for Social Sciences (SPSS) and analysis. The package helped in entry of the data and analysis to produce frequency tables, charts and figures for presentation. Qualitative information was presented in form of charts, graphs and tables.

3.8 Ethical Considerations

Though there was no immediate harm to the study respondents, before beginning the research, ethical contemplations were considered. The scientist guaranteed that before any interviews, respondents were guaranteed of privacy, this was done through marking of assent structures. Respondents were additionally permitted to pull back from the study on the off chance that they felt that they were not comfortable. The purpose and the destinations of the examination were disclosed to the respondents in detail. Data collected was stored securely and research findings disseminated to stakeholders. The findings were also made available to the University of Nairobi library.

CHAPTER FOUR: URBAN GARDENING AND HOUSEHOLD FOOD SECURITY IN MUKURU KWA NJENGA

4.1 Introduction

This Chapter presents findings of the study. The findings are based on data collected from in-depth interviews, key informant interview and observation check list. The chapter also provides an overview of the benefits of introducing and encouraging agricultural practices in urban areas.

4.2 Socio-demographic characteristics of the respondents

4.2.1 Profile of Respondents

There were 30 respondents of whom 21(70%) were female and 9 (30%) were male. Most of the respondents in the settlement were female. This finding was consistent with the national population enumerations as well as those by NGOs and CBOs.

4.2.2 Gender and Age Group

There were three main age groups in the study. The first age group was the youth, below 35 years and the respondents for this were 68%. There were about 12% of respondents who were aged 35 and 45 years and about 18% of respondents who were aged 46 to 55 years. Ladies who are youth were the majority.

4.2.3 Marital Status

The study showed that 63% of the respondents were in marriage, while 25% were still single. There were 6% of respondents who were widowed and another 6% who had divorced from marriage.

4.2.4 Main Economic Activity

The economic activities of Mukuru Kwa Njenga are very diverse and vibrant. A large portion of the general population are either working in the industrial sector or manage their own enterprises. Most of these businesses are small-scale which include; mini shops and small groceries among others; and they form part of the Mukuru micro-economy.

The major economic site is situated on Wape Wape's major road, where around 85% of the front part of the lasting structures are business or business consolidated with private shaping the primary financial spine. Another financial site is situated along the Railroad line in Sisal, where numerous business exercises are occurring just around the Ngong River Bridge. The predominant types of business along the roads and secondary streets in Mukuru include

grocery/vegetable merchants, bars/eateries and lodgings, charcoal sellers, tailors, barbershops and salons, booths and shops.

4.2.5 Level of Income

In regard to the average amount made from business in Mukuru in a day, 18.6% of the people interviewed during the in-depth interviews make between 151-300 Kenya Shillings in a day, making it the most common scape. Few people earn above 5000 Kenya shillings whereas almost 10% of the business people interviewed earn below 150 Kenya Shillings in a day. Almost 50% of the people interviewed were able to sustain themselves from the businesses they run. However, more than half of the people running businesses are satisfied with the businesses they are carrying out. The ones not satisfied represent almost 30% of the respondents due to the challenges they have to face day by day like high competition with numerous similar businesses, power blackouts or the high number of debtors.

The table below shows the findings of the socio-demographic attributes of the participants.

Table 4.1: Socio-demographic characteristics of respondents

Gender Division of Respondents		
Gender	Frequency	Percentage
Female	21	70
Male	9	30
Respondents Age groups classification		
Age bracket	Frequency	Percentage
35 years and below	20	20
36-45 years	3	12.5
46- 55 years	7	18.7
Total	30	100
Marital Status		
Status	Frequency	Percentage
Single	8	25
Married	18	63
Divorced	2	6
Widowed	2	6
Total	30	100
Economic Activities		
Activity	Frequency	Percentage
Self Employed	18	60
Casual Laborers	12	40
Land Size		
Size	Percentage	
< 1 acre	23	75
2-5 acres	5	19
5+ acres	2	6

4.3 Participation in Urban Gardening

The study shows that there are about 81% of the respondents both ladies and men who are engaged in small scale urban gardening while 18% do not engage in the activity (Table 4.2). This shows that indeed there is great potential and capacity in urban gardening and it can improve the state of economy and food security in informal settlements of Mukuru Kwa Njenga.

Table 2: Participation in Urban Gardening

	Percent
Valid Yes	81.3
No	18.8
Total	100.0

4.4 Types of Crops Grown

The most common crops grown in Mukuru Kwa Njenga are vegetables (Plate 4.1). The vegetables are in high demand in the surrounding areas since they form part of the core diet in Kenya's urban homes. One leaf of kale goes for one cent. Apart from vegetables, some enterprising farmers have also projected into growing arrow roots. These grow best along rivers or streams, but the absence of these has not deterred residents, who dig shallow trenches and place nylon material on top to cover the trenches. Soil mixed with humus is spread on top and water is poured generously on the soil. Arrow roots are then planted. The nylon helps retain water, which is generally scarce in the slums. The trench holds the nylon in place, ensuring that plants grow on the same level ground and are in tandem with the local terrain structure. In this manner, slum farmers have overcome the lack of a continuous water supply.



Plate 4.1: Arrow Roots in Mukuru Kwa Njenga (Picture by Anne Kiruku)

The survey showed that 75% of the respondents engaged in urban gardening primarily grow vegetables such as Sukuma wiki(kales) and spinach, on the other hand 7% engage in tomatoes onions and carrot growing while others were engaged in growing arrow roots, sweet potatoes, and pepper (Figure 4.1)

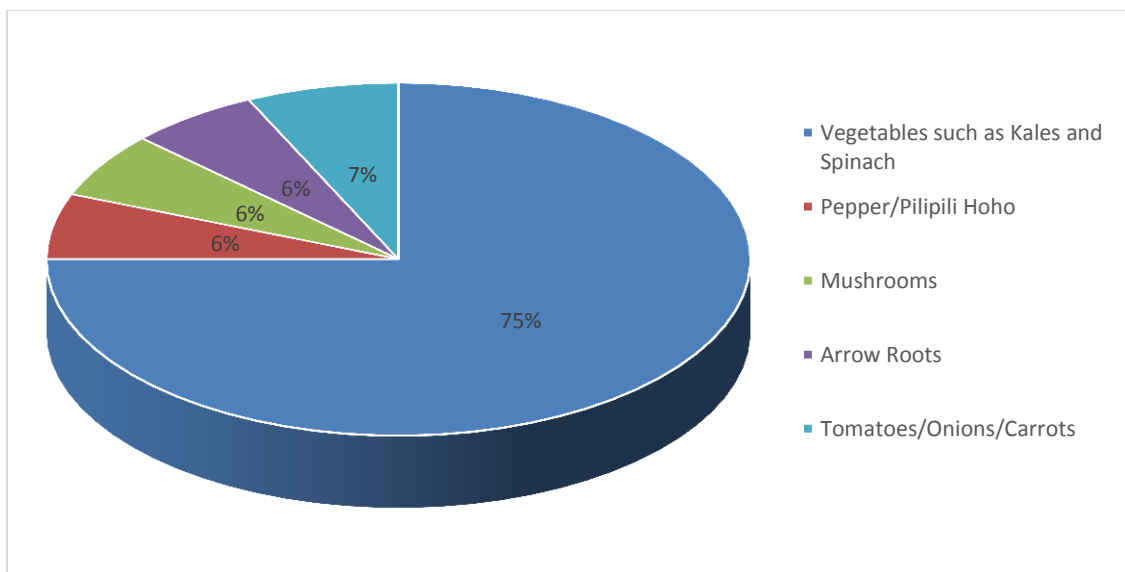


Figure 4.1: Crops Grown in Mukuru Kwa Njenga

4.4.1 Farming methods

About 70% of the respondents engaged in urban gardening grow their crops in sacks while about 28% engage in direct gardening (Figure 4.2). There is only 1% who engages in green house gardening within the settlement; green houses are mostly owned by both public and complimentary schools within Mukuru Kwa Njenga and are funded by different stakeholders.

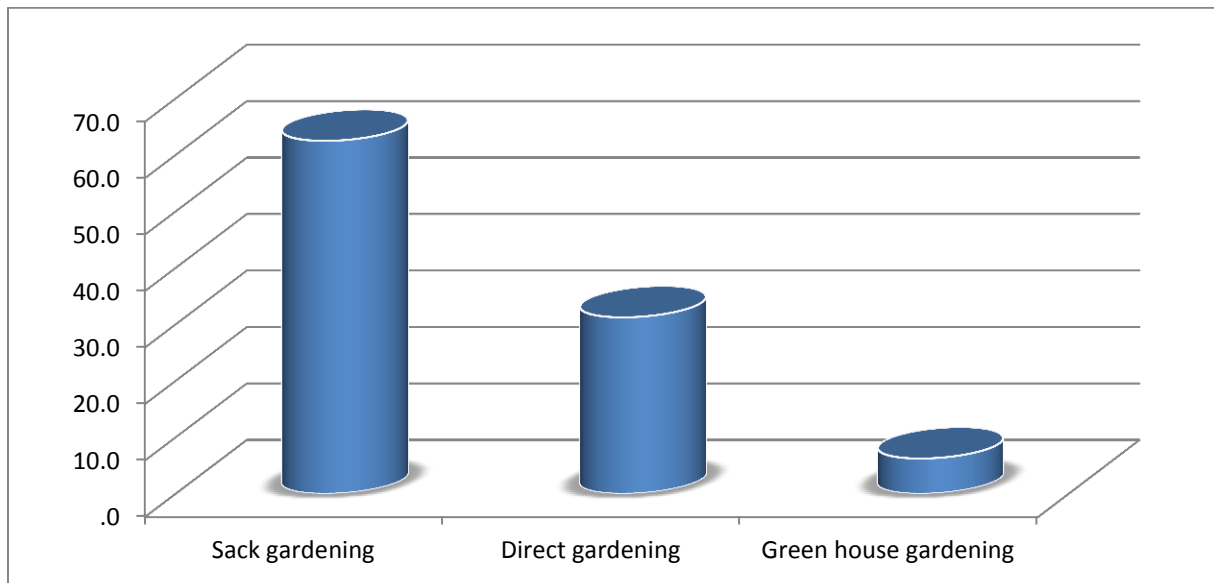


Figure 4.2: Typology of Urban Gardening
Sack Gardening

These urban farms comprise of a progression of sacks that are loaded with excrement, soil and little stones that empower water to deplete. From the tops and sides of these sacks, frequently alluded to as multi-story gardens, ranchers in Mukuru Kwa Njenga develop kales, spinach, onions, tomatoes, vegetables and arrowroot. The vegetables are grown on nylon or sisal sacks filled with red soil. The soil is mixed with humus collected from local dump sites. The sacks are placed along alleyways between the shanties. For those who do not have enough space for the sacks, buckets and tins are used. Since the area is crowded, most people are encouraged to use old buckets and tins. The sacks, tins and buckets are easily available, mostly being recycled from used products. (Plate 4.2)

Those who cannot find sacks or buckets sometimes use paper bags. It is also common to find some of these vessels suspended from trees or placed on roofs. Apart from kale and onions, other popular crops include dhanian (a spice), pepper, tomatoes and cucumbers. The labor is provided by family members.



Plate 2 Sack and Green House Gardening

4.4.2 Reasons for Practising Urban Gardening

There were various reasons cited by respondents for undertaking urban gardening but the major ones are for business purposes and to ensure they make good use of land, which comprise 62% of reasons. There were 19% who undertake the project to minimize on family expenditure on food and other agricultural products while another 19% carry urban gardening to promote their own self-sustenance (Figure 4.3).

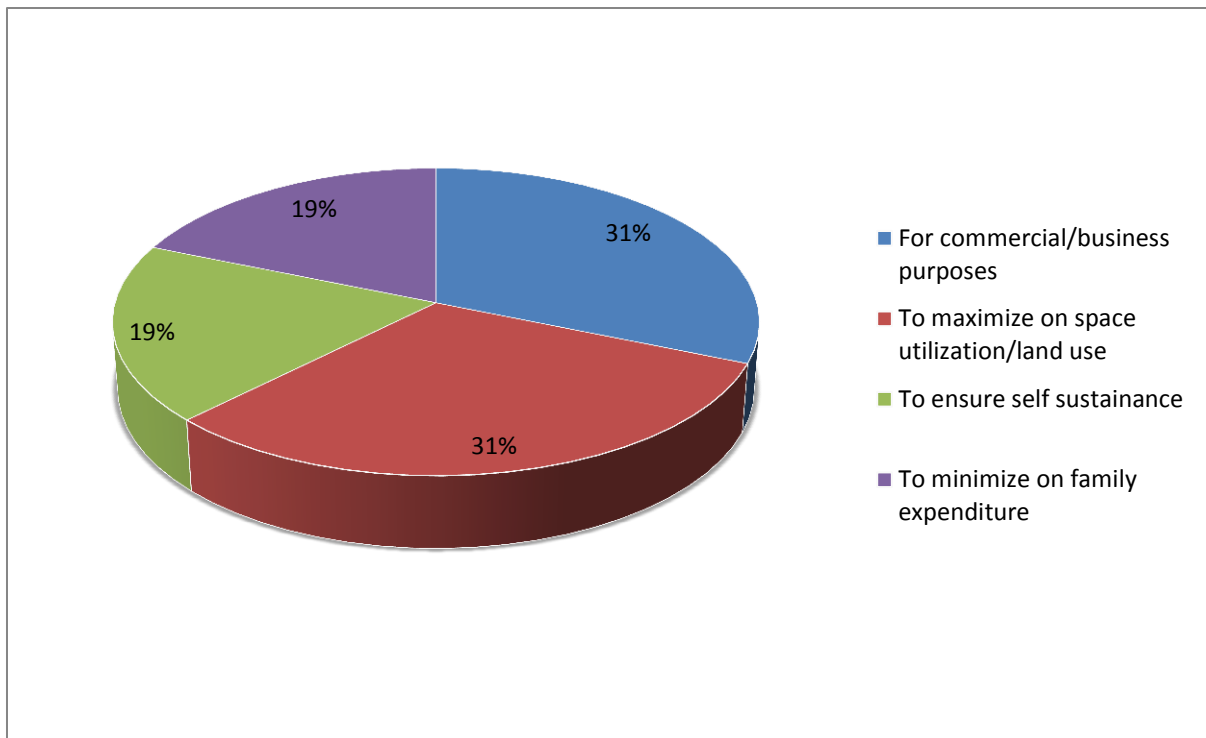


Figure 4.3: Reasons for Urban Gardening

4.5 Role of Ladies and Men in Urban gardening

Urban ladies homestead to nourish their families and to create pay. Urban families in creating nations may spend more than half of their pay on sustenance as indicated by respondents' verbalizations amid the meetings. Developing and eating home-developed nourishment arranges for money for different necessities and enhances the family's eating regimen. Cultivating is a reasonable contrasting option to wage work for ladies who need access to formal work because of restricted instruction, preparing and different open doors. Cultivating has the additional preferred standpoint of permitting ladies to work near and dear.

Not all ladies cultivate essentially on the grounds that they have no different choices. Ladies who work outside the home likewise develop vegetables in their extra time. A few ladies took up gardening full time when they understand that their cultivating livelihoods were 10 times higher than their compensations. An expansive rate of low-and center salary urban ladies oversee kitchen patio nurseries to supplement the family eat less carbs. Albeit numerous ladies cultivate revenue driven, men are more probable than ladies to develop crops available to be purchased. Men deal with the salary creating exercises, while ladies oversee vegetable generation for home utilization. Ladies' part in urban agribusiness is not constrained to sustenance creation, but rather incorporates preparing nourishment for home utilization and

for market. In spite of the fact that men are regularly observed as the providers, in many nations sustaining the family is the ladies' duty. Along these lines ladies are promptly aware of sustenance lacks. Nourishment creation additionally empowers ladies to enter the monetary field, and additionally enhance their social and political status.

The study revealed that there are 40% of male who participate in urban gardening while about 80% of ladies respondents participate in the project. This shows a great inclination of ladies respondents taking part in urban gardening in comparison to their male counterparts (Figure4.4).

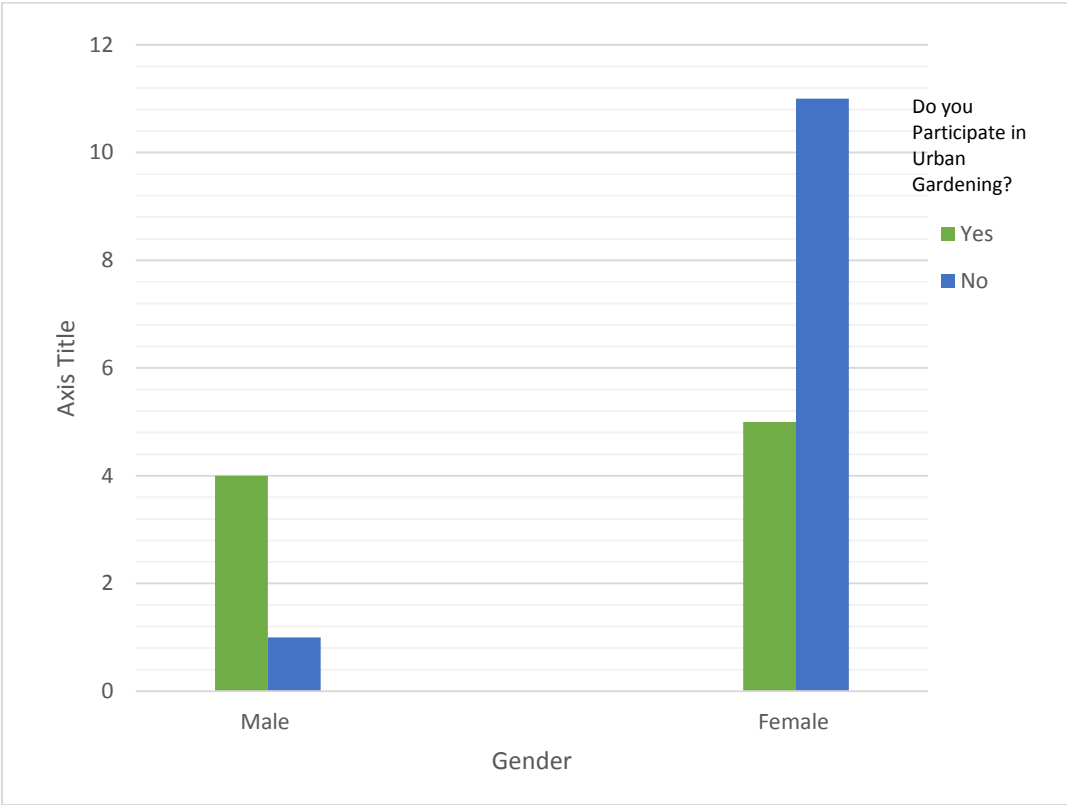


Figure 4.4: Gender Vis a Vis Urban Gardening

4.5.1 Support for Urban Gardening

Urban farmers get specialized support from the service of agribusiness, domesticated animals and fisheries – through their Urban and Peri-urban Agricultural Project. Aside from preparing on the sort of bug sprays to use in occasion of irritation assaults, agriculturists are educated on the most proficient method to make multi-story gardens utilizing sacks. While making the

sacks, agriculturists are educated to guarantee that, for every wheelbarrow of soil, they include one wheelbarrow of compost and afterward water the sacks relentlessly.

Table 4.3: Sources of Support for Urban Gardening in Mukuru Kwa Njenga

	Percent
Funding from NGOs	56.3
Technical and advisory support	25.0
Provision of sacks, sand and manure	18.8
Total	100.0

"Farming in-a-sack" projects, Nairobi is one bolster activity that started by the Italian associations Cooperazione Internazionale (COOPI). The project gave support to urban gardening through giving seedlings to families in Nairobi's slums. COOPI acquired country agrarian specialists to teach community groups on the most proficient method to homestead vegetables in slums and gave out one sack and 43 seedlings to each family participating in the project. The vegetables are set up inside two or three weeks and the plants can be harvested different times through the traverse of a year. Not simply do the as of late printed urban farmers increment additional supplements, any surplus can be sold for an advantage. Tantamount projects in Nairobi's slum likewise observe awesome achievement. As indicated by Map Kibera Trust, sack cultivating builds week after week family unit salary by at any rate Kshs. 500 every week and adds a few suppers week-gigantic picks up in a slum infamous for its devastating impoverishment.

4.5.2 Drivers of Urban Gardening in Mukuru Kwa Njenga

According to Ochola et al (2010), the basic reasons for nourishment instability in Kenya brought about a rundown of 27 drivers (Table 4.5.1) that can be assembled into five classes (financial, socio-political, socio-social, land utilization administration and generation frameworks, and ecological).

Water security, sustenance creation and biological system wellbeing are overall issues. Changes in the worldwide water cycle are influencing human prosperity in many spots, while broad land and biological system corruption, driven by poor agrarian practices, is truly constraining nourishment generation keeping in mind the end goal to alleviate the issue of sustenance instability there is have to completely comprehend the connections between

environments, water, and nourishment creation is vital to the strength of every one of the three, and economically dealing with these associations is turning out to be progressively vital.

Table 4.4: Drivers of food insecurity, driver classes

Drivers	Driver classes
Income	ECONOMICS
Employment	
Cost of living	
Food prices	
Prices of agricultural inputs	
Prices of agricultural products	
Marketing	
Infrastructure	SOCIO-POLITICAL
Government policies	
Extension services	
Education	
Health	
Dependency syndrome	SOCIO-CULTURAL
Unrest and violent conflicts	
Attitude and perceptions	
Tradition	
Overpopulation	
Agricultural practices	LAND USE MANAGEMNT AND PRODUCTION SYSTEMS
Post-harvest management	
Overdependence on one crop	
Land degradation	
Management of water resources	
Human-wildlife conflicts	
Livestock pests and disease	
Crop pests and diseases	
Rainfall variability and water shortage	ECOLOGICAL
Soil and /or terrain	

Urban gardening adds to neighborhood financial improvement, destitution easing, the social incorporation of the urban poor and ladies, and also to the greening of the city and the gainful reuse of urban squanders as fertilizer. While there is a developing mindfulness about the part of urban gardening and agribusiness with regards to sustenance security and destitution lightening for urban populaces, urban cultivating to a great extent remains a casual division that is not all around coordinated into farming strategies or urban arranging. Crevices in the accessibility of good quality, present and tantamount information on the advantages and limitations of urban agribusiness limit the design of relevant policies and interventions that would enhance the positive impacts for urban livelihoods and public health, as well as for the environment.

Crosswise over Kenya an expected 1.5 million individuals are intensely sustenance shaky and look into from the International Fund for Agricultural Development recommends that a substantial number of family units in Kenya constrain their nourishment admission to maybe a couple dinners a day. Nairobi like numerous other African urban areas, is encountering quick urbanization, and urban sustenance instability is on the ascent. The rise of urban gardening has however reduced the trend of food insecurity among other impacts.

The survey in Mukuru Kwa Njenga show that urban gardening has contributed to increased food security as reported by 37% of the respondents, improved nutrition and reduced cost of living as noted by 38% and improved farming techniques as noted by 19% of respondents. There were 6% of respondents who indicated that urban gardening has improved the use of land.

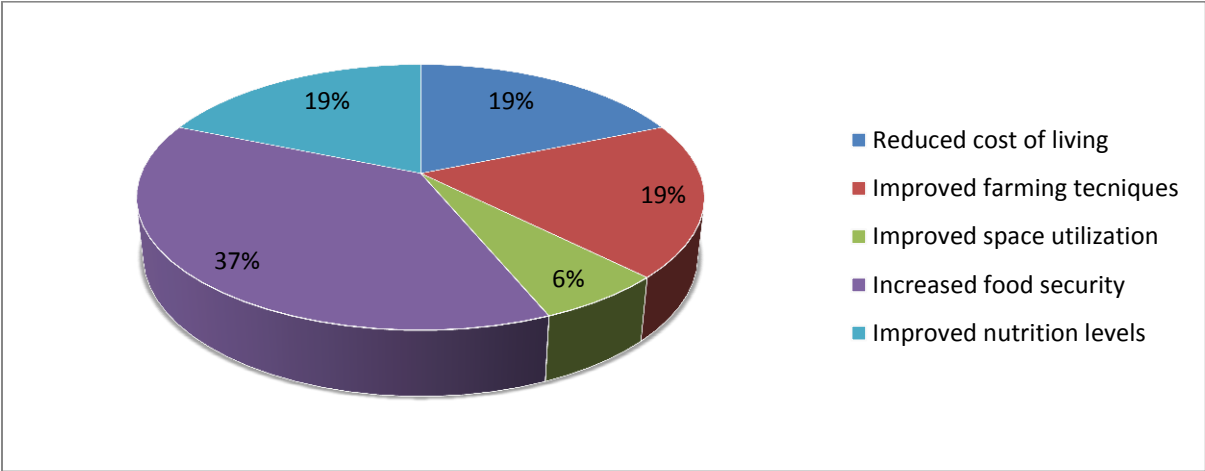


Figure 4.5: Impact of Urban Gardening

4.6 Impact of Urban Gardening

4.6.1 Improved food security and nutrition

Urban gardening has the potential not just to make nourishment more accessible and reasonable, additionally more nutritious. Urban gardening can likewise enhance wellbeing by providing more beneficial nourishment alternatives which would somehow be excessively costly, making it impossible to eat. At long last, urban cultivating upgrades environmental change strength by lessening the ecological expenses of mass horticultural creation and conveyance. Reduced Family Spending

From one of the group discussions, it was found that members spent between Sh280 and Sh420 to buy vegetables per week before the urban gardening project was introduced. Some members used to battle to sustain their families yet through sack cultivating they are presently more guaranteed of getting no less than one adequate meal daily.

4.6.2 Improved Economic Status

Money earned by farmers from sale of vegetables goes into a saving and credit society they have framed, which thus will give advances to youngsters to begin their own business enterprises.

4.7 Challenges of Urban Gardening

The advantages of small-scale cultivating in slums are possibly enormous. Be that as it may, urban gardening likewise confronts various difficulties. Sullied soil from the uncontrolled contamination inescapable in slums is frequently an issue. There can likewise be an aggregate absence of accessible land. Cramped conditions add to an absence of daylight. Water accessibility and quality can likewise be constrained. Cultivating in a slum, definitely has its inconveniences. Is a land and space rare, as well as discovering zone free from tainting can likewise be a test.

The study shows that the major challenge in urban gardening in Mukuru Kwa Njenga is insecurity that leads to theft of grown crops as indicated by 50% of the respondents practicing urban gardening.

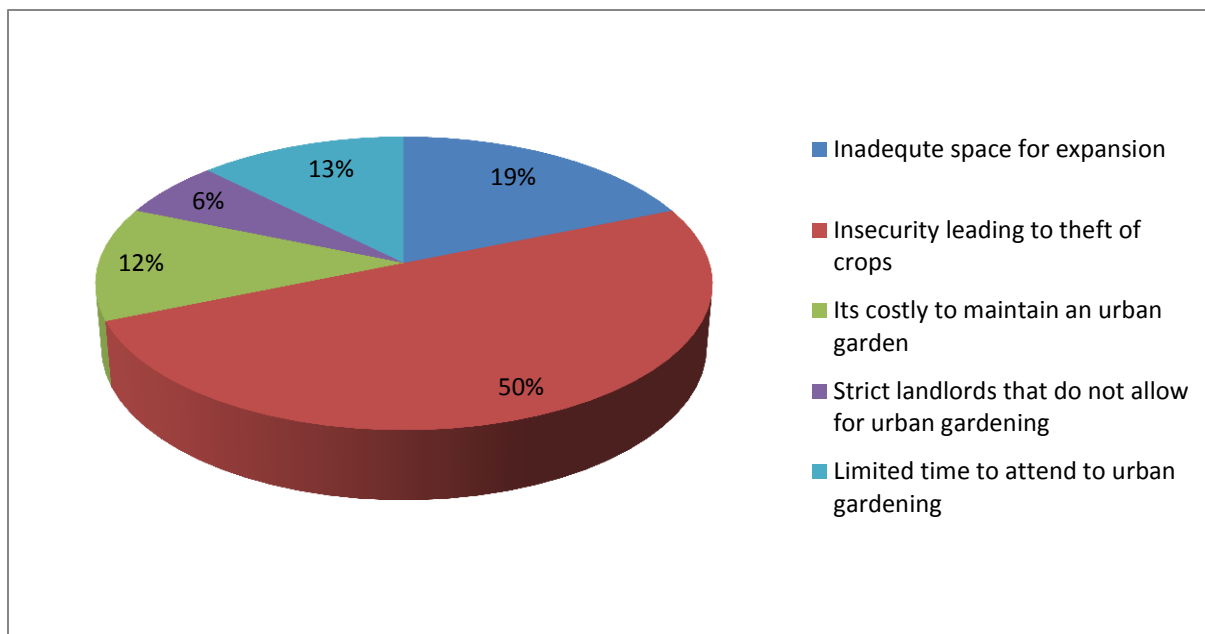


Figure 4.6: Challenges of Urban Gardening in Mukuru Kwa Njenga

4.7.1 Pollution and Health Concerns

The nourishing advantage experienced by the urban poor who rehearse urban agribusiness, is counteracted the danger of tainting and malady. In slum zones especially, there are dangerous water supplies, poor sanitation, uncollected waste, dirtied waterways and poor air quality. Urban soils may likewise contain lead, arsenic and different poisons. These dirtied situations make wellbeing perils and can possibly diminish both product yields and the dietary nature of the deliver. To lessen these issues, contamination must be controlled through the usage of against dumping directions and projects to screen defilement in urban create.

Gardening crops close dump locales and sewers, which has been a typical practice in the Mukuru Kwa Njenga is not perfect for general wellbeing. A considerable lot of the sewers contain overwhelming metals, for example, lead and mercury, making a wellbeing danger to the individuals who expend vegetables developed close them.

4.7.2 Illegality of Urban Farming

Urban farming is illicit in numerous nations, because of general wellbeing, regulatory and social concerns. The illicitness of urban horticulture brings about expanded sustenance instability, decreases in harvest yields and it keeps ranchers from embracing maintainable cultivating practices.

4.7.3 Economic Limitations

Another obstruction to the across the board development of urban cultivating is its high cost. Sustenance delivered through urban gardening is no less expensive than locally acquired nourishment. Regardless of lessened transport costs, urban creation is costly in view of its high start-up costs, costly city arrive and the cost of work. Much of the time, land could be utilized all the more beneficially for urban improvement. Urban agriculture is too financially wasteful to give motivations to urge more famers to take part in it. In spite of this, there is some potential for urban agribusiness to be all the more monetarily reasonable later on. Individuals in the created world as of now pay costs for sustenance that does not mirror their full cost of generation. In a less comprehensively sustenance secure environment, with higher nourishment costs, urban horticulture may turn out to be more financially savvy.

4.8 Suggestions to Improve Urban Gardening

Different suggestions were given by respondents on how to improve urban gardening in Mukuru Kwa Njenga settlement. A sixty two percent suggested that education and sensitization of Mukuru Kwa Njenga residents could help to promote urban gardening in the community while thirty eight percent suggested that provision of incentives such as farming inputs and funding for urban gardening could support the improvement of the project in the settlement (4.7)

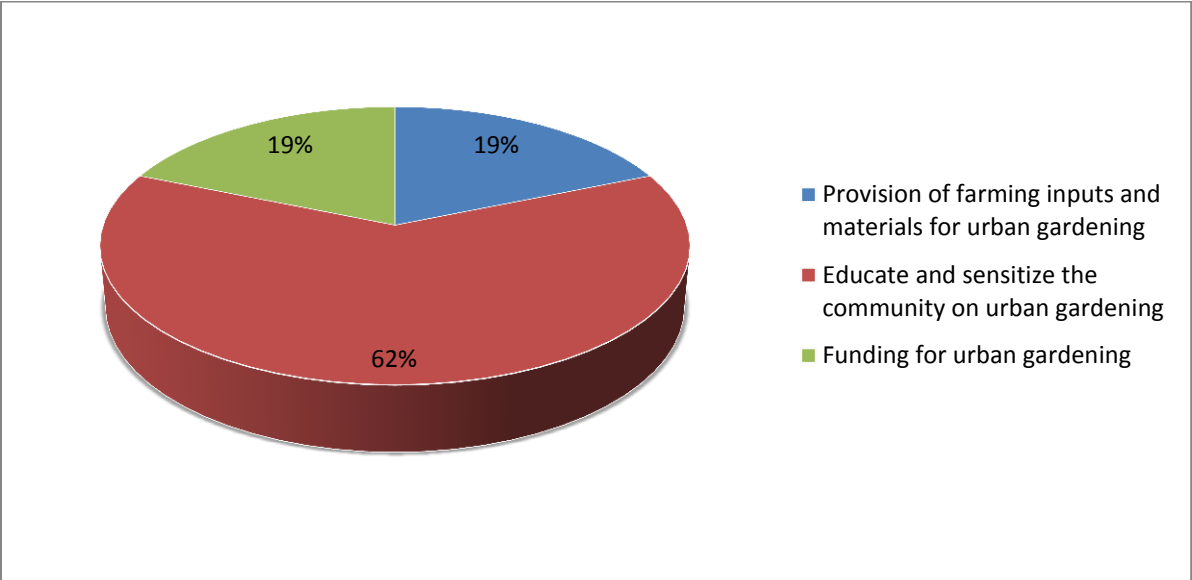


Figure 4.7: Suggestions on Improving Urban Gardening

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the findings and advances recommendations necessary for the improvement of urban gardening on household food security in the informal settlement of Mukuru Kwa Njenga in Nairobi city county. The chapter also provides a conclusion to the study.

5.2 Discussion

From the findings it is evident that the most common crops grown in Mukuru Kwa Njenga are vegetables. The vegetables are in high demand in the surrounding areas since they form part of the core diet in Kenya's urban homes. One leaf of kale goes for one cent. Apart from vegetables, some enterprising farmers have also projected into growing arrow roots mushrooms, onions and tomatoes.

Urban gardening adds to nearby financial advancement, neediness lightening, the social consideration of the urban poor and ladies, and to the greening of the city and the gainful reuse of urban squanders as fertilizer. Urban cultivating enhances sustenance security by giving solid and abundant substitutes to acquired nourishment, particularly for poor families. Family units that practice urban cultivating are likewise more inclined to have entry to a more extensive assortment of nutritious nourishments, for example, vegetables, It additionally creates wage for urban families required underway, preparing, showcasing and dispersion of these sustenance, permitting them to purchase nourishment they don't deliver furthermore meet different costs, accordingly adding to family unit nourishment security and sustenance. The survey in Mukuru Kwa Njenga show that urban gardening has contributed to increased food security, improved nutrition and reduced cost of living and improved farming techniques. There was also an indication that urban gardening has improved the use of land.

In Nairobi alone, it is evaluated that urban agriculturists contribute 50,000 packs of maize and 15,000 sacks of beans yearly and up to a quarter million chickens, around 45,000 goats and sheep, and 42 million liters of deplete. This, in money related terms, suggests that deplete alone creates up to KES. 800 million consistently if assessed at 20 KES. Per liter. The dominant part of it accomplishes the urban poor as either sustenance or wage. In 1998 there were 24,000 dairy bovines in Nairobi, worth around one billion shillings. In Kasarani Division, around 180,000 plate of eggs were conveyed, worth KES27 million. Around a

similar time 110,000 kilograms of sukuma wiki were produced in Dagoretti, 240,000 kilograms in Langata and 260,000 kilograms in Westlands (Agaya et.al. 2004).-

In Japan, regardless of the way that the nation is profoundly industrialized, the nearness of farming area utilize is a typical element on the urban scene of urban areas the country over. It may come as a shock that very nearly 33% of all horticultural yield in the nation is, indeed, created by urban agribusiness. Similarly, urban agriculturists represent 25% of cultivating family units in Japan (Peñaranda, 2011).

Moreover, Japanese urban farming is more profitable than its rustic partners. In Japan, a few social and natural elements of urban horticulture have been as of late perceived by Japanese strategy creators. According to 2010 data from the Ministry of Agriculture, Forestry and Fisheries (MAFF) recognizes the accompanying parts of urban agribusiness:

1. Source of new and safe items, including natural and low-substance crops, which are progressively requested by urban purchasers. These can be privately created and devoured in view of connections of trust amongst ranchers and city occupants.
2. Opportunity for urban occupants' engagement in agrarian exercises, both straightforwardly (e.g., assignment gardens) and through trade amongst makers and purchasers with the offers of rural items at neighborhood cultivate stands.
3. Open spaces for disaster control, including fire spread aversion, clearing space for seismic tremors and open space in the event of different catastrophes.
4. Resource for diversion and prosperity, including green space for individual relaxation and profound solace.
5. Education and mindfulness raising for enhancing urban inhabitants' comprehension of agribusiness and sustenance issues.

In Kenya ladies form 70% of the labour force in agriculture. Findings from this study indicate that albeit numerous ladies cultivate revenue driven, men are more probable than ladies to develop crops available to be purchased. Men deal with the wage creating exercises, though ladies oversee vegetable generation for home utilization. Nonetheless, ladies' part in urban agribusiness is not restricted to nourishment generation, but rather incorporates handling sustenance for home utilization and for market.

A rapid assessment of the educational levels in Nairobi slums where the study area, falls showed that about 76% of male residents and 72% female had acquired primary level education and 38% of male residents and 32% of female residents had secondary level education. These indicators were different in the rest of Nairobi settlements where about 89% of male residents and 75% of female residents have primary level education against the National percentage of 52% male and 50% female. There are also 72% male and 50% female who have secondary level education in Nairobi settlements in comparison to 31% male and 28% female in the National scale.

A primary survey in Mukuru Kwa Njenga revealed that 25% of the respondents had acquired primary level of education, 50% had secondary education, 19% had diploma education and 6% had a bachelor's degree.

A noteworthy restriction to urban gardening creation in third world nations is the accessibility of reasonable plots. Private yard regions are the most reasonable spaces for this improvement in many urban communities. Answers for confinements on space can be found in option cultivating strategies. Vertical greenery enclosures might be developed on the outside of structures. Hydroponics and aeroponics have the ability to expand trim yields by 15 to 20 for each penny, without requiring substantial plots of urban land. These cultivating techniques are turning out to be progressively prominent and strategies to enhance edit efficiency are at present being researched. For urban zones to bolster a significant piece of their populaces, inhabitants must be included in cultivating. As the cost of nourishment is low, occupants from created nations do not have the motivating force to develop their own sustenance. Interest for horticultural create, in this way, can't be met through customary cultivating techniques in urban zones.

5.3 Conclusion

Urban farming alludes to the generation of both sustenance and non-nourishment items in urban and peri-urban regions. The development of urban farming is an aftereffect of a worldwide increment in relocation from country to urban regions. Urban populaces are more powerless against nourishment uncertainty, as they depend on outer hotspots for their sustenance needs and are subsequently presented to more prominent supply dangers. A few analysts propose, in any case, that urban horticulture may give the answer for nourishment security issues in urban areas. The potential commitment of urban horticulture to sustenance security contrasts amongst created and creating nations. In urban communities in created

nations, urban farming is restricted by an absence of space and the nonappearance of financial motivators; in any case, in the creating scene, urban horticulture can possibly enhance sustenance security. Key issues, for example, urban sprawl, sully dangers and lawfulness, must be tended to for urban cultivating to have a reasonable future. In the Mukuru Kwa Njenga slums of Nairobi, Kenya, family units have as of late started another type of urban farming called sack farming in which vegetables, for instance, kale and spinach chard are planted into significant sacks stacked with topsoil.

This study inspected the effect of urban gardening in family unit nourishment security among occupants of Mukuru Kwa Njenga. The study utilized a mixed method approach, combining qualitative interviews and quantitative methods to collect data from farmers and non-farmers. The study showed that 75% of respondents engaged in urban gardening primarily grow vegetables such as Sukuma wiki, kales and spinach, there are 7% who engage in tomatoes onions and carrot growing while others engage in growing yams, arrow roots and pepper. The crops are grown in sacks, those who cannot find sacks or buckets sometimes use paper bags. It is also common to find some of these vessels suspended from trees or placed on roofs. Institutions like schools use green houses for growing crops.

The study presented evidence that urban gardening increases food security, family nutrition and income, particularly for those family units that embrace cultivating in gatherings. The concentrate additionally uncovered that sack gardening in the Mukuru Kwa Njenga slums positively affects family sustenance security by enhancing family unit dietary differing qualities and by lessening the need to depend on non-conservative methods for dealing with stress that are utilized amid nourishment deficiencies.

The study further reveals that 40% of male respondents in urban gardening while about 80% of ladies participate in the project. This shows a great inclination of ladies participants taking part in urban gardening in comparison to their male counterparts.

Albeit numerous ladies cultivate revenue driven, men are more probable than ladies to develop crops available to be purchased. Ladies' part in urban agribusiness is not constrained to sustenance creation, but rather incorporates preparing nourishment for home utilization and for market. In spite of the fact that men are regularly observed as the providers, in many nations nourishing the family is the ladies' duty. Along these lines ladies are promptly aware of nourishment lacks.

A significant part of the creating scene, including Kenya, is quickly urbanizing. Rising sustenance and fuel costs as of late have put the nourishment security of the urban poor in a tricky position. In urban communities around the world, urban farming helps some needy individuals access nourishment, however urban agribusiness is less regular in thickly populated slums that need space. Urban farming produces 15 to 20 for each penny of the world's sustenance supply and could assume a noteworthy part in accomplishing worldwide nourishment security.

5.4 Recommendations

- 1.** There is need to integrate urban gardening into urban planning and development policies. This will help to promote the project from a planned and policy perspective and the broader development agenda. Policy makers and development institutions should promote development frameworks that enhance the capacity to exploit the potential of urban agriculture.
- 2.** There is need for the Nairobi City County to promote local food systems and support urban farmers and their production lines. This will improve food production from the urban fora especially informal settlements. The County can initiate programs to sensitize residents on small scale backyard farming.
- 3.** Improvement on urban agriculture will mean that all the nodes in the value chains linkages are enhanced and have the capacity to enhance urban farming in various roles.
- 4.** Urban gardening can be improved through harnessing technology to conduct urban gardening. There is need to learn the best practices and borrow in technological advancement in order to improve urban gardening. For instance, the Neza-Chalco-Itza slum in Mexico City is the biggest on the planet with an expected four million individuals. In this manner, innovative nourishment arrangements are critical to the vocation of the general population living there. With that in mind, ANADEGES, a gathering of 20 self-sufficient NGOs in Mexico, created and coordinated a project that intends to individuals build up their own particular ability to deliver natural sustenance from their lawns, porches, and housetops. Using disposed of holders and promptly accessible waste matter, the project has been effective in planning inventive routes for individuals to develop their own particular nourishment. The preparation of rustic ladies is imperative, particularly with the reception of present day farming methods that are custom-made to neighborhood conditions and that

utilization characteristic assets in a reasonable way, with a view to accomplishing monetary advancement without having any adverse effects on the environment.

With the support for the Government of Kenya through the ministry of agriculture and others service providers, the above can be taken into consideration in order to improve urban gardening.

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APPENDICES

Appendix 1: Consent form

Institute of Anthropology, Gender and African Studies

Informed Consent Form for Research Participants

Information Sheet

Purpose of the Study: To examine the impact of urban gardening on household food security

Confidentiality: Your identity will be confidential. The information will be kept private for the length of the study. The outcomes will be exhibited as a project. They will be seen by my supervisor, a second examiner, and an examiner from without. The project might be perused by future understudies on the course. The study might be documented in an empirical journal.

Benefits: The information that will be provided in the research will be used by other researchers who will undertake similar research; the information will also be used to reduce food insecurity in Nairobi and Kenya at large. This is a research and for the purposes of gaining knowledge on urban gardening, and there are no benefits given to respondents.

Information of the researcher

I am a student from the University of Nairobi studying in the institute of gender and African studies; I wish to carry out this research to explore the impact of urban gardening on household food security.

Name; Ruth Masita

Phone No: 0726535843

Email: masita.ruth@yahoo.com

Consent Form

I.....agree to participate in urban gardening’s research study.

The goal and nature of the research has been clearly made known to me in writing.

I am taking part out my own volition.

I grant permission for my interview with [*name*] to be tape-recorded

I comprehend that I can quit from the research, without any consequences, at a time I may feel so, prior or when the research is ongoing.

I comprehend that I can withhold the right to use the data within two weeks of the interview, in which case the information volunteered will be erased.

I comprehend that privacy will be maintained in the write-up by not disclosing my identity.

I comprehend that hidden extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box :)

I agree to quotation/publication of extracts from my interview

I do not agree to quotation/publication of extracts from my interview

Signed.....

Date.....

Appendix 2: In-depth Interview Schedule

Upon signing the consent form the researcher will proceed with the following questions as a guide, in order to explore the impact of urban gardening on household food security mukuru informal settlement.

1. What do you understand by the concept of urban gardening?

.....
.....
.....
.....

2. What are the common crops grown?

- a)
- b)
- c)

3. Have you participated in urban gardening? (*probe* for reasons and benefits for doing so)

.....
.....
.....
.....

4. What crops do you grow yourself?(*probe*, why that crop)

.....
.....
.....
.....

5. Why did you choose to grow this type of crop/ vegetable?

.....
.....
.....
.....

6. What are some of the challenges that you face?(*probe*, in terms of cost, space and attitude of people)

.....
.....
.....
.....

7. What are some of other challenges faced by others who participate in urban gardening?

.....
.....
.....
.....

8. Tell me of any support given to those who engage in urban gardening. (*probe further, either government support or nongovernmental organization*)

.....
.....
.....
.....

9. How has urban gardening changed your life

.....
.....
.....
.....

In your opinion Please give me any suggestions on how to improve and promote urban gardening

.....
.....
.....
.....

10. Is there any other information about urban gardening that has not been included?

.....
.....
.....
.....

Appendix 3: Key informants Interview Guide

Upon signing the consent form by the respondent, the researcher carry out a smooth interview with key informants in order to collect the required information on the impact of urban gardening on household food security in MukurukwaNjenga.

1. Do you practice urban gardening?
2. How is urban gardening practiced in Mukuru?(*probe*)
3. What are the type of crops are grown in Mukuru?
4. What are the challenges that are faced by those who practice urban gardening in MukurukwaNjenga?
5. Tell me of any support given to those who practice urban gardening?(*probe* if support is from Government or any other body)
6. In your opinion how can urban gardening be advanced

Appendix 4: Observation Checklist

Component	Remarks
What is the size of the land	
What is the source of water	
What are the types of crop grown	
What is used for farming? Garden or sack?	
Method of urban gardening	
Owner of the household(male/female)	