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Investigating the effectiveness of urban agriculture in addressing the dynamics of food insecurity in Khayelitsha: A case study of Moya Wekhaya Peace Gardens

A mini-thesis submitted in partial fulfilment of the requirements for the degree of Master of Arts in Development Studies at the Institute for Social Development, Faculty of Economic and Management Sciences, University of the Western Cape.

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Key Words

Urban agriculture

Food security

Resilience

Sustainable Livelihoods Framework

Livelihoods

Community gardens

Coping strategies

Poverty

Khayelitsha

ABSTRACT

Food security is a challenge for most developing countries (Yahaya, 2018). In South Africa, poverty continues to be a stumbling block to food security for most of the population. Due to the socio-economic challenges plaguing the country, a large proportion of the population struggles to access sufficient food which meets dietary needs. Poverty and unemployment are the key contributory factors of food insecurity in South Africa. Against this backdrop, this study sought to investigate the perceived impact of urban agriculture on food insecurity in Khayelitsha. As a survival strategy, urban agriculture has been advocated to improve food security in most developing countries.

Moya Wekhaya Peace Gardens is the study organization of this thesis. The aim of the research is (1) To investigate the extent of food insecurity in Khayelitsha; (2) To investigate the coping strategies adopted by households to be more food secure (3) To investigate the perceived impact of urban food gardens on household food security and (4) To identify challenges faced by urban farmers in Khayelitsha.

Although a mixed method was followed in the study, this study leaned more towards qualitative due to its emphasis on the need to achieve in-depth contextual understanding of the experiences of urban farmers than to establish cause effect relationship between variables. Quantitative method was used for its ability to provide an overview of context-specific factors such as demographics and socio-economic information of the cultivators. Questionnaires were used to acquire socio-demographic information of the participants. The study comprised of 32 purposefully selected participants who completed self-administered closed-ended questionnaires. SPSS 22. was used as a tool for the quantitative analysis. The socio-demographic and financial patterns of the households are presented in the form of descriptive statistics by the scores of each variable. Two semi-structured key informant interviews with project leaders and two focus group interviews with 10 community members and 10 beneficiaries, respectively, were included in the qualitative data collection. The Sustainable Livelihoods Framework was used as a theoretical lens to investigate the potential urban food insecurity urban agriculture to address food insecurity. The study highlights other benefits of urban agriculture for livelihoods, such as empowering women, restoring dignity and enhancing food security. Remittances, group feeding programs and social grants include some of the coping mechanisms adopted. The results revealed that nutrition is still a major challenge for most households in Khayelitsha therefore government intervention and other stakeholders such as the City of Cape Town, the Department of Agriculture and NGOs is required to reinforce

agricultural practices in disadvantaged communities to improve food security and alleviate poverty in Khayelitsha.

Declaration

I declare that *Investigating the effectiveness of urban agriculture in addressing the dynamics of food insecurity in Khayelitsha: A case study of Moya Wekhaya Peace Gardens* is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Bontle Tebello Moloinyane

Signed……

December 2020

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Dedication

This work is dedicated to my incredible mother, Nozipho Elizabeth Moloinyane.

Abbreviations and Acronyms

AFSUN	African Food Security Urban Network
DAFF	Department of Agriculture, Forestry and Fisheries
IEDD	International Institute for Environmental and Development
FAO	Food and Agriculture Organization
IFSS	Integrated Food Security Strategy
NDP	National Development Plan
NGO	Non-Governmental Organization
OXFAM	Oxford Committee for Feminine Relief
RSA	Republic of South Africa
SADC	Southern African Development Community
SASSA	South African Social Security Agency
SDGs	Sustainable Development Goals
SLF	Sustainable Livelihoods Framework
STATS SA	Statistics South Africa
UA	Urban Agriculture
UN	United Nations
UNCF	United Nations Children's Fund
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UN-HABITAT	United Nations Human Settlements Programme
USAID	United Nations Agency for International Development
HFIAS	Household Food Security Access Scale

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CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 Overview and background

Food insecurity is a global challenge although enough food is produced in the world to feed the entire global population. The Food and Agricultural Organization (FAO) (2019) reports that in the year 2019 more than 2 billion people in the world are moderately food insecure i.e. they lack regular access to nutritious and sufficient food. Similarly, the number of undernourished people in the world is estimated to have risen to 815 million (WHO, 2017). Although this is said to be lower than 2000, the number of undernourished people escalated by 11% in 2016. The rise in the number of undernourished people, despite many attempts to reduce global poverty, is a major challenge to international commitments to end hunger by 2030. Food insecurity results in disastrous human suffering. Food insecure individuals are subjected to the consequences of malnutrition and hunger. Hunger can lead to decreased energy levels, shortened life expectancy, diminished capacity to learn and a reduced ability to avoid infections and illnesses (Ihuoma, 2015). Hunger is a growing concern for all African sub regions (FAO, 2019). Hunger is defined by Campbell (1991:409) as a "exhausted condition caused by a strong desire for food". The FAO (2019) reports that Africa has the highest prevalence of chronic hunger and undernourishment compared to other regions. The FAO (2008) and Vogel and Smith (2002) describe chronic hunger as consistent hunger in which people over a long period of time are unable to meet the basic requirements for food. Due to increased urbanisation, food insecurity has become a challenge in urban areas (Korir et al., 2015).

The United Nations (2018) predicts that 68 percent of the global population will live in cities by the year 2050. As a result, Hoornweg and Munro-Faure (2008) and Azunre et al. (2019) conclude that this rapid growth in the population of the city would have dire effects on the levels of food security and poverty. Within this context, urban agriculture emerged as a livelihood strategy to alleviate poverty within urban centres for most developing countries (May & Rogerson, 1995). This is supported by Brezziani & Valdes (2007) and Ziga (2018) who found that urban agriculture is one of the basic livelihood strategies for achieving food security in low-income economies. Scholars such as Simatele and Binns (2008) view urban agriculture as one of the main strategies of action to alleviate hunger and enhance urban food security. This is confirmed by Zezza & Tasciotti (2010) who explain that urban agriculture is instrumental in alleviating poverty and improving food security when it is geared towards

increasing food production and creating employment opportunities. In the sub-Saharan region, urban agriculture is diverse i.e. it includes small-scale market orientated commercial farming and subsistent farming by the poor (FAO, 2001) and just more than 10 percent of the urban population are actively involved urban agriculture (approximately 11 million people).

In South Africa, food insecurity is attributed to widespread poverty, unemployment and inequality. According to the FAO (2019), income inequality is associated with undernutrition and increases the likelihood of severe food insecurity. Due to income inequality, the poor cannot benefit from economic booms as they disproportionately earn less income compared to others (FAO, 2019).

For many urban residents in South Africa, access to employment opportunities continues to be a stumbling block to access to food and overall well-being of many households. As a result of the urbanization trends in South African cities, poverty, food insecurity and malnutrition have become a major challenge in urban areas (UN-HABITAT, 2001). Stats SA (2019) estimates that urban areas are home to more than half of the South African population (two thirds). Statistics South Africa (Stats SA, 2012) estimates that in South Africa, 21 percent of the population do not have access to adequate food and nutrition. Furthermore, in 2015 it was found that 13.4% of the South African population were vulnerable to hunger while the percentage of people living below the poverty line in South Africa during the same period was 23.7% (Stats SA, 2017). As 15 million South Africans are relying on social grants as the primary source of income in their households, Oxfam (2014) notes that this is due to high unemployment rates. Urban agriculture is one of the basic survival techniques implemented to enhance food security due to the extent of food shortages and inadequate access to food for many households. Reese (2014) reports that urban agriculture takes place in various forms such as backyard gardens, community gardens, roof tops, indoor farms, backyard chicken pens and aquaculture. Shackleton et al. (2010) found that urban agriculture is a supplementary rather than a primary livelihood strategy for many urban farmers in South Africa. According to Azunre et al. (2019), community gardens provide residents access to fresh fruits and vegetables and play a significant role in safeguarding people's health and improving food security (Larsen & Gilliland, 2009). In Cape Town, most urban residents rely on the cash economy to secure food. Battersby (2011) found that 80% of Cape Town households earned less than R1200 per month and were severely food insecure.

1.2 Rationale of the study

Urban agriculture's contribution to food security is well documented internationally and in South Africa (Sebata et al., 2014; Amar-Klemesu, 2000; Zezza & Tasciotti ,2010; Mougeout, 2000; May & Rogerson, 1995). However, Shisanya & Hendriks (2011) contends that there is lack of empirical evidence on the positive impact of [1]community gardens on food security. Food insecurity has a negative impact on individuals in many aspects, such as their quality of life, health and overall livelihood outcomes. In South Africa, food insecurity is a major problem and is experienced by many households. The rapid increase in the number of people migrating to cities has made ensuring food security a priority. Poor people in urban areas are more vulnerable to food insecurity. Poulsen et al. (2015) report that urban residents often face high food costs, accounting for a large percentage of their revenue, leaving them vulnerable to fluctuations in prices. Recent statistics show that despite the decrease in general poverty between 2006 and 2011, poverty levels increased in 2015 and more than half of South Africans (30.4 million) were considered poor in 2015 (Stats SA, 2018). This rapid increase in urban poverty can be attributed to the high unemployment rate. Statistics South Africa (Stats SA, 2016) estimates that access to food was extremely insufficient for 18.4 percent of households in metropolitan areas. In the City of Cape Town 29.7% of households experienced inadequate access to food. Furthermore, Odoms-Young (2018) found that there is a significant racial dimension to food insecurity. Similarly, Frayne et al. (2009 cited in Philander, 2015) argues that Black African and Coloured people living in areas such as Ocean View, Philippi, and Khayelitsha are mostly experiencing food insecurity. It is therefore important that urban food insecurity is addressed by promoting small-scale farming which improves access to food for poor households.

Owing to the extent of food insecurity and its multi-dimensional impact, it was thus imperative to investigate the issue of food insecurity more fully and ascertain the contribution of urban agriculture on food security. Within this context, this research examines the perceived impact of urban agriculture on food security. The findings of the study will be used to provide

[1] It is important to note that community gardens are one form of urban agriculture and are comprised of a large group of people who farm on state owned land (Vitiello et al, 2009). In Cape Town other agricultural practices include animal farming, home gardens which are located on private land for household consumption and allotment gardens which are gardens located within larger hectares of land that is either state owned or privately owned which can be leased for agricultural purposes (Drescher et al., 2006).

recommendations to government departments, policy makers and other supporting actors on ways to reinforce the impact of urban agriculture on food security.

1.3 Background to the case study area

This study focuses on the impact of urban agriculture in addressing food insecurity in the township of Khayelitsha in the Western Cape Province. Illustrated in Figure 1.1, Khayelitsha is situated 30 km from the centre of Cape Town on the Cape Flats. It is located to the east of Mitchell's Plain and bordered to the south by False Bay and north by the N2 highway.

Most people live in the impoverished townships on the Cape Flats because in the hope of finding jobs, people migrate mostly from the Eastern Cape to the city. Khayelitsha is characterized by elevated unemployment, crime, informal settlements, poor health and low levels of education. Townships in the Cape Flats usually have high population densities, and when increased urbanization leads to a higher population density, they also face high unemployment. Van Breeman (2014) reports that Khayelitsha has the highest number of people living below the poverty line, therefore, it experiences the highest rates of food insecurity.

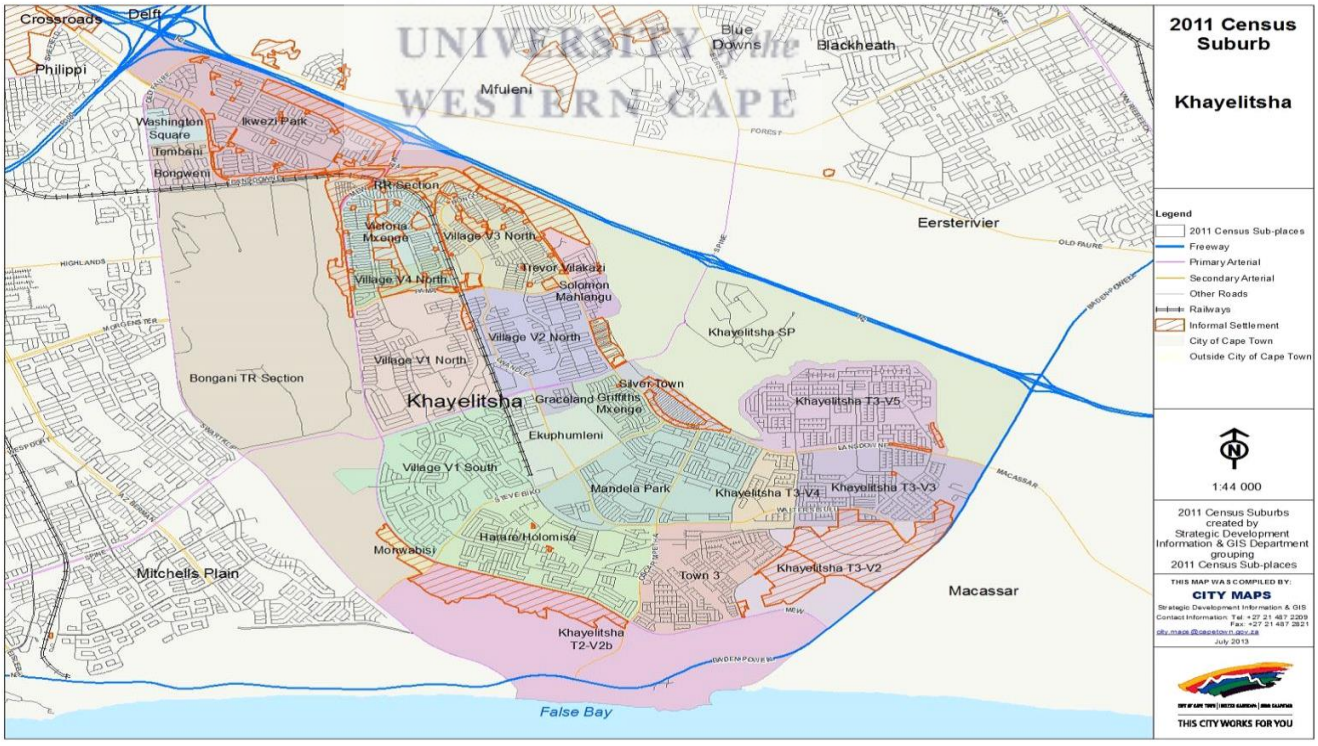


Figure 1.1 Location of Khayelitsha. Source: City of Cape Town (2011)

1.3.1 Case study organization: Moya Wekhaya Peace Gardens

One of the prominent community gardening projects in the case study area is Moya Wekhaya Peace Garden. Moya Wekhaya is a 10 000m2 community garden project in Khayelitsha which was established in 2014. The aim of the project is to enable residents to plant and harvest crops by providing facilities, equipment and training and start-up requirements (World Design Capital, 2014). The Moya Wekhaya community garden was founded by a non-profit organization known as Abalimi Bazekhaya and the Rotary Club of Constantia. One of the organization's primary functions is to inspire people to combat hunger by sustainably and organically growing food in both their backyards and community gardens. The food is grown for home consumption as well as commercial purposes. More than 100 households are beneficiaries of Moya Wekhaya Peace Garden. Moya Wekhaya Peace Gardens aims to combat poverty by empowering the community by providing them with training workshops which equips the gardeners with skills (World Design Capital, 2014).

1.4 Problem statement, Aims and objectives of the study, Research questions,

1.4.1 Problem statement

South Africa is a country characterized by high poverty and inequality. Recent studies on food insecurity indicate that it is not a result of food shortage but rather of access and affordability (Van Breemen, 2014). High unemployment rates in South Africa are the primary contributing factor to food insecurity. While Section 27 of the South African Constitution (RSA 1996) integrates the right to adequate food, most of the population of South Africa is food insecure (Stats SA, 2017). Although addressing food insecurity has been part of the policy agenda in South Africa (Integrated Food Security Strategy, National Development Plan, and the South African Social Security Agency), the estimated number of people vulnerable to food insecurity has increased. Devereux et al. (2019) report that child stunting rates fluctuate between 20 – 30 percent since 1994 while one in four children is chronically malnourished in South Africa. This increase in the number of people experiencing poverty has led households to adopt various livelihood strategies to address this issue. Urban agriculture, although not a new concept has become a livelihood strategy in efforts to reduce food insecurity and has enabled people to generate income. This research has explored how urban agriculture, as a livelihood strategy,

contributes to food security in Khayelitsha in the Western Cape Province of South Africa.

1.4.2 Objectives of the study

This research sought:

1. To review existing literature on food security and urban agriculture as a livelihood strategy.
2. To investigate the extent of food insecurity in Khayelitsha.
3. To investigate the coping strategies adopted by households to be more food secure in Khayelitsha.
4. To investigate the perceived impact of urban food gardens on household food security.
5. To identify challenges faced by urban farmers in Khayelitsha

1.4.3 Research questions

Based on the aims and objectives of this study, the following research questions guided the study:

1. What is the extent of food insecurity amongst households in Khayelitsha?
2. What coping strategies are adopted by households to be more food secure?
3. What is the impact of urban food gardens on household food security of the participants in the Moya Wekhaya Peace Gardens?
4. What are the challenges faced by urban farmers in Khayelitsha?

1.5 Structure of the thesis

Chapter One is the introductory chapter of the study. The chapter provides an overview and background of food security, the rationale for the study, background of the case study organization and presents the research problem, objectives and questions.

Chapter Two focuses on the study of related food security and urban agriculture literature. The literature is divided into key topics and patterns in both the international and South African contexts. This chapter discusses an overview of the South African policy and legal framework

relating to food security and urban agriculture.

Chapter Three is centred on the Sustainable Livelihoods Framework, the theory used in the study to address the questions and objectives of the research.

Chapter Four outlines the research design and research methodology employed in the study. A description of the research design, sampling techniques and data collection methods used in the research is given in this chapter.

Chapter Five presents the empirical data and general findings drawn from the fieldwork conducted in the case study area.

Chapter Six presents the conclusion to the study. It provides summary findings, theoretical reflections and provides recommendations based on the findings of the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

There has been a resurgence of interest on the contribution of urban agriculture to food security since the concept was placed on the policy agenda in the mid 1980's (Rakodi, 1985). As a result, controversies on the extent to which urban agriculture contributes to food security persist. The aim of this chapter is to critically examine the impact of urban agriculture in addressing the dynamics of food insecurity. This chapter discusses different perspectives in the literature on urban agriculture and food security and establishes the relationship between urban agriculture and food security. Moreover, the impact of urbanisation trends on food security will be discussed in this chapter. Subsequently, resilience in relation to urban agriculture, the emergence of urban agriculture in Cape Town and the policy and legislative framework regulating urban agriculture in South Africa will be discussed. Lastly, the key policy challenges in urban agriculture will be discussed in this chapter followed by a summary of the chapter.

2.2 Overview and definition of food security

The earliest apprehensions about food security can be traced as far back as the 1940s to the Hot Springs Conference of Food and Agriculture in 1943. Since then, the issue has experienced a few redefinitions. The 1943 conference conceptualized food security as "secure, adequate and suitable supply of food for everyone" (Napoli et al., 2011:7). It was after this conceptualization of the term that a growing concern for food security was observed on the international agenda. In the 1950s, bilateral agencies by donor countries such as the USA and Canada assisted poor countries to improve the state of food security in these countries. However, this was rejected upon recognizing that food aid would restrict a country's ability to be self-sufficient. This realization birthed the concept of Food for Development which was made official institutionally at the World Food Programme (WPF) (Ziga, 2018). According to the FAO (1996), food security occurs when all people have physical, social and economic access to healthy and nutritious food that meets dietary requirements for a healthy life (FAO, 1996). Based on this definition, the term is used to describe whether a household, region or country has access to enough food that meets a diverse diet and energy requirement. Therefore, a household is food secure if it can provide sufficient food needed by its members to be food secure (Barret, 2010). Evidently, previous debates on food security focused on food availability

as a necessary element to food security (Gross et al, 2000). Opara (2013) argues that the availability of food is influenced by various factors, from production to post-harvest management that maintains food quality and safety. The authors note that at both the global and domestic level, food supply does not always lead to food security. Adding to the discussion, the FAO (2000) states that food security has four components namely, availability, accessibility, stability, and utilization. Availability is accomplished when enough food is at people's disposal. Access is achieved when all households and individuals have sufficient resources to acquire food (through producing, purchasing, or food aid). Food access may be physical market access or economic access, i.e. household-level purchasing power (Opara, 2013). Utilization refers to the adequate quality and quantity of food needed to achieve calorie and nutrient intake requirements (Ibid). Food utilization is accomplished when food is properly prepared and stored. This implies that proper food processing and storage techniques are employed, and adequate health and sanitation services exist (FAO, 2006).

2.2.1 Measuring food security

The notion of food insecurity is linked to poverty. Often, when discussing food insecurity, it is important to briefly highlight the extent or perhaps the severity of poverty in a country. The United Nations Development Programme (2006) reports that food insecurity is related to poverty, income, and unemployment and often manifests itself in multiple deprivations. Conversely, Napoli et al. (2011) note that while food security describes adequate access to food, food insecurity measures hunger. This was evident at the 1996 Rome World Food Summit when, in response to goal 3 of the Millennial Development Goals, governments committed to alleviating hunger by 2015 in order to reduce the proportion of people suffering from hunger between 1990 and 2015. To achieve this goal, the FAO held a Scientific Symposium on Food Measurement and Evaluation in 2002. The first three compared food availability, the fourth measured nutritional outcomes while the fifth measured people's perceptions of hunger (Napoli et al., 2011). According to Massett (2010 cited in Napoli et al., 2011), various metrics are used to measure food insecurity depending on the nature of the research, i.e. whether the impacts of food insecurity are evaluated and whether the analysis is qualitative or quantitative or whether the analysis is conducted at macro (country) or meso (regional) or micro (household) level. In 1995, the US used its food security model to evaluate the extent of food security in the region. The questions were aimed at extracting information on four main areas, such as the level of distress in relation to the availability of food, the

perceptions of people that either quality or quantity of food is inadequate and the reduction in adult and children's food intake. It was based on these four factors that a food security scale was drawn which highlighted moderate food security (worrying about food) to food insecurity (child going a day without food) (FAO, 2003; Labadarios, et al. 2009; Napoli, 2011). Table 2.1 below illustrates the qualitative measurement of food security.

Table 2.1: Qualitative measurement of food security

Level of Food Security	Definition	Analysis of the level of food security
Food secure	-Households regularly having Adequate food without difficulties or no evidence of food insecurity.	-How often households consume a balanced meal
Moderately food secure	- Adult food consumption is limited, and adults feel hunger due to self-rationing. -Diet quality is reduced	Households sometimes have difficulties or anxiety about sufficient food, but their food consumption has not significantly reduced the quality and variety
Food insecure	Reduced food intake for children and children experience the physical feeling of hunger, adults display signs of more extreme hunger as a result of much lower food intake.	- Loss weight from a lack of food

Source: Napoli et al. (2011)

2.3 Food security as an urban challenge

Urbanisation is defined as the shift from a rural to urban society (Hussain & Imitiyaz, 2018). Migration and national population play a significant role in the growth of cities in developing countries (Abouelmagd, 2020). In developing countries, rapid urbanisation poses

unprecedented challenges for food security in cities. Hatab et al. (2019) note that the rate of urbanisation is projected to increase over the next few years and two thirds of the world's population will live in cities. Countries in Asia and Africa where urbanisation is growing rapidly face severe adjustment pressures in their food systems, as urban expansion often takes place in the most productive agricultural land in the world (Seto et al. 2012 cited in Hatab et al, 2019). Similarly, UNDESA (2014) reports that by 2050, over six billion people are expected to live in urban areas.

The Food and Agriculture Organization (2017), contends that understanding the socio-economic challenges and consequences of urbanisation is one of the key components of sustainable development because it sheds light to the appropriate policies needed to address the issue of urbanisation. Furthermore, the Sustainable Development Goals (SDGs) identifies the link between urbanisation and food security, poverty, the deterioration of natural resources and sustainable development. Moreover, Battersby (2013 cited in Hatab et al., 2019) postulates that in developing countries where urban food security and food supply is critical, rapid urbanisation and other environmental challenges have changed the landscape and complexity of food systems in terms of access.

According to the FAO (2017) the nature of urban food insecurity is characterized by nutritional transitions, that is, changes in diet preferences, physical activity and nutrition. This change in diet is linked to epidemiological transitions (Drewnowski & Popkin, 1997). Conversely, Basu et al. (2013) reports that there is an association between a country's level of urbanisation and diabetes prevalence. Similarly, Haddad et al. (2016) found that obesity, diabetes and hypertension are higher in in urban areas in most West African countries. Castellanos (2014) found that in Mexican cities, supermarkets and unhealthy food choices increased obesity levels. This is supported by the FAO (2004), Mehio et al. (2010) and Baker and Friel (2016) who observed that urban populations tend to consume more calories compared to people in rural areas. Subsequently, May (2018) argues that urbanisation not only changes people's dietary choices but also influences where food is purchased. This reliance on purchased food is the main contributing factor to food insecurity, because in poverty-stricken areas people frequently lack a stable income (ibid). Conversely, Matuschke (2009) contends that having adequate resources to afford a balanced diet is an important aspect of urban food security, as urban residents in developing countries purchase 90% of their food (Ruel & Garrett, 2004). Moreover, Maxwell et al. (2000) report that in urban areas, access to food is determined by the household's ability to purchase food because majority of the urban population do not have

access to land to produce their own food. Against this backdrop, the urban poor often spend more on food purchases than their wealthier counterparts because they are forced to purchase smaller quantities of food daily (ibid). Similarly, Crush (2016) notes that nutrition narratives on urbanisation bring awareness on the [2]double burden of malnutrition and increasing obesity rates in urban areas.

2.3.1 The relationship between urban agriculture and food security

Urban agriculture refers to informal farm production in urban areas based on farming practices typically undertaken in rural areas (Van Veenhuizen & Danso, 2007). Urban agriculture is a livelihood strategy that helps people cope with economic crises and future shocks and helps in the provision of food and job creation. There have been many discussions on the role of urban agriculture in improving food security in developing countries (FAO, 2003). Urban agriculture is perceived as having many positive outcomes and is considered as an important means to improve food security in addition to providing income for people (Rogerson, 2003). According to De Zeeuw (2002), urban agriculture not only contributes to subsistence needs for food security but also improves the urban ecological environment and employment. Egal (2001 cited in Hampwaye et al., 2007) articulates the impact of urban agriculture on food security in terms of overall availability and food supply for urban markets. This is supported by Dubbeling et al. (2010) who notes urban agriculture plays a significant role in improving food security even if the percentage of the total access to food is relatively small. For Drescher (2001), the positive outcome of urban agriculture is its significant role in alleviating poverty for the poor in urban areas, while Nugent (2002: 86-87 cited in Rogerson, 2003) states that urban agriculture provides a lifeline against shocks.

While unemployment and dire poverty tend to be a permanent situation for many households in urban areas, "farming may constitute an important means of survival by providing substantial part of a family's food and possibly income" (De Zeeuw, 2002:1 cited in Rogerson, 2003). Moreover, the UNDP (1996:4) considers urban agriculture as an "easy entrepreneurial activity for people at different levels of income" as it provides the poorest of the poor access to food while providing the stable poor with a source of income and good quality food at low

[2] This is characterized by the existence of undernutrition, obesity and diet relate communicable diseases in people, households, populations and across life course (WHO, 2017).

cost.

Evidently, it is because of its ability to enable households to deal with economic shocks that urban agriculture is seen as an effective strategy to alleviate poverty in most developing countries. According to the Food and Agriculture Organisation (FAO) (2014) agriculture is linked to food security in many parts of the world and contributes to food security by reducing food prices, creating employment and increasing wages. Moreover, De Zeeuw (2002) notes that urban agriculture provides poor people with the chance of a livelihood and improves their dietary diversity. Another positive outcome for Maxwell (2002) is that urban agriculture is linked to higher nutritional status due to access to more diverse food.

Based on a vast number of household studies of the role of urban agriculture on food security, it is clear that urban agriculture can make a huge difference in improving the lives of the poor and aids with improving the health of the poor (Nugent, 2000 cited in Rogerson, 2003). Furthermore, urban agriculture is a popular livelihood strategy for women as it enhances food security within the household and serves as a source of income (Maxwell, 2002 cited in Hampwaye et al. 2007). Empowering people to grow food for subsistence provides nourishment for many people in the country. In this regard, the FAO (2014) are of the view that without adequate farmer support programmes, poor people have little chance of escaping poverty hence limiting the impact of agriculture on livelihood outcomes of the poor.

Notably, much of African research supports the view that urban agriculture provides poor households with food and much needed income. Similarly, Mougeout (2000 cited in Philander, 2015) found that urban agriculture has positive impacts on the welfare of the poor in African cities, whereas Lee-Smith (1999 cited in Rogerson, 2003) is of the view that subsistence agriculture represents an important coping strategy in urban areas of Sub-Saharan Africa with self- production amounting to 60% of total consumption in poor households. At a macro level, Rogerson (1997) states that the spread of urban agriculture across Africa can be attributed to the consequences of globalisation processes and structural adjustment programmes which threatened household food security. In trying to cope with the effects of structural adjustment measures, poor households adopted farming as a livelihood strategy which helped release the pressure on the food budget of families (Hampwaye et al., 2007). Similarly, Bowyer- Bower (1997) found that the main push factor for urban agriculture in Zimbabwe was economic hardship which resulted from economic structural adjustment. According to more recent research, both Rogerson's (1997) and Bowyer-Bowyer's (1997) statements are still relevant

today (Szabo, 2016).

2.3.2 Critique of the potential of urban agriculture on food security

Contemporary debates are dominated with the view that urban agriculture can alleviate poverty and improve food security (Drechsel & Dongus, 2010; Dubbeling et al., 2010; Rogerson, 2010). However, a considerable body of research has critiqued the potential of urban agriculture on food security. Sceptics argue that this argument exaggerate the resources and motivations of the urban poor to grow their own food and derive income. Accordingly, it has been argued that there is insufficient evidence to support claims regarding urban agriculture's ability to alleviate poverty and improve food security (Rogerson, 1996; Webb, 1998). Similarly, Lynch et al. (2001) and Rogerson (2003) argue that there is insufficient evidence supporting the effectiveness of food gardens in improving nutrition.

According to Mbiba (2000), African city governments are not convinced that urban land should be used for urban agriculture. In fact, for most cities in Africa, food production and supply are not the key determinants of food security. Zezza and Tasciotti (2010) contend that food access rather than production and supply determines food security as most urban dwellers purchase their food. This implies that the poor the household the greater the percentage of income that is spent on food.

Zezza and Tasciotti (2010: 266) argue that some literature on urban agriculture is intended to promote sector based on scant data that overexaggerates the benefits of urban agriculture. Similarly, Webb (2011) notes that there are methodological errors and lack of evidence backing claims in urban agriculture literature because only a few studies attempt to quantify yields of urban agriculture and some studies either lack clear links with nutrition or take cultivator's perceptions at face value without proper analysis.

According to Devereux and Maxwell (2001), due to restricted land access and lack of secure tenure rights, urban cultivators are forced to farm on small public spaces and the farming results in low productivity and sustainability. Moreover, it has been argued that, literature on urban agriculture does not consider issues associated with competition for resources in urban areas such as access and water rights / land tenure rights (May & Rogerson 1995; Lima et al., 2000; Webb, 1998). Moreover, Crush et al, (2011:292) argues that 96% of the population in areas targeted for urban agriculture by local NGOs have never eaten home grown food and this has

led to the conclusion that it is not making a substantial contribution to food security (Olivier, 2015).

2.4 The emergence of urban agriculture in Cape Town

Urban agriculture was practiced in Cape Town as early as 1652 upon the arrival of Jan Van Riebeek. Jan Van Riebeek established the Vereenigte Oost-Indische Compagnie (VOC) company shortly after his arrival at the Cape. Later that year Jan Van Riebeek started experimenting with vegetables in his 17.884 hectares garden and produced vegetables such as carrots, corn, wheat, cabbages, peas, lettuce and spinach (Worden et al., 1998). Worden et al. (1998) reports that in the 1730s, many residents had small gardens on the slopes of the Table Mountain and Devil's Peak. Naidoo and Dreyer (1984) note that during the 1730s health was the primary motivation to participate in gardening because gardening provided the sailors stationed at the Cape fresh vegetables. It was only in the early 1800s that the Cape government decided that the Cape Flats should be used for agricultural development (Edwards, 1984). Literature on the history of urban agriculture (Karstens, 1951; Worden et al., 1998) indicates that prior to 1980, people farmed for health benefits while others viewed gardening as a hobby. While urban agriculture gained its popularity in the townships of the Cape Flats during the 1980s (Silk, 1981). Karaan and Mohammed (1998) note that community gardens became popular in Cape Town around 1982 specifically after the establishment of Abalimi Bazekhaya a voluntary organisation that works with individuals and community-based organisations to achieve food security through establishing community gardens on the Cape Flats. Fermont et al. (1998) reports that in the early 1990s, urban agriculture was predominantly practiced by the urban poor. In Khayelitsha, Nyanga and Philippi farmers were typically unemployed women who came from a gardening background who derived both social and economic benefits from agricultural activities.

In recent years, however, the socio-economic challenges that South Africa is faced with has resulted in urban agriculture a livelihood strategy to alleviate poverty and improve food insecurity. South Africa's high rate of unemployment and low formal labour force absorption together with increased food prices are some of the causes of food insecurity in Cape Town (Nattrass & Walker, 2005). Battersby (2011) finds that living in informal settlements increases the chance of being food insecure by 20%. This is a significant finding as a large proportion of

households on the Cape Flats reside in informal structures.

A study conducted in Khayeliltsha, Ocean View and Philippi using the Household Food Security Access Scale (HFIAS) consisting of 1060 households, found that 80% of the study population were moderately and severely food insecure with only 15% of the study population indicating that they were food secure (Battersby, 2011). In this regard, the influence of income on food security is significant and Battersby's (2011) finding that 80% of Cape Town households earning less than R1200 per month were severely food insecure is to be expected. According to the Food Gardens Policy in Support of Poverty Alleviation and Reduction (2013), 40% of houses in poor areas of Cape Town cannot afford to buy food at least once a week. Thus, it can be concluded that several studies conducted within the boundaries of the City of Cape Town found that a large number of the population are living in poverty and as a result are food insecure.

As noted above, urban agriculture is not a new phenomenon in Cape Town. In fact, Cape Town is the only city in South Africa with an urban agricultural policy (Battersby, 2012; Olivier & Heinecken, 2017). In addition, it has been reported that Cape Town has the largest number of non-governmental organizations that promote urban agriculture in South Africa (De Satge & Williams, 2008). Olivier and Heinecken (2017), provide some insights into urban agriculture in the city, noting that Cape Town has a broader agricultural sector, with support from both the government and NGOs with NGOs being the biggest instigators of the development of urban agricultural activities in Cape Town.

To address the issue of food insecurity in the province, the Western Cape Department of Agriculture started various initiatives in the informal settlements of the Cape Town Metropole. Most importantly, more than 100 NGOs are reported to be supporting urban agriculture in Cape Town (Battersby et al., 2015). Currently, the largest NGO in Cape Town, Abalimi Bazekhaya supports 4558 members from the poor communities of Khayelitsha and Nyanga (Olivier & Heinecken, 2017). Another prominent NGO in Cape Town is Soil For Life which currently supports 1930 members. Olivier and Heinecken (2017) report that NGOs play a significant role in improving urban agriculture activities in Cape Town as they connect farmers with the private sector market creating a source of income for the farmers.

D'Haese & Kirsten (2006) are of the view that NGOs and other pro development initiatives in Cape Town are not only aimed at combatting food insecurity but are also aimed at empowering the poor by allowing them to be proactive in their development. The initiatives include starter

packs for household gardens, support for school and community gardens and farmer support. Similarly, Crush et al. (2011) observed a significant increase in the number of urban farmers in Cape Town, from 723 in 2002 to 1 767 in 2007 due to the collective efforts promoting urban agriculture by NGOs and other agencies. However, despite this increase in the number of urban farmers in Cape Town, some authors argue that the impact of urban agriculture on food security is minimal as 96% of the population in areas targeted for urban agriculture have never eaten home-grown food (Crush et al., 2011).

2.5 Urban agriculture and food security in South Africa

There are many socio-economic, environmental and political problems facing South Africa (Olivier, 2015). As a result, poverty remains one of post-apartheid South Africa's most critical challenges (May, 1998). Rogerson (1998) recognizes that this is characterized by the unjust history of the country which denied most of its citizens access to opportunities (South Africa, 1997). In addition, Szabo (2016) notes that the issue of poverty is exacerbated by globalization and urbanization which has an increasing impact on food insecurity for a large percentage of the population. Though poverty is mostly seen as a rural problem (Battersby and Marshak, 2013; Crush and Caesar, 2014), it is one of the main problems forcing people to move to urban areas in the hope of obtaining jobs and improving their living standards. Consequently, the UN-HABITAT (2001:12) argues that the rural framing of food insecurity is associated with the rural bias in development research. Urban agriculture is taken as a subsistence strategy to resolve food insecurity by poor households due to rural to urban migration of skilled urban farmers (Eriksen-Hamel & Danso, 2010: 87). This is supported by Nugent (1996) who reports that for the unemployed in the urban cities of South Africa, urban agriculture is an important source of income and a mechanism to meet basic needs.

As noted above, there are many drivers of food insecurity in urban areas. The main contributors to food insecurity in South Africa are the high levels of unemployment and poverty in the country with unemployment calculated at 29% with more than 42.2% of the adult population living below the upper bound poverty line (Stats SA, 2019). Urban agriculture has become one of the essential livelihood strategies to improve food security. In addition, South African municipalities have tried to counter food insecurity by formulating policies that promote urban agriculture (Rogerson, 2010). Crush et al. (2011), however, argue that most South Africans do

not have enough land to engage in urban agriculture because most live in houses less than 350 square meters in size.

Research conducted by Stats SA (2017) indicated that 87.6% of people living in rural areas live below the upper-bound poverty line which is significantly higher than 52% of those in urban areas living below the poverty line. In addition, Stats SA (2012) revealed that 21% of the people in South Africa do not have adequate access to nutritional and sufficient food. In 2015 13.4% of the South African population was reported as vulnerable to hunger while the proportion of people living below the poverty line in South Africa during the same | period was 23.7% (Stats SA, 2017). Stats SA (2012) found that less than a quarter of South African households are involved in agricultural activities with most agricultural activities taking place in rural areas.

Webb (2011) is of the view that urban agriculture contributes to food security in South Africa in many ways. When households produce their food through agricultural methods, it is easier to access a diverse diet and this subsequently leads to a higher quality diet. When households produce their food, their overall household expenditures are reduced and enables households to spend more on other household necessities. In low-income countries where there is high unemployment and greater gender bias in the labour market, urban agriculture confers more benefits to women as it offers them employment (Webb, 2011). Stats SA (2016) found that three quarters (76.7%) of households involved in agriculture do so to secure an additional source of food. Figure 2.1 below illustrates that 14.8% of South African households were involved in agricultural production activities.

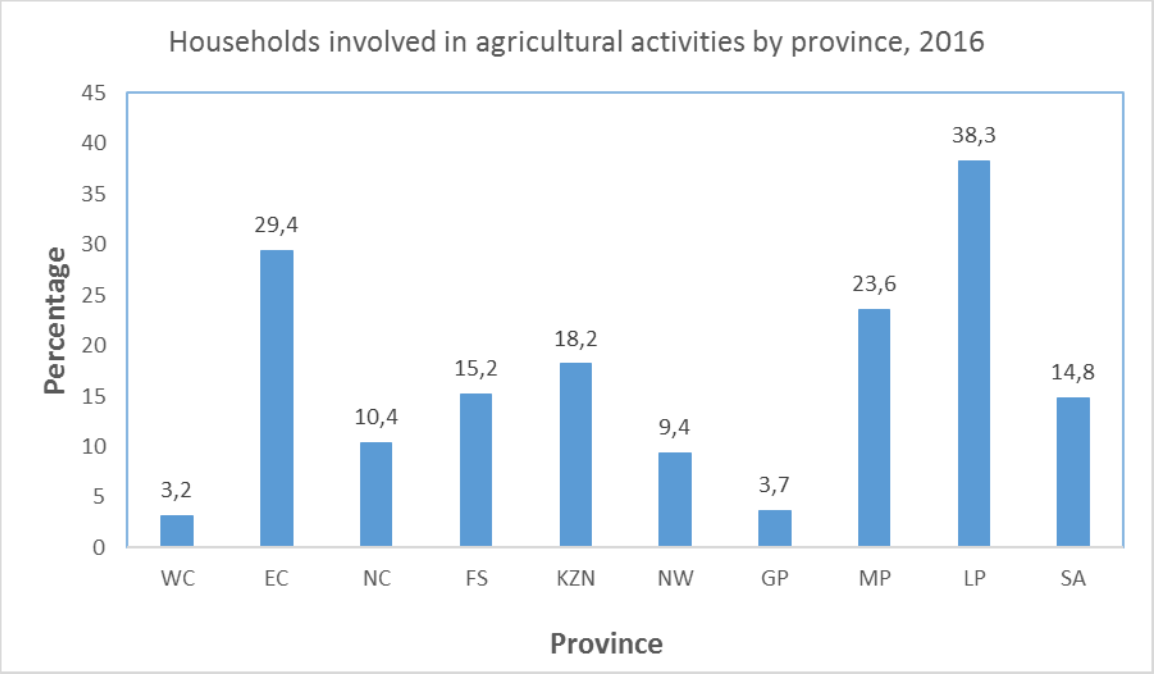


Figure 2.1 Households involvement in agricultural activities Source: StatsSA (2016)

2.6 Building resilient cities through urban agriculture: Evidence from developing countries

Urbanisation poses many challenges which inevitably impact resource use in urban areas as most cities encounter difficulty in providing basic services and creating enough employment opportunities (Madlener & Sunak, 2011). Resilience is described as the ability to deal with shocks and stresses and has become a prominent concept across various academic disciplines particularly in relation to shocks, inflation, climate change and environmental disasters (Skerratt, 2013; Wilson, 2013). In most developing countries, food security is perceived as a significant resilience attribute. For Dubbeling et al. (2009) resilient cities are categorized by increased self-sufficiency and their ability to manage and bounce back from stress or catastrophic events. Involvement in urban agriculture ensures that households can produce their own food which helps during financial hardships and unemployment.

Evidently, supporting farmers, households and other food system actors is key to ensuring that people are flexible to adapt to economic, social and ecological shocks and stresses which translates to resilience in food systems (Smit, 2001). This is supported by Baker (2008) who argued that prioritizing investing in urban agriculture can help mitigate the effects of food

insecurity and reduce risks in the future. Conversely, Bolund and Hunhammar (1999) argue that the best way to build resilience in urban areas is through local based solutions such as urban agriculture. More recently, the Food Alliance and National Heart Foundation of Australia (2012) stressed the importance of incorporating urban agricultural policies into planning processes to help build resilience and strengthen regional economies.

2.6.1 Economic resilience

As noted in preceding sections, the impact of urban agriculture to food security is widely recognized by researchers, urban development planners and governments. Research has shown that urban agriculture has become a source of income for many residents in developing countries. It is reported that globally more than 200 million urban residents produce food for urban markets (Armar-Klemesu, 2000). In Africa, urban agriculture is an important source of income for people who cannot find formal employment due to their low skills level (Zezza and Tasciatti, 2010). Furthermore, it is estimated that about 40% of urban residents in Africa are involved in urban agriculture. Donovan et al. (2011) notes that in the Sub Saharan region, urban agriculture plays a significant role in creating employment opportunities for the urban poor. Households that produce more than what they need are more likely to trade their surplus goods and generate their own income. A study revealed that in Havana, more than 26000 people are involved in jobs indirectly related to urban agriculture and more than 117 000 people are directly involved in urban agriculture production (Novo & Murphy, 2000). In Nigeria, a study revealed that more than 50 percent of the poor generated income from urban agriculture (Zezza & Tasciotti, 2008). Moreover, research conducted in the Dominican Republic revealed that unemployed youth derive income through their involvement in agricultural activities and this allows them to secure the wellbeing and food security of their families and communities (Kekana, 2006). Conversely, data gathered from research in Zimbabwe indicated that residents involved in urban agriculture earned enough income to pay for revenue for targeted service delivery (UN-HABITAT, 2015 cited in Modibedi, 2018). Furthermore, the FAO (2013) reports that urban agriculture provides employment and income opportunities which contributes to relieving chronic poverty in urban areas while stipulating the growth of other small businesses related to farming such as packaging and farming inputs (IIED, 2011).

2.6.2 Social resilience

In many developing countries social cohesion is a fundamental value for most communities. Hodgson et al. (2011) found that urban agriculture creates opportunities for community involvement and strengthens relationships and social interaction. This is supported by De Zeeuw et al. (2011:158) who note that in developing countries, urban agriculture is often used as a strategy to "promote social inclusion of the urban poor and disadvantaged". For people living with disabilities and female headed households, urban agriculture presents opportunities to feed their families while enhancing self-esteem and entrepreneurial capabilities (Van der Schans & Wiskerke, 2012; Bailkey et al. 2007). Similarly, Novo and Murphy (2000) note that urban agriculture plays a vital role in the integration of disadvantaged people such as immigrants, women, elders and those living with disabilities. For refugees and migrants that live in camps and slum areas, urban agriculture is an important livelihood strategy. Through their involvement in gardening activities, refugees and migrants can regain their dignity while enhancing their self-reliance (Bradford et al. 2009). Moreover, evidence from developing countries highlights the positive impact of urban agriculture in empowering women as women are more likely to occupy managerial positions in agricultural projects (Mawois et al., 2011). For Orsini et al. (2009) empowering women through urban agriculture translates to better social integration in the social fabric of the community.

A study revealed that in the North East of Brazil, urban agriculture plays a significant role in strengthening family ties as it is common to find children helping their parents in growing plants. Orsini et al. (2013) note that working in the garden with parents aids in keeping the children off the street and at the same time equips them with knowledge on farming. Furthermore, this transference of knowledge helps maintain biodiversity (ibid). Subsequently, involvement in urban agriculture enables households to better mitigate diseases through home-grown medicinal plants and rely less on food aid (Lock & de Zeeuw, 2001). In some instances, using inclusive methods to co-govern community gardens with local authorities and community members increases the garden's resilience in these communities (Barmeier & Morin, 2012).

2.6.3 Environmental resilience

In recent decades, more efforts have been made to mitigate the potential effects of climate change and environmental degradation on food security. Successful agricultural production is dependent on the human and ecological system. Urban agriculture plays a significant role in preserving the environment by maintaining green open spaces and improving the urban microclimate (Tidball & Krasny, 2007). Urban agriculture may also prevent building on environmentally sensitive and risk prone land from illegal residential development (Dubbeling et al., 2009).

The rapid increase of urbanisation poses many development problems as cities produce more wastewater. Buechler et al. (2006) note that productive reuse of wastewater in urban agriculture reduces the demand for fresh water supplies and decreases the discharge of wastewater into the rivers and other surface water sources which helps to reduce pollution. For van Veenhuizen and Danso (2007) urban agriculture provides an effective way of using urban wastewater and plays a significant role in managing public parks and maintaining open green urban spaces such as wetlands and helps reduce related public costs. This is supported by De Zeeuw et al. (2011) who note that urban wastewater can be recycled for the irrigation of crops as well as irrigation of forest plantations.

Moreover, research has demonstrated that globally, urban agriculture has a positive impact on production, energy savings, fertilisation, climate regulation, soil formation, and the biological control of pests. Conversely, it is argued that urban agriculture can enhance food security and health by producing fresh food for residents (Nicholas et al., 2018).

The FAO (2008) stresses the importance of encouraging local food production to reduce costs related to food transportation. Subsequently, De Zeeuw et al. (2011) argued that encouraging local food production helps in preserving the ecological footprint of the city. This is confirmed by the FAO (2008), which noted that by producing fresh food close to the city, urban agriculture is successful in reducing energy use and greenhouse gas emissions. This discussion suggests that the benefits of urban agriculture are multifaceted and transcends addressing the dynamics of food insecurity to income generation, social cohesion and environmental preservation.

2.7 Policy and legislative framework of agriculture in South Africa

Everyone has the right to sufficient food and the right to support environmentally sustainable development under the South African Constitution (RSA, 1996) (Section 24) (b). It is local governments' duty to ensure that they exercise the right to food. Local governments and municipal structures entrust national and provincial governments with the responsibility for agriculture.

2.7.1 The White Paper on Agriculture

The White Paper on Agriculture came into effect in 1995 (RSA, 1994). The main objective of the White Paper on Agriculture was to ensure fair access to agriculture for citizens and to promote agriculture for the improvement of food security and the quality of life in the development of all communities. The White Paper views national and household food security as being equally important and calls for government's support in production systems and practices such as urban food gardens as it improves household income, food security and quality of life (Hendriks & Olivier, 2015) The White Paper on Agriculture calls for a multidimensional view to enhance household and national food security (Du Toit, 2011). The White Paper mentions that food insecurity is a result of high unemployment among the urban poor that can be reduced by long term programmes such as employment programmes, urban food gardens and welfare programmes (White Paper, 1995). Furthermore, the White Paper enforces that the government should support urban production systems for household income and food security.

2.7.2 The National Development Plan

The National Development Plan (NDP) of 2012 has become the all-encompassing government development agenda (NDP, 2012). Chapter 6 of the National Development Plan deals with food security and agriculture. The NDP was published in 2012 and seeks to alleviate poverty and inequality by 2030. According to the NDP (2012) alleviating poverty requires an inclusive approach in which persons who were socially and economically excluded in the past become active participants in their own development. Enhancing people's capabilities is at the heart of the National Development Plan. The Food Gardens in support of poverty alleviation are aligned

with specific aspects of the NDP such as redressing the injustices of the past effectively through collaboration from public and private sectors (RSA, 2012). The NDP states that agricultural production helps provide the poor with coping mechanisms when food prices increase. Although the National Development acknowledges the potential of agriculture in addressing poverty and food security, it does not make specific reference to urban agriculture.

2.7.3 The National Food Security and Nutrition Strategy

Food and nutrition security are a multi-faced challenge that can be addressed by implementing a multi-dimensional strategy. To achieve this, the Food and Nutrition Security Strategy proposes an integration of existing policies and programmes such as education, health, environmental protection, agrarian reform and agricultural development. The Food and Nutrition Security Strategy 's vision is to ensure that nutritious food is available, accessible and affordable at household and national levels (DAFF, 2014). The purpose of this policy is to build on existing initiatives and ensure better coordination of these initiatives and systems (Delport, 2019). Furthermore, the policy provides a platform for various strategies that include better targeted public expenditure on social programs affecting food security, increased production and distribution of food, increased access to production inputs for the upcoming agricultural sector, encouraging the government to support community gardening, and improving the use of market interventions that encourage food security (DAFF, 2014). The National Food Security and Nutrition Strategy does not mention urban agriculture. Its contents on urban agriculture is rather vague. It does, however, promote sustainable agriculture and improving food security for all people, addresses inequalities and insufficiencies (DAFF, 2013:5).

2.7.4 The Western Cape 'Nourish to Flourish Strategy'

Food and nutrition have long term effects on the wellbeing of communities. The Western Cape Government strives to alleviate poverty and improve food security of its people through different initiatives such as nutritional programmes at schools for learners. Food is offered to over 457 000 learners in schools and 65 000 children in early childhood development institutions. Moreover, dietary supplements are granted to over 20 000 disadvantaged children and adults to help improve their health. Moreover community, household and school gardens

have been given support in the form of finance and equipment to assist with gardens. To ensure that nutritional requirements of the poor are met, the Western Cape Government introduced the Nourish to Flourish Programme which is built on six pillars namely:

Food assistance- The aim of the Food Assistance Programme is to achieve greater access to healthy food for children and disadvantaged people by helping poor and vulnerable people by supporting families, schools and community gardens and offering nutritional support to people at risk of malnutrition by 2019 (Western Cape Government, 2016).

Food awareness and safety- Stunting, wasting and undernutrition is prevalent in South Africa. The second pillar of the Western Cape Nourish and Flourish Strategy aims to bring food awareness food safety and promote healthier behaviour. (Western Cape Government, 2016)

Food sensitive planning- Urban planning is one of the significant tools that the government uses to influence society. The accessibility and distribution of healthy food can influence food security. Therefore, the Western Cape Nourish and Flourish Strategy seeks to ensure that food security is considered in the Provincial Spatial Development Framework (PSDF) in order to influence municipal spatial development. In addition, the Western Cape Nourish and Flourish Strategy aims to develop guidelines that are food sensitive for provincial land use. (Western Cape Government, 2016)

Food resource management for the future- The food system and the farming sector are interrelated. The objective is to work towards incorporation of climate change into all facets of the food systems by 2030 by promoting a climate-resilient agricultural sector that is productive and ecologically sustainable across the value chain. (Western Cape Government, 2016).

Inclusive food economy- Informal traders play a pivotal role in providing access to affordable food to the poor. The nourish to flourish programme aims to aims to work towards better access to food for the poor by introducing a model by law for municipalities for informal food trading and guidelines for implementation.

Food governance- Improving food security can also be achieved by establishing partnerships between the government, business sector and civil society and through technology and innovation in household food security solutions.

2.7.5 City of Cape Town's Urban Agricultural Policy

The City of Cape Town's Agricultural Policy states that urban agriculture is the production, processing, marketing, and distribution of crops and animals within urban areas and is aimed at benefiting the people of that area (City of Cape Town, 2007). The City of Cape Town's Agricultural policy seeks to give poor communities the chance to use urban agriculture as a livelihood strategy that will contribute to household food security. The strategy incorporates, among other strategies, urban farming and land use management. The government helps individuals access land, resources, production inputs, and equipment through a needs assessment. The goal of the policy is to create economic opportunities that create jobs and generate income. It seeks to empower citizens by providing training, improving their technological, business and social skills, to engage in land redistribution programs.

2.8 Key policy challenges in agriculture

A study of the literature shows that food insecurity is a major problem in South Africa and, despite many socio-economic and political influences, there is no clear urban mandate for cities to resolve food-related issues (Battersby, 2011). The city of Cape Town has ignored food security (Nel, 2012). Nel (2012) believes that budget constraints are pushing urban policymakers to resolve other issues, such as housing and sanitation, that are viewed more critical than food security. This is supported by Steele (2008), who argued that the food production system no longer dictates urban development as food is no longer a priority on the agenda of urban planning. Urban food insecurity, for Steele (2008), manifests itself differently from rural food insecurity. Food insecurity in rural areas is characterized by massive food shortages, whereas food insecurity in urban areas is a question of access and affordability rather than scarcity. As a result, different households use different coping mechanisms, and these individual tactics make the challenge of food insecurity appear less apparent in urban households. Conversely, Battersby (2011) argues that the fact that poverty and food insecurity are seen as rural problems blinds policymakers from the urgency of addressing urban food insecurity.

2.9 Summary and conclusion

This chapter reviewed a broad range of literature on the topic of urban agriculture. The nature of urban food insecurity and the relationship between food security and urban agriculture was examined. The chapter also discussed the impact of urban agriculture on food security in South Africa. The chapter established the role of urban agriculture in building resilient cities and provided a synopsis of the emergence of urban agriculture in South Africa. Finally, the policy and legislative framework regulating agriculture in South Africa was examined and the key policy challenges in urban agriculture was discussed. The following chapter focuses on the theoretical framework underpinning the study.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1 Introduction

Food insecurity is a major problem in urban areas and in the context of high unemployment, urban dwellers are compelled to diversify their livelihoods. Literature discussed in Chapter 2 indicates that participating in urban agriculture enhances the lives of the poor in many ways (Mkwambisi et al., 2011). The Sustainable Livelihoods Framework provides a theoretical lens through which to conceptualise urban food insecurity and understand the role of urban agriculture in addressing food insecurity. The first section of the chapter provides an overview of Sustainable Livelihoods Framework, followed by a discussion of the different components of the Framework. In addition, the chapter also describes how the vulnerability context, livelihood assets and policies and institutions shape livelihoods. Thereafter, a discussion of livelihood strategies and livelihood outcomes achieved from adopting various livelihood strategies is presented. Finally, the applicability of the framework to this study and a critique of the framework is documented.

3.2 The Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework grew out of three decades of changing perceptions of poverty and role that structures and institutions play in underdevelopment and poverty. The Sustainable Livelihood Framework (SLF) emerged as a response to the failure of traditional development approaches to eradicate poverty. Past development approaches such as modernization theory viewed poverty only as a rural phenomenon (Ashley & Carney, 1995). While traditional approaches to poverty alleviation concentrated on economic development and certain aspects of poverty, such as low income, other factors such as deprivation and social exclusion were not considered (Krantz, 2001). According to Chambers and Conway (1992: 6), "A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living". They note that making use of tangible and intangible assets is the way households can diversify their livelihood strategies. They go on to state that "A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets" (Chambers & Conway, 1992: 6). This definition suggests that poverty alleviation interventions should focus on empowering the poor to take advantage of expanding their economic opportunities, support the poor to access assets and

develop enabling policies and institutional environment (Krantz, 2001).

The SLF acknowledges the poor as actors with assets and capabilities who play a pivotal role in improving their livelihoods (Carney, 1998). Assets include financial, human, physical, natural or social resources which can be acquired, developed and transferred to future generations (Moser, 2006). The SLF looks at what assets men and women rely on to achieve results which enhances their lives (Cortes, 2008).

The notion of capabilities in the SLF is influenced by Amartya Sen's capability approach (Ellis, 1999). Capabilities refer to knowledge, skills, state of health as well as the ability to labour. It is the activities that households engage in as they pursue their livelihood which enables them to respond to shocks and stresses (De Satge et al, 2002). People's ability to adopt different livelihood strategies is dependent on the capabilities and resources they have (Scoones, 1998 cited in Philander, 2015).

Intricately linked to capabilities are livelihood resources which include the social, financial, human and natural capital that influence livelihood strategies (Philander, 2015). Depicted in figure 3.1 below, Natural capital includes land, water and the biological resources people use to generate livelihood means. Physical capital refers to capital goods such as roads, irrigation networks and machinery. Human capital refers to assets possessed by the poor in their own labour (Ellis, 2000: 33 cited in Cortes, 2008). Human capital is determined by educational attainment, job qualification and health. Financial capital is determined by cash and material resources possessed by a household (Cortes, 2008). While social capital is defined as the networks and relationships between people and organizations (Ellis, 2000). The transformation of the different capitals into livelihood strategies for sustainable livelihoods is comprised of household's income profile and the policies, institutions and processes that govern households (Cortes, 2008).

Central to the SLF is the notion of sustainability. The term sustainability refers to the ability to meet the needs of the present generation without exhausting resources for future generations (Imperatives, 1987). This implies that progress in poverty reduction efforts should be everlasting and not compromise future generations (DFID, 1997). This is supported by Davies (1996) who argues that for both livelihood adaptation and coping, resilience is important. Households' inability to adapt and cope with stresses exposes them to greater vulnerability, limiting them from achieving sustainable livelihoods. Therefore, diverse livelihood strategies lead to resilient households (Mkwambisi et al., 2011).

The DFID (1997) distinguishes between four dimensions of sustainability i.e. environmental sustainability which is achieved when the productivity of natural resources is preserved for the use of future generations and economic sustainability, which achieved when a specific level of expenditure is maintained over a long period of time. Social sustainability is achieved when social equity is maximized and, lastly, when the dominant structures and processes can continue to fulfil their roles for a long period of time, institutional sustainability is achieved (ibid).

The Sustainable Livelihoods Framework offers a broader lens in which poverty reduction can be viewed. According to Mensah (2014) the SLF recognizes that poverty is not just an economic problem but involves social, political, cultural and environmental aspects as well. Similarly, Krantz (2001) contends that the SLF views economic growth as integral part of development only when it is matched with the skills and opportunities of the marginalised. The SLF puts people at the center of development and describes what tools and assets are available and how these can be utilized to achieve livelihood. Krantz (2001) notes that in this context, it is important to recognize the strengths of individuals rather than their needs to help people achieve their goals. In addition, development initiatives frequently concentrate on the macro or micro level, but the Sustainable Livelihoods Framework aims to assess the interrelationship between the two and attempts to bridge the gap between the two, and this is necessary for sustainable development to be ensured.

In the context of this study, the effect of household assets and skills, the livelihood strategies implemented and the livelihood outcomes were evaluated in reference to the Sustainable Livelihood Framework.

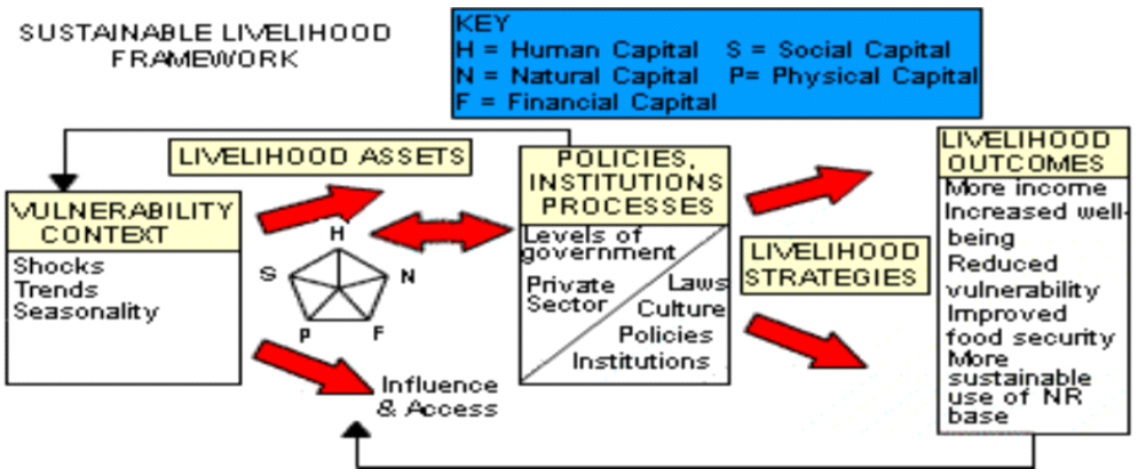


Figure 3.1 Adapted from DFID, (1999).

3.3 Components of the Sustainable Livelihoods Framework

This section examines the different components of the Sustainable Livelihoods Framework. The Framework is depicted in Figure 3.1.

3.3.1 The vulnerability context

Vulnerability is characterized as the susceptibility of the household to shocks and stresses affecting the ability of the household to generate sufficient income to obtain a livelihood and to obtain basic nutritional requirements for a healthy lifestyle both in the present and in the future (LIFT, 2013). Stresses and shocks stem from different issues in the economic, natural, political, and social environments (Thompson, 2001).

A household's vulnerability context includes factors both outside and within their control such as unanticipated illnesses, floods or a drought. The SLF offers an unconventional way of analysing food security by looking at household food security in relation to the household's vulnerability context and the policies and the institutions that shape a household's vulnerability context. Adato and Meinzen-Dick (2002) note that the vulnerability context includes trends in populations, resources, economic indicators such as food prices and seasonality in employment opportunities, agricultural production and availability of resources. Furthermore, vulnerabilities can influence people's decisions to diverse their livelihood strategies (ibid). Conversely, Devereux (2002) reports that factors that predispose vulnerability have a direct impact on opportunities available for households to pursue other livelihood strategies. Poor households' ability to minimize vulnerability and increase economic production depends on their assets and their ability to turn those assets into cash, food or other basic necessities. Moser (1998) notes that analysing vulnerability requires looking beyond identifying the threats to individuals and households but also their resilience and how they recover from inevitable changes in the environment.

3.3.2 Livelihood assets in the Sustainable Livelihoods Framework

Livelihood assets can be defined as the livelihood building blocks or resources that people attempt to convert into livelihood outcomes. Different livelihood assets are needed to achieve different livelihood outcomes (DFID, 1999). The asset base consists of human capital

(knowledge, skills and good health), financial capital (financial resources), social capital which includes networks and relationships, physical capital such as infrastructure and natural capital such as land (Carney, 1998). Lack of livelihood assets forces people to rely on the informal economy. The five capitals are explained below.

Financial capital

Financial capital consists of economic resources such as cash, credit and savings and other assets such as infrastructure and technologies needed in the pursuit of livelihood outcomes (Mago, 2018). According to Mago (2018), financial capital plays a pivotal role in the pursuit of livelihood outcomes. Financial capital is not limited to monetary capital but includes anything that can be converted to money such as property. The DFID (1999) distinguishes between two financial capital streams, i.e. available stocks consisting of deposits, credit and liquid assets such as livestock; and daily revenues such as state pensions and other transfers and remittances. Out of the five asset groups, financial capital is seen as the most flexible type of capital as it can be used to directly achieve livelihood results, such as buying food to improve food security (DFID, 1999 cited in Mago, 2018).

Having access to substantial financial capital allows households to afford necessities such as food, shelter and education. Twigg and Bhat (1998) note that the highly commoditised nature of cities has led to a higher dependence on income. Similar findings are observed in Cape Town, where most urban residents rely on the cash economy to secure food. A study by AFSUN revealed that half of the surveyed population were exclusively reliant on wage income to access food. Of these, 42% indicated that they rely on social grants to access food (Battersby, 2011). Porritt (2009) and Landry and Chirwa (2011) postulate that depending on the structures and processes, financial capital can be converted into other types of capital. Conversely, DFID (1999) contends that financial can be converted into political influence by granting people access to participate in policy implementation and regulation.

Human Capital

Human capital refers to the skills, knowledge, ability to labour, good health and the physical capabilities possessed by individuals which are important to achieve different livelihood strategies (Scoones, 1998). Human capital is essential for development because it influences the ability to invest in other capitals (Olivier, 2015). For example, low educational attainment has a direct impact on financial capital as it limits the chances of being employed in the formal sector (Neves, 2017).

According to Olivier (2015), in low-income areas of Cape Town where space is confined around the home, farmers need to know how to make use of the space effectively. This requires knowing which crops to grow during a specific season. Moreover, Kirkland (2008) notes that NGOs promoting urban agriculture contribute to improving human capital through entrepreneurial training, conferences, networking and access to markets. For Porritt (2009) emotional and spiritual capacity and the willingness to actively engage in productive work plays a vital role in accumulating human capital. Important determinants of human capital include educational attainment, health services, sanitation, clean water and nutritious food (Carney, 1998). Lack of educational attainment has adverse effects to individuals, families and nations. A study revealed that in Mount Frere, Eastern Cape, human capital is one of the major constraints to achieving livelihood (Neves, 2017).

Social Capital

Social capital is defined as "the rules, norms, obligations reciprocity and trust embedded in social relations, social structures and society's institutional arrangements, which enable its members to achieve their individual and community objectives" (Narayan- Parker, 1997: 50). At household, community and social levels, it consists of social relationships (Narayan- Parker, 1997). According to Bass et al. (2005) relationships between families and communities signify an integral part of the asset base, as these can provide food and financial support in desperate times. Moreover, evidence from a study in rural Tanzania, revealed that trust, reciprocity and the spirit of unity and participation from locals and external supporters such as NGOs and government institutions played a significant role in establishing social capital between villagers and external groups. In addition, the study revealed that social capital is a powerful determinant of individual incomes (Moser, 1996; Booth et al., 1998). This finding is resonant of a similar one by Ratner (2000) who argues that social capital is the most important form of asset for informal traders. Chirau (2012) also provides evidence of the importance of social capital in Zimbabwe, noting that social capital in the form of remittances play a crucial role in a household's income. This finding suggests that social capital in the form of revolving group savings provides a lifeline for many poor households as it aids in coping with financial challenges (Chilwalo, 2015).

While the effectiveness of social networks in improving the lives of the poor in urban areas is often questioned (World Bank, 1996; Beall, 1997 cited in Rakodi, 1999). Amisi (2006) reports that in the context of high unemployment among the Congolese migrant population in Durban,

social networks and organisations such as churches played a significant role in aiding refugees with financial and material support. Moreover, Adato and Meinzen-Dick (2002) found that in Zimbabwe, social capital played a vital role in facilitating a better relationship between rich and poor male farmers which resulted in better technology assimilation. For many Zimbabwean households, higher earnings from maize production reinforces reciprocity in urban-rural relationships.

The DFID (1999) notes that social capital is related to structures and processes. The relationship between social capital and structures and processes is two-fold. Firstly, social capital is a product of structures and processes. On the other hand, structures and processes are products of social capital. Moreover, social capital directly impacts other types of capital. For instance, through enhancing the effectiveness of economic relations, social capital can improve people's income and saving rates, and this impacts financial capital. Similarly, knowledge distributed within social networks plays an integral role in facilitating human capital (DFID, 1999). However, social capital does not always yield positive results. The DFID (1999) highlights challenges and limitations associated with social capital such as the destructive role power relations play in hindering people from dodging poverty by restricting avenues for mobility. In the context of urban agriculture, due to the patriarchal nature of most African societies, social capital socially excludes women and restricts them from accessing markets, loans and prime land (Olivier, 2015).

Natural Capital

Natural capital is often referred to as environmental capital and relates to natural resources such as water, land, soil, air, wildlife habitats, forests and environmental services that have a significant effect on the wellbeing of households (DFID, 1999). According to Rakodi (1999), urban dwellers are dependent on natural resources as their source for food supply, energy and water. Additionally, DFID (1999) contends that natural capital is particularly important for people who derive their livelihood from the informal economy and those who derive their livelihood from natural resource-based activities such as farming (ibid). For instance, disasters like forest fires can cause air pollution which may be detrimental to human health thus affecting human capital by restricting people's ability to actively engage in different livelihood strategies (Mago, 2018). The availability and accessibility of land is a key aspect of urban agriculture. However, due to inequalities in access to land and unavailability of space for food production,

the urban poor in South Africa have limited access to land (FAO, 2012). Similarly, a study in Chipata revealed that less than 5% of households in Lusaka are involved in urban agriculture (Crush et al., 2011). This low percentage highlights the scarcity of land for food production (Chihambakwe et al., 2018). In addition, Cook et al. (2015) posit that insecure land tenure is one of the challenges faced by urban farmers. Furthermore, Fermont et al. (1998) emphasises the need to protect natural capital in cities as most of Cape Town's marginal land is of poor quality for urban agriculture.

Physical Capital

Physical capital comprises of infrastructure and producer goods that are necessary to sustain livelihoods (DFID, 1999; Porritt, 2009). Infrastructure includes assets in the environment that are important for individuals to meet their basic needs. Producer products refer to tools and equipment used by individuals to work resourcefully. (DFID, 1999).

Physical capital includes the economic infrastructure, household assets and other assets essential to achieve livelihoods. It includes roads, rails, communication facilities, ports etc. The household's physical assets include land, machinery and moveable assets with can be transformed into cash or exchanged for goods or services such as furniture, appliances or jewellery (Mago, 2018). According to DFID (1999) roads and telecommunications assist in connecting rural areas and urban areas by facilitating transmission of information and migration.

For poor households, housing is one of the essential assets as it is used for various purposes such as shelter, reproductive purposes, and revenue generation purposes such as renting out rooms (Moser, 1998) Conversely, (Guha- Sapir, 1996) reports that access to housing plays a significant role in ensuring access to other resources as it can be used as collateral for credit.

3.3.3 Transforming Policies, Institutions and Processes

Policies, Institutions and Processes (PIP) refer to the social and political environment that govern livelihoods. Serrat (2017) notes that livelihood strategies are not only determined by access to capital assets or contained by the vulnerability context but they are transformed by the environment of structures and processes. The way in which assets are used is determined by the different structures of government as well as processes in the form of policies and institutions (Mazibuko, 2013). Structures comprise of the public and private sector

organizations that regulate legislation, policies, service delivery, trade and perform all other functions which have direct impact on livelihoods. While processes embrace laws, policies, operational arrangements and norms and practices which determine how structures function (DFID, 2000). The effectiveness of policy determining structures is determined by the presence of appropriate institutions and processes through which policies can be applied. Douglas (1998) argues that the linkages between specific cities and the wider global economic system predisposes many cities to vulnerability and poverty. Urban economies are part of the global economic system and are driven by international macro policies. (ibid). Elson (1995) notes that such policies have adverse impact on employment opportunities and negatively affect the livelihood of the poor. Similarly, Serrat (2017) argues that processes frame livelihood of the poor and often excludes and constrains them systematically unless the government implements pro-poor policies. This is supported by Guha-Sapir (1996) who notes that pro poor policies have the potential to improve food security of poor households.

Adato and Meinzen-Dick (2002) argue that the policies, institutions, and processes (PIP) component of the SLF is appropriate to the study of agricultural research in many ways. They are institutions whose interventions influence people's choices in pursuing livelihood strategies such as land tenure arrangements, legal rights and other policies which influences how farmers take advantage of technologies and influence farmers from different economic background differently. In South Africa, the government plays a pivotal role in promoting urban agriculture. An example is the City of Cape Town's agricultural policy which is described as one of the most supportive legal agriculture policies in Africa (Battersby, 2012 cited in Olivier, 2015).

3.3.4 Livelihood strategies

In the early 1970s, much of development thinking emphasized the significance of job creation as a key poverty alleviation strategy for the poor. However, recently more emphasis has been placed on livelihood diversification or the pursuit of multiple livelihood activities simultaneously by different family members to combat poverty and improve food security (Adato & Meinzen-Dick., 2002). Simply defined, livelihood strategies are the various practices that individuals participate in to achieve their livelihood goals. (Owen et al., 2018). Engaging in different activities plays a significant role in reducing vulnerability because it allows households to be more resilient in times of uncertainty and unanticipated shocks (Owen et al., 2018). Livelihood strategies include formal and informal employment, home and community

gardens, livestock production, borrowing and remittances from local and international migration. Overtime many households may choose to strengthen their asset base through diversifying their income sources or migrate in order to take advantage of opportunities in other places (ibid). Moreover, Adato and Meinzen-Dick (2002) posits that the type of livelihood strategies people engage in is influenced by their access to resources and the policies, institutions and processes that either constrain or enhance their ability to effectively use these resources to realise their livelihood outcomes.

3.3.5 Sustainable Livelihood outcomes

Livelihood outcomes refer to the desirable outcomes that result from pursuing livelihood strategies such as reduced vulnerability, increased income, improved food security and increased wellbeing (FAO, 2003). Livelihood outcomes help us understanding why people exercise certain livelihood strategies and the context in which these strategies are derived (FAO, 2016). Owen et al. (2018) note that a livelihood is sustainable if allows people to improve their living standards in relation to their well-being, income and reduces their vulnerability to shocks and trends while ensuring that activities are compatible with preserving the natural resource base.

3.3.6 Applicability of the framework to Urban Agriculture

The SLF is a people-centred approach that acknowledges the need to place people at the centre of their own growth by concentrating on what people have, their strategies and their ability to respond to shocks and trends (Allison & Horemans, 2006). The SLF is a fundamental tool to understand the multidimensional relations between the vulnerability context of households, their asset base, intervening institutions and the different livelihood strategies employed by households (Adato & Meinzen-Dick, 2002) and is used by a number of international organisations and governments to analyse the vulnerability context of the poor (DfID, 1997; Farrington et al., 1999). The people centred nature of the SLF is complemented by its participatory nature (Ziga, 2018). The SLF asserts that beneficiaries play a key role in identifying and prioritizing their needs (Allison & Horemans, 2006). Reflecting on the various livelihood strategies adopted by the poor reveals how the poor are active decision-makers in shaping their own livelihoods. Due to its holistic approach, the SLF facilitates a broader understanding of the underlying causes of poverty by focusing on the different factors that

constrain people's access to resources, thus affecting their livelihoods. These constraints may stem from social factors at the micro level or may be a result of policies, legislative frameworks or economic structures at the macro level.

The SLF is an essential framework to analyse poverty, structures, access to resources and the different livelihood strategies that people adopt. Central to the SLF is understanding the relationship between different factors at macro and micro level and how this interaction affects the livelihoods of the poor. Understanding the interaction between different factors at macro and micro levels enables researchers and policy makers to understand the various ways in which the poor are affected by structures, institutions and the multiple vulnerabilities endured by the poor (Hebinck & Bourdillon, 2002). Conversely, Adato and Meinzen-Dick (2002) note that understanding the varied ways in which the poor are affected by structures and policies allows development interventions to strengthen their intervention strategies to promote sustainable development.

3.4 Critique of the framework

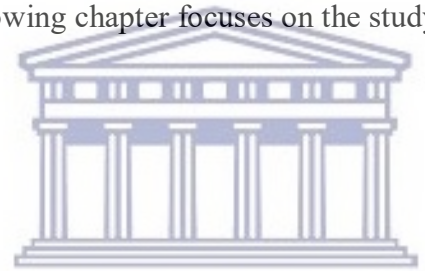
The SLF has been widely recognized for its focus on poverty alleviation (Carney, 2002). While this focus is significant in providing insight on issues related to poverty, Small (2007) argues that it also presents biases within the framework. While it is generally commended for its holistic nature, the SLF fails to consider the actions and influence of wealthy people and only focuses on the poor while wealthy people are only included as part of the transforming structures and processes (Small, 2007). Moser et al. (2001) are of the view that a detailed conceptualisation of the social structure and power relations relating to class, gender and ethnicity is missing from the SLF. This is supported by Snidder (2012) who notes that poor households are often characterized by enormous gender inequality as men tend to be in power. In the same vein, Afshar (1998) contends that the SLF has ignored power relations regarding women empowerment and the degree and nature in which its increase can have powerful influence on livelihoods. Therefore, more attention needs to be given to the significance of gender, class and other social differentiation.

The SLF has been criticised for not considering the history (i.e. the events or forces) of a country or community which led to the existing social institutions (O' Laughlin, 2002). In addition, Mazibuko (2013) argues that the SLF fails to explain how households should deal with problems created by international structures which national governments cannot resist.

For example, prominent institutions like the World Bank and the IMF have enforced economic control over poor indebted states through their Structural Adjustment programmes (ibid). The SLF has also been criticized for not considering issues pertaining citizen rights, the environment and poverty.

3.5 Chapter Summary

This chapter discussed the theoretical framework underpinning the study. The chapter outlined the significance of the SLF and its relevance to the context of the study. The chapter demonstrated the role of various capitals in achieving livelihood outcomes and improving food security. The chapter also provided a detailed description of the components of the SLF and their impact on livelihoods. Additionally, the chapter discussed the vulnerability context and how structures and policies influence the vulnerability context. Finally, the chapter provided a critique of the theory. The following chapter focuses on the study's research methodology.



CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the research methodology employed in the research. The chapter discusses the research population, the sampling techniques used and the rationale for using these techniques. The chapter firstly outlines the selected research design and thereafter sets out the quantitative and qualitative methodological tools used to collect data.

4.2 Research design

A research design is a logical framework that is used by researchers collect and analyse data (Bryman, 2012). Simply defined, a research design is a plan and logical structure used for conducting a particular inquiry and sets out the plan for the collection of data (De Vaus, 2001) and specifies how the research will be performed. Kothari (2004) notes that a research design answers questions of what, where, when, how and by what means research was undertaken. Research designs give researchers the necessary tools needed to determine what observations to use when testing their hypothesis (Abbott & McKinney, 2013). The type of research design used in a study is dependent on the specific questions that the research seeks to inquire as well as the applicability of such design (Burger et al., 2009).

4.3 Research methodology

Research methodology refers to the steps a researcher undertakes when conducting research and the strategy used to collect data (Kothari, 2004). The type of research method used in a study is dependent on its appropriateness (Guba & Lincoln, 1994). The researcher's choice to use a particular method is determined by the ontological and epistemological nature of the research. Walsham (2006) posits that positivist researchers based on their assumptions of an objective reality, use quantitative methodology to measure objective reality on the basis of numerical data from randomly selected samples in which generalisations can be made to larger samples. On the other hand, interpretivist or constructivist researchers view knowledge as being socially constructed by humans and makes use of qualitative measures such as in-depth interviews, focus group discussions and observations to understand people's views and

experiences. This study leaned more towards qualitative due to its emphasis on the need to achieve an in-depth contextual understanding of food security and urban agriculture than to establish cause effect relationship between variables. The decision to use the qualitative approach was based on the realisation that concerns of poverty, livelihood strategies and resilience can be comprehended through the perceptions and experiences of participants which is best investigated through the qualitative approach.

4.3.1 Quantitative research methodology

Quantitative research is categorized by a positivist epistemological orientation (Bryman, 2012). Babbie and Mouton (2001:130), define quantitative methods as a systematic and objective process that utilizes numerical measurement tools to collect data to investigate a specific problem. For the purpose of this study, quantitative research was especially useful in evaluating the socio-demographic characteristics of respondents with regard to the level of food security, such as the level of education, employment status, household size, income and the proportion of income allocated to food. Due to its cost effectiveness and time efficiency, self-administered questionnaires were employed as a quantitative data collection tool.

4.3.1.1 The structured questionnaire

Self-administered structure questionnaires were used in this study. The structured questionnaire was chosen for its ability to reduce bias errors caused by the characteristics of the interviewer (Phellas et al., 2011). The questions included closed-ended questions and were structured around the research objectives. The researcher administered 32 closed ended questionnaires to purposefully selected respondents. The questionnaire was administered to households that have members participating in community gardens in ward 92 in Khayelitsha. The administered questionnaires gave respondents sufficient time to think about their answers. In this analysis, the questionnaire used consists of closed-ended questions that allowed the respondent to choose the answer from the list of options provided. The questionnaire is divided into two sections. Demographic details, including age, gender, educational status, employment status, income and size of household, is the first section. The second section is the level of food security and includes questions about worrying about food, skipping meals, dietary diversity for children and adults, the types of livelihood strategies adopted to be more food secure and

livelihood outcomes. It took 30 minutes to complete the questionnaire.

4.3.2 Qualitative research methodology

Qualitative research is defined as the development of theories which give insight to social phenomena in natural settings which places emphasis on the experiences and perceptions of participants (Mays & Pope, 1995). Qualitative research is categorized by an interpretivist epistemological orientation and a constructionist ontological orientation (Bryman, 2012). Conversely, Creswell (2003) and Creswell (2014) posit that qualitative research method allows the researcher to make knowledge claims based on constructivist perspectives which emphasize the divergence of meanings based on personal experiences.

4.3.2.1 The semi structured interview

Interviews are a significant data collection tool. The research questions guide the type of questions to ask in interviews. Interviews may be structured, semi-structured or unstructured in nature, as a data collection method (Blumberg, et al., 2008). Structured interviews are descriptive with a specific set of questions while semi-structured and unstructured interviews are of an exploratory or explanatory nature (Blumberg, et al., 2008). This research comprised of key informant interviews with questions centred around the research objectives. The interviews were conducted with 2 project leaders and 10 farmers of Moya Wekhaya Peace Gardens. Based on their knowledge and experience of working on the project and their familiarity with the field of research, the participants were chosen. The interviews sought to determine the processes involved in ensuring successful, sustainable community gardens as well as the challenges faced by farmers and project leaders. The interview also sought to identify the reasons for agriculture, the perspective of the participant on food security, the strategies adopted for livelihoods and the role of community gardens in addressing food security in Khayelitsha. The qualitative method was useful in examining the reasons and benefits of gardening, the challenges faced by urban farmers, their perception of food security and their views on sustainability. The qualitative method gave an in-depth understanding of the farmer's experiences in Khayelitsha. The length of the interview was 1 hour 20 minutes. The researcher had a translator during the interview sessions. Translations were done from English

to Xhosa.

4.3.2.2 The focus group discussions

A focus group discussion is defined as an organized discussion conducted with a selected group of people to gain insights on their views and experiences on a specific topic (Gibbs, 1997). For this study, the focus group was conducted with purposefully sampled urban farmers. Based on their knowledge and experience of working on the project and their familiarity with the field of research, the participants were chosen. Each group member had the chance to share their views on the subject openly in the focus group interview. The focus group comprised of 10 farmers of Moya Wekhaya Peace Gardens. The purpose of the focus group was to understand why people participated in community gardening, their understanding of food security and how participating in community gardening contributes to household food security. The focus group discussion gave a better understanding of the challenges faced by urban farmers, farmers' views on the sustainability of the project and the role of external supporters such as the government in ensuring sustainability of community gardens. In shedding light on the livelihood strategies adopted by households to be more food secure and the benefits of farming, the focus group was also important. The length of the interview was 1 hour 30 minutes.

4.3.3 Secondary data: Literature review

In this study secondary data was collected through an extensive literature review. The literature review included published journal articles, reports, books, masters and doctoral thesis and other internet sources. The objective of the literature review was to extract knowledge on food security and urban agriculture in the global and South African context, the impact of urbanization on urban food security, the role of urban agriculture in building resilience in developing countries and the legislative frameworks that govern urban agriculture in South Africa. The three data collection methods were chosen to enhance the research project and to capitalize on the strengths of each method. Drawing on the strengths of each method helped to improve accuracy, validity and reliability of my findings (Harrell and Bradley, 2009).

4.4 Population and Sampling

A population can be defined as the universe of units from which a sample is to be selected (Bryman, 2012). The term sample is used to refer to the subset or segment of the population that is selected for research (Bryman, 2012). When embarking on research, it is important to choose a sample population that best reflects the target population as inferences can be made from the sample to the entire population. (Blumberg, et al., 2008). Therefore, the sample population must not be biased. The targeted population in this study were households in Khayelitsha which had member(s) engaged in urban agriculture. Ward 92 in Khayelitsha was sampled because it has high prevalence of poverty and more people participating in community gardens. A sample size of 32 community members were targeted using purposive sampling. 10 farmers were interviewed in areas concerning their understanding of food security, their motivations for gardening and the benefits of gardening. Purposive sampling refers to the process of selecting participants based on similar characteristics and researchers own judgement (Etikan et al, 2016). The reason for this sampling method was because gardeners will provide the most useful information required to answer the research questions. The research employed a questionnaire as a survey tool. The questionnaire gave insight into farmer's socio-demographic information. 10 farmers were interviewed in areas concerning their understanding of food security, their motivations for gardening and the benefits of gardening.

4.5 Data analysis

Data analysis refers to the process of systematically examining and interpreting data to derive insights (Bryman, 2012). Bryman (2012) describes data analysis as a process whereby the researcher reduces large information to make sense of it. Data analysis can be divided into quantitative and qualitative techniques (Terre Blanche, et al., 2011). This study yielded results from both qualitative and quantitative techniques. Quantitative data analysis uses statistical analysis to interpret data whereas the qualitative technique identifies emerging themes in the data to interpret findings (Terre Blanche, et al., 2011). The findings in this research were linked to literature, the research questions, the objectives of the study and the theoretical framework.

4.5.1 Quantitative data analysis

Quantitative data analysis refers to the numerical presentation of data used to interpret and explain the research phenomenon (Babbie, 2010). In this study, quantitative data analysis presented data collected from the questionnaire. The data was transferred from the questionnaires to an excel spreadsheet. Thereafter, the data was imported to SPSS 22 for analysis. Socio-demographic and economic information was described using measures of central tendency.

4.5.2 Qualitative data analysis

Qualitative data analysis is the process in which we make sense of the information collected from the people we are investigating. Qualitative data is usually based on interpretive philosophy which is based on describing and interpreting people's experiences and perceptions. The lack of focus on relevant qualitative analysis has negative implications on the creditability of the research process (Nowell et al., 2017). In this research qualitative analysis was done through identifying recurring themes. This enabled the researcher to identify the relationship between these themes. This study draws on Braun and Clarke's (2006) six steps to conduct thematic analysis in qualitative data analysis which is arguably the most influential approach in the social sciences as it offers a logical framework for conducting thematic analysis (Maguire & Delahunt, 2017).

Step 1: Become familiar with the data

I familiarised myself with the recorded interviews by carefully listening to them. The interviews were listened to, translated from Xhosa to English and transcribed. The transcriptions were read and re-read and summarized.

Step 2: Generate initial codes

After familiarising myself with the content of the data, I sought to systematically organize the data by coding the data into smaller chunks of information to make better sense of the information. Based on their importance to the research questions, the codes were identified and then written down. I compared the codes from the focus group discussion and the key informant interviews, I noticed that since most questions from the FGD and key informant were similar, so were the codes.

Step 3: Search for themes

I then examined the codes and how some codes were aligned and fitted into a theme. For example there were several codes on the benefits of urban agriculture such as access to fresh vegetables, food is always available and better health. Combining these codes derived the theme "contribution of urban agriculture to food security".

Step 4: Review themes

The themes were then reviewed to determine whether they made sense. I did this to ensure that the research data supports the identified themes. Some of the themes initially identified were discarded as new themes emerged.

Step 5: Define themes

This phase included the naming and definition of the themes. After identifying themes and sub-themes, I then had to name the broader theme. The themes were named and defined based on their meaning and how they aligned with the research objectives.

Step 6: Compile the report

The final stage was converting the qualitative data into information that can be interpreted in relation to the research questions and literature. To explain the qualitative part of the study, the interpreted data was used.

4.6 Limitations of the research

The data was collected at a time when some of the farmers who had initially shown interest in participating in the study were either traveling or sick and therefore the researcher was forced to work with a smaller sample size. This sample is too small to be representative of all households in Khayelitsha. The study provides indicative information therefore, it is not generalisable.

4.7 Ethical considerations

Ethics play a significant role in any research (Laws et al., 2003). Important ethical issues that had to be addressed in the study include avoiding damage to respondents, preventing undue

intrusion, communicating information and obtaining informed consent, privacy and anonymity rights, fair return for assistance, data and publication rights of respondents, participation of respondents in research (Laws et al., 2003). In addition, the participants' right to privacy, anonymity, involvement in research and fair return for assistance was respected and upheld.

Information collected from the respondents was dealt with confidentiality. Also, when obtaining their consent, knowledge about the content of the research, the fact that it is solely used for academic purposes only was conveyed to participants. The researcher ensured that the research did not impact the working hours of the farmers. The University of The Western Cape's ethical code was adhered to. This study was only conducted after the Senate Higher Degrees Committee of the University of the Western Cape and all other participants and stakeholders interested in the research accepted the research proposal.

4.8 Summary

The research methodology employed in the research was outlined in this chapter. The study population, the sampling techniques used and the justification for using these techniques were further discussed in the chapter. The following chapter explores how the empirical evidence gained by the approaches described in this chapter helps to answer the research questions.

CHAPTER FIVE: DATA PRESENTATION, INTERPRETATION AND ANALYSIS

5.1 Introduction

The study sought to assess the effect of urban agriculture on improving food security in Khayelitsha. The main objectives of this study include assessing whether urban food gardens in Khayelitsha contribute to food security, as well as other livelihood strategies adopted be food secure. The aim of this chapter is to revisit the research objectives and questions and to determine the degree to which the views in the literature are substantiated by my findings. The research questions will be used as a guide to organize this chapter's layout. In the form of graphs, tables, pie charts and direct quotations, the results are presented.

5.1.2 Socio-economic characteristics

This section presents the demographic characteristics of the respondents in the form of descriptive statistics which includes age, gender, level of education and employment status. According to Neuman (2000), descriptive statistics describe the numerical data by categorizing several variables. In the form of percentiles, tables, pie charts and graphs, these variables help to provide a clearer understanding of the data by highlighting its important characteristics. In this study, the variables describing the demographic profile of participants include their age, gender, monthly income, educational background, level of food security in the household and employment status. This study consisted of 32 respondents in total. The respondents were black African men and women who practiced gardening. All 32 respondents completed the closed ended questionnaire. Key informant interviews were conducted with 2 project leaders and 10 farmers while focus group interviews were conducted with 10 farmers.

5.1.3 Gender

Gender plays a significant role in urban agriculture (Hovorka et al., 2009; Mougeot, 2005). Literature indicates that urban agriculture is often perceived as a women's business as more women practice agriculture compared to men (Binns & Lynch, 1998; Beaumont, 1990; Van der Merwe, 2003). Haysom (2015) argues that as female-headed households are more

vulnerable to food insecurity, as a result, women play an important role in improving household food security through their involvement in urban agriculture (Babatunde et al., 2008; Mallick and Rafi 2010; Ndiritu et al., 2014). Similarly, Horvoka et al. (2009) report that in most developing countries women are synonymous with the practice of urban agriculture. For instance, 2/3 farmers in Yaounde, Nakuri, Maputo, Nairobi and Kampala are women (Prain & Lee-Smith, 2010 cited in Azunre et al., 2019). In contrast, this study revealed that 53.1 percent of the respondents were male, while the remaining 46.9 percent were female (see table 5.1).

Table 5.1 Gender distribution of participants

Gender		Frequency	Percent	Valid Percent
Valid	Male	17	53.1	53.1
	Female	15	46.9	46.9
	Total	32	100.0	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.1.4 Age

The age of the respondents ranged from 23-60 or above years. The data presented in Table 5.2 illustrates that most of the respondents 37.5% were found to be between 51 and 60 years. This was followed by 21.9% of the respondents who were between 43 and 50 years. Approximately 18.8% of the respondents were found to be between 34 and 42 years. Whilst 18.8% of the respondents were 60 years and above. Only 3.1% of the respondents were between ages 26-33. This suggests that the rate of participation of youth in urban agriculture is low.

Table 5.2 Age distribution of respondents

Age		Frequency	Percent
Valid	26-33	1	3.1
	34-42	6	18.8
	43-50	7	21.9
	51-60	12	37.5
	60+	6	18.8
	Total	32	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.1.5 Educational attainment

Evidently, education plays a significant role in determining whether a person can enter the labour market (Olaniyan and Okemakinde, 2008). The educational background of participants presented in Figure 5.3 below indicates that 28.1% of the respondents had no formal education and only 3.1% of the respondents had acquired a bachelor's degree from a university. Most of the respondents 43.8% completed high school while 15.6 of the respondents indicated that they only completed primary school.

Table 5.3 Education status of respondents

Education status		Frequency	Percent
Valid	No formal Education	9	28.1
	Primary School	5	15.6
	High School	14	43.8
	College	3	9.4
	University	1	3.1
	Total	32	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.1.6 Employment status

Table 5.4 below shows the employment status of respondents. Only 3.1% of the respondents had fulltime employment. While most of the respondents, 40.6% were solely reliant on [3]social grants. This was followed by 37.5% who had some form of part-time work. While 18.8% of the respondents were unemployed.

Table 5.4 Employment status of urban gardeners in Khayelitsha

Employment status		Frequency	Percent
Valid	Full time employed	1	3.1
	Part-time employed	12	37.5
	Unemployed	6	18.8
	Solely rely on social grants	3	40.6
	Total	32	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.1.7 Monthly income

In the urban context income is considered as an important factor in providing natural resources and food security (Garret & Ruel, 1999; Gibson & Rozelle, 2002 & Zere & McIntyre, 2003). Literature indicates that poor households in most developing and middle-income countries practice urban agriculture as a source of livelihood (Abaidoo et al., 2009; Foeken & Owuor, 2008; Raschid-Sally & Jayakody, 2008 cited in Azunre et al., 2019). Conversely, Drechsel and Keraita (2014) report that in Accra, Ghana two out of three farmers indicated that they had no intentions of leaving farming even if they were offered alternative employment. Based on this, Amponsah et al. (2015) conclude that gardening has become an employment destination for many. Moreover, Reuther and Dewar (2005) are of the view that urban agriculture could be economically and socially viable to the poor living in informal settlements if practiced

[3] The social grants indicated by respondents included the Child Support Grant, Disability Grant and the Old Age Pension.

properly.

The results presented in Table 5.5 below show the monthly income of the respondents. The findings of this study indicate that out of the 32 sampled participants, most of the respondents 50% earned between R1000 and R2000 per month. This was followed by 21.9% of the respondents earned between R2100 and R3000. Only 6.2% (2) of the respondents were found to earn between R4100 and R6000 per month. These 2 respondents had fulltime employment. While 2.5% of the respondents earned R500 or less. During the time of the survey (2019) the food poverty line was R561 (Stats SA, 2019).

Table 5.5 Income distribution of respondents

Income		Frequency	Percent
Valid	R500 or less	4	12.5
	R1000- R2000	16	50.0
	R2100- R3000	7	21.9
	R3100- R4000	3	9.4
	R4100- R5000	1	3.1
	R5100- R6000	1	3.1
	Total	32	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.1.8 Percentage of income that is allocated to food

The proportion of income allocated to food gives us an idea of a household's food security status. Ray (1998) and the FAO (2006) note that the poorer the household, the higher the percentage of their income is spent on food. Therefore, understanding how much household income is allocated to food helps us to understand the household's vulnerability to food insecurity. Table 5.6 shows that 3.1% of the respondents allocate 10-15% of their income to food. While 12.5% of the respondents spend 31-40% of their income on food. The greater

share, 43.3% allocate 41-60% of their income to food. According to Stats SA (2014) Poor households spend allocates 34% of their income on food as compared to non-poor households who only allocate 10% of their income on food.

Table 5.6 Percentage of income that is spent on food

Percentage of income allocated to food		Frequency	Percent
Valid	10 - 15%	1	3.1
	16- 20%	5	15.6
	21- 30%	8	25.0
	31- 40%	4	12.5
	41- 50%	7	21.9
	51-60%	7	21.9
	Total	32	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.1.9 Household size

Household size can be defined as the number of people who reside in a household. The results presented in Table 5.7 show that majority of the respondents 65.6% have a household size consisting of 1-3 members. This is followed by 34.4% consisting of 4-5 members. The findings of the study revealed that households with children who were in school were more likely to have a limited dietary diversity or experienced marginal food security. This is due to additional financial responsibility such as transportation to school. These findings suggest that household size negatively affects household food security. Similarly, Olayemi (2012) reports that an increase in household size reduces food security in the household. This is because the larger the household size the higher the demand for food (Ndobo, 2013).

Table 5.7 Household density of respondents

Household size		Frequency	Percent
Valid	1-3	21	65.6
	4-5	11	34.4
	Total	32	100.0

Source: Author's compilation based on fieldwork survey, 2019

5.2 Research Objective 1: To investigate the extent of food security in Khayelitsha

Theme: Level of food security in Khayelitsha

The Household Insecurity Access Scale was used to measure the level of food insecurity of the participants. The HFIAS is a measurement of the prevalence of food insecurity in the household (Coates et al., 2007). The method is based on the premise that the experience of food insecurity causes expected reactions and the results can be enumerated and summarized on a scale (Yahaya et al., 2018) The minimum score on the scale is 0 and the maximum score is 27. The lower the score the less food insecurity experienced by the household (Crush et al., 2018). The HFIAS provides insight on how households experience food insecurity. This study used the HFIAS questions to understand cultivator's experiences of food security. The questions used in the study are like those by Stats SA. Table 5.8 below presents a descriptive analysis of the extent of food insecurity in Khayelitsha based on HFIAS.

5.2 Table 5.8 Basic descriptive analysis of the extent of food insecurity in Khayelitsha

How food secure is your household?	Frequency	Percentage
In the past six weeks did you worry that your household would not have enough food?	16	50
Could not afford a balanced meal?	21	65.6
Ate less because of lack of money?	11	34.4
In the past six weeks did any child in the household have to eat a limited variety of foods due to a lack of resources?	13	53
In the past six weeks did any adult in the household have to eat some foods that were not desired due to a lack of resources to obtain other types of food?	16	50
Go to bed hungry?	7	21.9
Lost weight because of a lack of food?	9	28.1
Skip meals?	20	62.5

Source: Author's compilation based on fieldwork survey, 2019

Table 5.8 illustrates the quantitative findings of this study which revealed that 50% worried about not having enough food. In addition, 53% of the respondents indicated that a child in their household often had to eat a limited variety of foods due to lack of resources. In their work, Arimond & Ruel (2004) observed a significant relationship between diet diversity and food security. Evidently, in most developing countries dietary diversity is linked to Height-for-Age Z Scores (HAZ scores). These findings concur with those of Thorne-Lyman et al. (2010) who observed an improvement in nutritional status when the prices of food decreased as households were able to afford to purchase food. Further, results pertaining dietary diversity for adults indicate that 50% of the respondents indicated that an adult in the household had to eat a limited variety of foods. Moreover, 21.9% of the respondents indicated that they sometimes went to bed hungry due to lack of resources. Whereas most of the respondents, 65% indicated that they could not afford a balanced meal. Only 28.1% of the respondents indicated they lost weight due to lack of food while 20% of the participants indicated that they skipped

meals. Similarly, a study on the state of food security in Cape Town (Crush et al., 2018) revealed that half of the surveyed population worried about not having enough food. In addition, more respondents in that study indicated that they had to eat smaller and fewer meals due to lack of resources.

This study further revealed that respondents experienced a limited dietary diversity. Dietary diversity can be used as a proxy indicator to determine nutritional quality of the diet (Steyn et al., 2006). Although the study did not assess nutritional adequacy, 91% of the respondents indicated that they consumed maize and maize products while 99% stated that they consume bread daily.

Moreover, Stats SA (2019) reports that in 2017, 12.7 million (78.7%) households indicated that they did not have sufficient access to food. Of those who experienced severe food insecurity, about 80.8% households with no children indicated that their food access was adequate. In addition, 51% of households with younger children that experienced food hunger lives in urban areas compared to 43.9% that reside in rural areas (Stats SA, 2019). Furthermore, Stats SA (2019) concludes that high levels of poverty (25.2%) and inequality in South Africa have negatively impacted a household's ability to access food despite the fact the country produces enough food to feed its population. The findings of this study revealed that the prevalence of food insecurity remains a challenge in Khayelitsha as over half of the participants in this study experienced food insecurity. Notably, diet quality is significant in ensuring food security, this study showed that diet quality is a major concern in Khayelitsha as more than 50% of the respondents indicated that they had to eat undesired food due to lack of resources.

5.3 Livelihood strategies

Research Objective 2: To investigate the livelihood strategies adopted by households to be more food secure in Khayelitsha

Theme: Coping strategies adopted to be more food secure

Coping strategies include ways to maintain consumption in the midst of disaster like drawing on savings, gifts from relatives, community transfers, sales of livestock etc (Mensah, 2014). In relation to food security, coping strategies vary from household to household (Ellis, 2000: 297). Moreover Ellis (1999) highlights that livelihood diversification includes the process whereby

households adopt different livelihood strategies in order to improve wellbeing and the overall standard of living. In addition, (Swift & Hamilton, 2001) notes that livelihood diversification is linked to two factors: one reason is related to increased vulnerability and the other reason is a conscious effort by households to expand their sources of income for the purpose of investing in the future. From this it could be inferred that the factors that influence livelihood strategies are incredibly significant. As Battersby (2011) observes, households often must diversify their income-generating strategies to enhance their household income because income has a significant impact on household food security.

Employment

The qualitative findings revealed that gardeners view employment as *"a better source of income"* which helps to generate more income and enables households to allocate more money to food, therefore, improving household food security status (Focus group Discussion, 2019). The study revealed that while self-employment generated some income for some households, it was unstable as there was no guarantee it could provide a stable income. This was supported by a gardener who owns a small tuckshop *"Some months are good and some are bad as there is no telling whether I will be able to make the same income this month as I did the previous month"* (Respondent F, 2019). Based on this narrative households viewed employment as a better livelihood strategy due to its ability to generate a stable household income. In support of this view, a respondent indicated that *"Employment guarantees money in your bank account every month"* (Respondent C, 2019). Furthermore, the findings revealed that gardening complements other sources of household income as opposed to it being the primary source of food security. These findings are supported by Frayne et al (2014) who found that while involvement in urban agriculture can increase food security and dietary diversity for households, participating in urban agriculture alone is not sufficient to ensure dietary diversity therefore alternative food sources are needed to reduce vulnerability. In addition, the study revealed that gardening was not restricted to the poor alone. *"it's not necessarily practiced by poor people alone as some people practice it to achieve a balanced lifestyle''* (Respondent J, 2019) a project leader describing how gardening is practiced by different types of people in Khayelitsha. These findings were further supported by the household income of the respondents as 6.2% of the respondents earn between R4100- R6000 per month (see table 5.5). Using the Allocation to food component of the questionnaire, the findings indicate that 43.8 %

of the households allocate the majority of their income 41%-60% to food.

Social grants

In this study social grants consists of the Child Support Grant, disability grant, and the elderly grant. May and Rogerson (1995) note that most urban farmers emerge from welfare-dependent households. The qualitative findings showed that social grants provide a lifeline for households faced with unemployment as one of the respondents stated that *"The money I receive from the child support grant for my children allows me to put food on the table"* (Respondent D, 2019). This is supported by Lloyd (2000) who reports that social grants have positive impacts on household nutrition and wellbeing. The qualitative findings further revealed that households who receive social grants are more likely to have a diverse diet compared to households faced with high unemployed that do not receive any form of government grant (Focus group discussion, 2019). In their study on the impact of cash transfers on food security in Mexico and Nicaragua, Haddinott and Wiesmann (2010) found that cash transfers increase access to food consumption and reduces food insecurity. Similarly, Berhane et al. (2011) observed an increase in food security levels amongst households who received food or cash transfers in Ethiopia. Furthermore, literature indicates that social grants are the key player in enabling the poor to access food (De Cock et al., 2013; Masekoameng & Maliwichi, 2014; Masekoameng, 2015). In contrast, Seidenfeld et al. (2014: 41) and Manley et al. (2012:65) argue that improvement in food security does not always translate to improvement in nutritional status.

Community feeding schemes

The findings of this study indicate that community feeding schemes play a significant role in alleviating poverty in poor areas like Khayelitsha. In the case study area, The Methodist Church provides small food parcels for the elderly twice a week. About 4 out of 10 of the sampled population (elderly) indicated that they were beneficiaries of church feeding scheme which is aimed at alleviating hunger and improving food security. One respondent stated *"The community feeding scheme based at a nearby church plays a significant role in ensuring that I have food on the table on Tuesdays and Wednesdays I really don't know what I would do without it"* (Focus group discussion, 2019). This was supported by another respondent who expressed that *"Our feeding schemes helps to take some load of our shoulders. Although we*

only get food twice a week. At least we know there's two days we do not have to worry about" (Focus group discussion, 2019). These narratives suggest that food assistance programmes provide a lifeline for the elderly. In their work, Kim and Frongillo (2007) observed that Food assistance programmes targeted at the elderly play a pivotal role in alleviating poverty and decreases their likelihood of being depressed and overweight. Similarly, Crawshaw and Shaw (1996) report that direct feeding schemes are effective when vulnerability is related to age or sex.

Remittances

The research revealed that [4]remittances play a pivotal role in food security. 5 out of 10 of the respondents stated that remittances play a significant role in covering other household expenses such as transport fees for the children, food and electricity. Respondent H, a 62-year-old male expressed that "*As a pensioner, the money I receive from my children helps me a lot because I can cover my grandchildren's transport fees and buy food. It helps me a lot because without it none of that would be possible because my grant doesn't stretch that far*" (Social group discussion, 2019). This narrative is supported by Waidler and Devereux (2019) who report that in South Africa, remittances plays a significant role in improving nutrition and food security. In Nigeria, Babatunde and Martinetti (2011) found that although remittance income contributed to improved calorie supply household level, there was no significant impact on diet quality and child nutritional status observed.

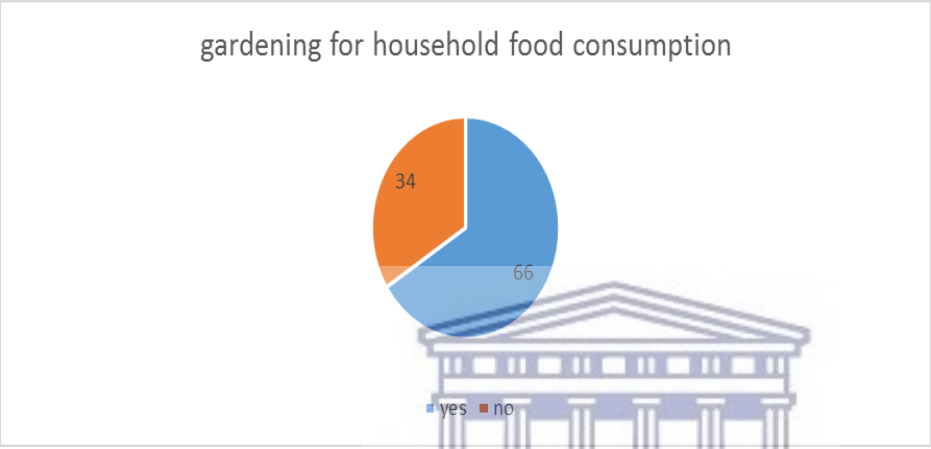
Gardening for household consumption

The study revealed that gardening for household food consumption is one of the main reasons why most households practice gardening in Khayelitsha. As one respondent stated, *"I practice gardening so that my family does not go to bed hungry"* (Respondent G, 2019). This is further supported by the quantitative findings illustrated in figure 5.1 indicates that 66% of the respondents use. Furthermore, the findings revealed that respondents view gardening as having a significant contribution to household nutrition as one respondent stated, *"The food from the garden is fresh, healthy and easily accessible"* (Focus group discussion, 2019). Consequently,

[4] While much literature on remittances focuses on rural to urban/ inter country contexts, findings from the interviews revealed 2 out of 3 pensioners who were also care givers of grandchildren received a money from their children working in other cities monthly.

gardening is justified on its nutritional content. A study in the Peruvian capital of Lima reported that home gardening yielded nutritional benefits for poor families in slum areas by increasing the availability of nutrient-dense fruits and vegetables that are not commercially accessible to the poor (Niñez, 1985). Similarly, in Nairobi Kenya, Smit (1996) found that urban agriculture has improved the nutritional content of households involved in the practice.

Figure 5.1: Gardening for household consumption



Source: Author's compilation based on fieldwork survey, 2019

Vegetable trading

Most households in Khayelitsha are faced with hard socio-economic hardships and often must diversify their livelihoods to improve their socio-economic status. Diversification of income sources and farming for household consumption and profit are some of the livelihood strategies adopted by the poor to be more food secure (Maxwell, 1996). Although selling the product has advantages for gardeners, the qualitative findings revealed that majority of the gardeners do prioritize selling the produce. This view was further supported by one gardener who explained that *"The profit I make from selling the vegetables helps me to do other things in the house"* (Focus group discussion, 2019). Conversely, this research revealed that 5 out of 10 of the respondents indicated that they sell the produce from the garden to make a profit as one respondent stated: *"I sell vegetables and use the profit to buy other staple foods such as maize"* (Respondent H, 2019). Based on these narratives, the profit from the vegetables allows households to cover other necessities.

Interestingly, 40% of the respondents indicated that they often must borrow food from neighbours to survive. As one respondent indicated *"Sometimes I borrow food from my neighbours"* (Respondent J, 2019). The sense of collectiveness in their communities allows people to borrow food from neighbours without feeling judged or looked down upon. Many of the respondents indicated that during hard times they always turn to their families. *"My family is always there to assist me financially''* (Focus group discussion, 2019). This was supported by another respondent who stated that *"I can always rely on my family in times of need"* (Focus group discussion, 2019). These findings are supported by Battersby (2011) who found that most of the poor in urban areas often have to rely on informal networks during times where they have no access to food. However, Zezza and Tasciotti (2010) argue that income earned from urban agriculture is comparatively lower than participation rates therefore the potential for urban agriculture to improve nutrition security and yield income is limited.

5.4 Livelihood outcomes

Research Objective 3: To investigate the perceived impact of urban food gardens on household food security
Theme: Contribution of urban agriculture to food security

The extent to which urban agriculture contributes to food security in South Africa have been investigated by researchers (May and Rogerson, 1995; Crush et al., 2011; De Zeeuw et al, 2011; Frayne et al., 2014). In the context of analysing the findings of this study, the contribution of urban agriculture to food security will be analysed based on four factors. Namely, Food availability, accessibility, stability, and utilization.

Food availability

The role of urban agriculture as perceived by gardeners was that it contributes to food security by significantly decreasing hunger and sometimes generating an income for the households. Based on the interviews, it is evident that gardening had greater benefits for households who sold the product. Reflecting on the impact of gardening on household food security, respondents expressed that:

"Gardening has enabled me to ensure that my family never goes to bed hungry" (Focus group discussions, 2019).

"The little profit I make from selling the crops allows me to purchase staple foods such as maize and rice so gardening really helps me to provide for my family" (Focus group discussion, 2019).

"I love the fact that I can always put food on the table regardless of the portion or how little the food is. Being able to provide for my family not only contributes to food security but it restores my dignity and pride because I don't rely on friends and family even though I am unemployed" (Respondent J, 2019).

The respondents further described the impact of gardening in relation to their family's mental stability as one respondent stated:

"Ever since I started gardening I've noticed my children are performing much better at school because they don't leave the house hungry and they don't have to rely on the school's feeding scheme all the time" (Focus group discussion, 2019)

These findings are supported by Mougeout (1994) who postulates that urban agriculture contributes to food availability and self-reliance which helps in reducing food insecurity of vulnerable groups. In contrast, Reuther and Dewar (2005) found no evidence of improved food security in community gardens in the Cape Flats.

Accessibility

Food access remains one of the serious challenges that plagues the African continent (FAO, 2013). Khayelitsha has the highest number of people who experience food insecurity. Most of these households rely on both formal and informal markets to purchase food (van Breeman, 2014). The high unemployment rates make it difficult for most households to access food. Malnutrition and food insecurity are some of the manifestations of inadequate access to food (ibid). Food security is not just a problem of aggregate food supply but rather the inability of poor households to access food (Maxwell et al., 1998). This study revealed that involvement in urban agriculture increases household access to food as people can produce their food. As one respondent stated:

"Involvement in the gardening project allowed me to easily access food while cutting other costs such as transportation" (Focus group discussion, 2019). This is supported by another respondent who added that *"gardening gives me access to more fresh and nutritious food"*

(focus group discussion, 2019). These findings are supported by (Yeudall, 2006) who found that urban agriculture leads to access to better nutritious and diverse foods than purchasing food from supermarkets or other fast-food chains.

Stability

The study revealed that the stability of the gardening project was one of the main objectives of the project leaders as it ensures nutrition stability for the gardeners. The findings revealed that two principles characterize this stability. The first is the longevity of the project and the second is the quality of the crops produced. The findings indicated that having proper tools, seedlings and dedicated farmers has contributed to the success of the project for the past 5 years. As one project leader stated *''without the efforts of dedicated farmers, this project would not have been a success*'' (Project leader 1, 2019). This was supported by another project leader who stated that "We have been able to feed more families because of our hardworking farmers" (Project leader 2, 2019). The findings also indicated that longevity of the project was at the heart of project leaders and they have managed to sustain the project through *''the unity of gardeners and donors''* (Project leader 2, 2019). These findings also revealed that understanding the needs of the community was key to ensure the stability of the project as one project leader recalled *''When we started this project it was important for us to understand what challenges the people of Khayelitsha face…. We wanted to not only to come up with a solution to poverty but also to ensure that people are empowered in the process''* (Project leader 1, 2019). The findings also indicated that Moya Wekhaya Peace gardens encourage farmers to produce a variety of vegetables to ensure that farmers have access to food throughout the year.

Utilization

According to the FAO (2006) food utilization encompasses food acceptability and food adequacy. The FAO (ibid) stresses the need for food to be culturally and personally acceptable to the household i.e. food should meet household's personal preferences.

The study revealed that 9 out of 10 of the respondent's perception of urban agriculture is that urban agriculture encompasses *"nutrition and better health"*. Interestingly, the study revealed that 9 out of 10 of the respondents indicated that gardening contributes to better health. *"I had a healthy pregnancy because of the food from the garden"* (Respondent J, 2019). Another

respondent stated that her children were *"healthier and don't get sick like they used to because of the food from the garden"* (Focus group discussion, 2019). Thus, the contribution of gardening to food security is also understood and justified based on its nutritional content. This is supported by Prain (2010) who found that involvement in urban agriculture leads to better health and better mitigation of diseases. In Cagayan de Oro, Phillipines, Potutan et al. (2000) found that urban farmers generally ate more vegetables compared to non-urban farmers. Based on these findings, the gardeners view that food grown from the garden is fresher and healthier than food from retailers because it is consumed from its natural state. The study also revealed that most of the respondents participated in urban agriculture to ensure better access to quality food.

5.5 Challenges of urban agriculture

Research Objective 4: To investigate the challenges faced by urban farmers in Khayelitsha
Theme: Factors mitigating effective urban agriculture

Gender dynamics/ Power relations

Gender relations are influenced by traditions, ethnic background, socio- cultural norms, age and economic status. Gender inequalities manifest in many facets of life. In the context of urban agriculture, these include access to physical and economic resources as well as gender roles (Danso et al., 2004). Research on urban agriculture in Africa has revealed that women make up the majority of urban farmers (Olivier, 2015). In the Cape Flats, the prevalence of women engaging in urban agriculture plays a pivotal role in improving household food security and strengthening social capital (ibid). Gender dynamics and cultural norms posed a huge challenge for the male participants. Elaborating on how cultural norms and perceptions on gender roles pose a challenge for urban agriculture *(Respondent H, 59-year-old Black Male, Khayelitsha)* stated that:

"Working for women is a challenge because traditionally, a woman should not tell a man what to do. I find this very disturbing because it is very disrespectful and condescending".

"There is this level of frustration that comes with working under a woman. I think it stems from our background and our culturally assigned gender roles. Even though we live at a totally

different era and there is this push for equality in the workplace. As an old black from the Eastern Cape I still find it hard to follow a woman's instruction even here in the garden". (Respondent G, 62-year-old Black Male, Khayelitsha)

These narratives accentuate traditional views on the role of women in the workplace. In contrast, women's perceptions on gender dynamics in urban agriculture are different. For women urban agriculture empowers them to be "leaders and bosses" as one project leader relayed:

"I love the fact that urban agriculture allows me as a woman to be a leader and a facilitator. Personally, it is very empowering to know that women are equally capable to start initiatives and dictate who does what". (Respondent T, 65-year-old Black Female)

Literature on urban agriculture has shown that involvement in urban agriculture provides some opportunities for women but many challenges exists in relation to patriarchal contexts (Redwood, 2009). As a result, the feasibility of their cultivation is comparatively lower for most female cultivators in Africa than their male counterparts, because women face much more challenges (Flynn, 2001:666; Sawio, 1994:25). Men and women are unequally positioned in both political and socio-economic landscapes in Botswana. Women are often placed in a disadvantaged position compared to men in urban agriculture both in terms of quantity and type of production (Mogwe, 1992; Kidd et al., 1997 cited in Horvoka, 2004). Hovorka et al. (2004) observed a strong relationship between socio-economic status and access to land which influences the distribution of physical resources across the urban landscape as men tend to be located on larger and expensive plots. Moreover, Kamara and Denkabe (1993) posits that gender differences between male headed households and female headed households influence their labour input in farm activities because women have reproductive duties such as taking care of children and attending to household duties.

Nevertheless, for Saraguro women of the Andes, South America, the ability to maintain a successful garden not only validates her agronomic competency but also her status in society (Finerman & Sackett, 2003). Furthermore, Olivier (2015) postulates that urban agriculture empowers women to challenge pervasive patriarchal norms. These narratives suggest that urban agriculture empowers women to challenge and redefine the role of women in farming.

Social Capital

The networks of relationships that urban farmers have play a significant role in the success of community gardens (Nel et al., 2001). The role of external supporters such as larger and more established NGOs, governmental organizations, City of Cape Town and any other key players is significant in facilitating the growth of community gardens. Therefore, forming a relationship with external supporters plays a pivotal role in community development. Subsequently, Olivier (2015) contends that social capital plays a significant role in reducing vulnerability by increasing support networks and farmer's opportunities. The findings of this study indicate that lack of linking social capital was a major concern for most respondents. Vervisch et al. (2013) define linking social as the ability to engage power structures such as government with cultivators. In the focus group discussion, most of the respondents expressed their concerns over the lack of linking capital in respect to cultivators and external supporters.

"We don't have the appropriate connections with influential people to expand our garden and this is a great challenge for us because we have limited resources and there's not much we can do with what we have" (Focus group discussion, 2019). Based on this narrative, it is evident that linking social capital is rare in low income communities. In the same vein, the DFID (1999) postulates that lack of linking social capital restricts avenues of mobility and growth for the poor.

Land

Access to land is a major challenge for urban agriculture in Khayelitsha and this can be attributed to *"urbanization and the fact that gardening is not top priority of the government agenda such as housing"* (Respondent A, 2019). This view was also expressed by one project leader who stated *that "it seems like gardening has to compete with other pressing social issues such as sanitation and infrastructure"* (Project leader 1, 2019). These findings are supported by existing literature suggesting that there is often conflict over land use in urban areas which causes harm to urban agriculture (May & Rogerson, 1995). Furthermore, the study revealed that majority of respondents viewed lack of ownership rights to land as a major challenge as respondent A stated:

"Not having ownership rights to land negatively impacts us because not having access to land means that we expand our garden thus our production too stays the same" (Focus group

discussion, 2019). These findings indicate that inadequate access to land hinders farmers from increasing their production thus affecting their income. Moreover, The City of Cape Town (2010:14) notes that there is no land reserved for gardening in Cape Town and finding land that does not compete with other uses is challenging. Thus, despite having much open space in the City of Cape Town's low-income areas, this land is not easily accessible by poor individuals. In addition, Fermont et al. (1998:25 cited in Olivier, 2015) argues that while plot sizes are feasible because of the marginal land available in Cape Town, most of this land is of low agricultural quality as it is 96% sand and alkaline.

Water

Access to water was expressed by most of the respondents to be a major challenge and this can be attributed to the "water crisis" that the City of Cape Town faced in 2018. One respondent asserted that *"due to the water crisis we are forced to use less water than we did previously"* (Project leader 1, 2019). This was supported by a respondent who stated *that "availability of water is the biggest problem because our crops don't grow as fast as we would like them to grow when we do not have enough water"* (Focus group discussion, 2019). participant expressed the need for *"intervention by the City of Cape Town because despite having borehole water, sometimes we have shortage of water and this affects the garden in so many ways"* (Focus group discussion, 2019).

Garden equipment and financial support

The findings of this study indicated that 9 out of 10 of the respondents expressed inadequate access to gardening equipment as a challenge. One respondent stated, *"We don't have enough tools, so we have to share the little tools we have amongst each other"* (Respondent B, 2019). This was supported by another respondent who added that *"We always have to share equipment, and this is time-consuming. If we had enough equipment, we would have more work done"* (Focus Group discussion, 2019). In addition, one of the project leaders noted that *"We are a small organization and we do not have enough money to invest in gardening equipment so often gardeners have to share the equipment amongst themselves and this affects productivity"* (Project leader 2, 2019). Similarly, a study by Mkwambisi et al. (2011) on urban agriculture in Malawi found that lack of garden equipment and financial assistance was a great

challenge for urban cultivators. Ziga (2018) notes that lack of finance restricts cultivators' ability to expand their agricultural activities to more profitable ventures.

Furthermore, this study found that lack of financial support from the Department of Agriculture and the City of Cape Town municipality caused a lot frustration to the farmers because *"their financial needs were not being met and therefore it is hard to hasten our productivity"* (Respondent G, 2019). This suggested that farmers require some stipend for the work they put in the garden. This is supported by another respondent who stated that *"It would make all the difference if we could receive a stipend from the municipality even if it's R500 per month it would make a difference"* (Respondent G, 2019). The need for financial assistance was expressed by 9 out of 10 of the respondents

Theft

The additional challenges identified in the focus group discussion and interviews included theft. The majority of the respondents raised concerns about crime and delinquent behaviour in the area in which the gardening project is situated. One respondent stated that *"Despite the success of our garden over the past few years, we still do not feel safe when we are working in the garden due to the high crime levels in this area and because we have had many cases of theft in the garden"* (Focus group discussion, 2019). This was supported by another respondent who elaborated that *"We live in constant fear when we are working in the garden because every day we hear about robbery in the area and we have had many unfortunate cases of vandalism in the garden"* (Focus group discussion, 2019). These findings are supported by Van de Merwe (2003) who found that urban farmers are often at risk due to theft and crime in urban areas.

5.6 The impact of socio-economic characteristics on food security: Evidence from the study

Socio-economic background plays a significant role in food security. In a study conducted on household food security in Cape Town, Crush et al. (2018) found that there is a relationship between household food security and the occupation of the household head. This section will look at the effect of socio-economic characteristics namely, Educational background,

Household income and employment status on food security based on the findings of the study.

5.6.1 Level of education

Educational attainment plays a pivotal role in household food security. According to Human Capital theory, higher educational attainment yields better earnings and productivity (Gillies, 2017). This suggests that obtaining an educational qualification increases your earnings. 9 out of 10 of the respondents indicated that educational attainment influences food security status. The influence of educational background on food security was further elaborated by an FGD respondent:

" When you're educated you have a better chance of securing a good job that enables you to cater your family's needs whereas when you're unemployed it is even hard to get a job as a domestic worker because even that requires some sort of formal education" (Focus group discussion, 2019). Evidently, education plays a significant role in determining whether a person can enter the labour market (Olaniyan and Okemakinde, 2008). These findings indicate that obtaining a qualification increases the chances of entering the labour market. Conversely, Lockheed et al. (1980) reports that a relationship exists between education and food security.

The interviews and FGDs with the cultivators further revealed that the level of education informs food preferences. For example, Bongani Meza, a retired primary school teacher with a university degree explained that he tries to opt for healthier food choices:

"I'm diabetic so I try to adopt a healthy lifestyle... I try to limit my calorie intake and I'm very careful with my portions too". In contrast, Sabelo Ngada a 50-year-old male with no formal education interjected:

"To be honest, I don't really pay attention to what I eat. If I have some vegetable on my plate, I am content" (FGD, 2019).

Based on these narratives, perceptions of nutrition tend differ for educated people and uneducated people. In addition, study also revealed that education played a vital role in food preferences as 91% of the respondents indicated that they include maize in their daily diet and 99% of the respondents indicated that they include bread in their diet. These findings are supported by Mukudi (2003) who found that education plays a vital role in informing people about nutrition and health. Conversely, Nyako (2013) theorized that obtaining some formal education teaches people basic health and nutrition.

5.6.2 Employment status and Income

The findings from the study revealed that employment plays a significant role in food security. The study revealed that unemployment and solely relying on social grants increased vulnerability to food security. When asked how not a stable source of income having affects them. Khululwa Myezo, a 35-year-old unemployed female conveyed:

"*Being an unemployed single parent is very tough. It takes a toll on you emotionally and financially. I cannot afford to meet my children's needs and the little money I receive from the child support grant is only enough for their transport. I have to rely on family and friends during the month*" (FGD, 2019).

Similar experiences were conveyed by other respondents. Zine Zikode, a 42-year-old male who works for a construction company (part-time) had this to say:

"*For me, the greatest challenge of being employed on a part-time basis is the uncertainty of whether or not I'll be able to provide other household essentials for my wife and children because I only earn R3000 per month and R800 has to go to my transport fare. With the cost of living so high it is hard to cover all household expenses and I cannot afford to purchase quality food.* " (FGD, 2019).

Evidently, unemployment and lack of formal employment is a stumbling block to achieving food security. Maxwell (1996) suggests that food security in urban areas is dependent on the ability to earn an income. Egziabher (1994) reports that most households who practiced urban agriculture in Addis Ababa, Ethiopia were poverty stricken and lacked necessities. Further, Ravallion (1992) postulates that income is linked to undernutrition and calorie intake. Crush et al. (2018) reports that income determines the overall diet quality. Garret and Ruel (1999) conclude that income is an important determinant of food security. In their study, Crush et al. (ibid) found that food security scores are better when the head of the household is employed than when the head of the household is unemployed. Moreover, Maxwell and Zziwa (1992) note that urban agriculture provides a lifeline for households faced with high unemployment.

5.7 Conclusion

Triangulating in-depth interviews, a survey and FGDs sheds light on the complex nature of urban agriculture and its contribution to livelihoods. Dietary diversity, empowerment and self-

reliance on food are some of the impacts that were reported. Households who adopted various livelihood strategies were less vulnerable to food insecurity and were not as affected by fluctuations in food prices. The chapter outlined the impact of socio- economic characteristics on food security and how lack of education and income influenced people to practice gardening. The chapter cited references from previous studies to support or contradict the empirical findings of the study. The following chapter summarises the key findings of the study, draws conclusions provides recommendations.

CHAPTER SIX: SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

6.1. Introduction

This study sought to explore the potential of urban agriculture on food security. This was done by identifying 4 research objectives. First, the study sought to investigate the extent of food insecurity in Khayelitsha. Secondly, the study sought to investigate the coping strategies adopted to be more food secure in Khayelitsha. The third objective of the study was to investigate the perceived impact of food gardens on household food security. Lastly, the study sought to identify challenges faced by farmers in Khayelitsha. This chapter gives a summary of the findings of the study in relation to the research questions and objectives. Lastly, policy recommendations are provided before conclusion remarks.

6.1.1 Community gardens, food security and sustainability of urban agriculture

The impact of urban agriculture on improving food security amongst poor households is well documented (Mougeout, 1994; Potutan et al., 2000; De Zeeuw, 2002). The Household Food Insecurity Access Scale (HFIAS) was used to access household food security in Khayelitsha. Evidently, food insecurity is a persistent problem in Khayelitsha. Similarly, research by Battersby (2011) on the state of food insecurity in Cape Town revealed that majority of surveyed population in khayelitsha were found to be severely food insecure. The findings of the study revealed that more than half of the surveyed population were either moderately food secure or severely food insecure.

Extensive socio-economic motives for urban agriculture are noted in research on urban agriculture in South Africa. The extent to which urban agriculture contributes to food security is dependent on varying factors including the context in which the produce is cultivated (Baiphethi & Jacobs, 2009). The findings of this study revealed that community gardens improve food security, increase food availability and accessibility for the poor. Further, the study found that gardening promotes self-reliance on food which is significant for sustainability of gardening projects and improving food security.

The urgency to place sustainability at the centre of development programmes has propelled most countries to act on food security despite little progress achieved thus far as one in nine

people (795 million) still suffer from undernourishment and dietary energy deficiency or hunger (FAO, 2015). Arguably, the different country's history and context has made it difficult for countries to reach a common ground on the social and environmental aspects of sustainable development. Most importantly, the sustainability of urban agriculture is determined by its ability to operate in the long term (Nugent, 2001). To ensure sustainability of urban agriculture, it should be economically and environmentally viable, socially just and culturally acceptable (FAO, 2007).

6.1.2 Coping strategies adopted to be more food secure

The Sustainable Livelihoods Approach considers the ability to diversify livelihoods as a contributory factor to food security. In this study, livelihood diversification played a pivotal role in improving household food security. The prevalence of unemployment in Khayelitsha has propelled some people to consider gardening as a solution to alleviate poverty. Most importantly, the study revealed that social grants provide a lifeline for the poor. Most of the participants in the study were solely reliant on social grants as a source of income.

The potential of generating income through selling vegetables was expressed by some respondents. Income derived from selling the produce helped farmers purchase other staple foods such as maize. Further, the findings of the study indicated that for most respondents, the motivation of practicing gardening was household consumption. Most respondents indicated that they participate in gardening to have better access to food. These findings indicate that gardening is viewed as a livelihood strategy for urban farmers. Further, formal employment was a preferred livelihood strategy for most of the respondents because gardening does not provide adequate income to cover household expenses. Conversely, part-time employed respondents expressed that gardening serves as a complimentary source of food. Notwithstanding the persistent challenge of unemployment in Khayelitsha, gardening for household consumption reduced vulnerability to hunger for most households. Nevertheless, livelihood diversification as reiterated in this section, plays a significant role in improving household food security.

6.1.3 Reflecting on the case study organization SWOT analysis: Moya Wekhaya Peace gardens project

A SWOT Analysis is a "simple but powerful tool for sizing up an organization's capabilities and deficiencies, its market opportunities, and the external threats to its future" (Thompson et al., 2007: 97). SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats. Conducting a SWOT analysis helps to identify internal and external factors that can affect the progress of an organisation. The decision to apply the SWOT analysis on the case study organisation was informed by my interest to understand the pillars that make the organization a success as well as the factors hindering its success. To achieve this, I generated codes from the qualitative interviews. The statements outlined in the SWOT analysis were derived through combining these codes to form sentences. For instance, one of the threats outlined in the SWOT analysis (crime in the area), emerged from combining the codes *unsafe area*, *violence* and *dangerous youth*. The same process was followed to come up with all the statements in this SWOT analysis. The information on the SWOT analysis was categorically divided based on its significance to each section. For example, any statement that is representative of the strengths of the organization was placed under the organization's strengths. The same was done for statements which are considered weaknesses, opportunities, or threats of the organization.

Table 6.1 Analysis of the effectiveness of Moya Wekhaya Peace gardens project

Strengths	**Weaknesses**
• Provides training and research support which helps improve production skills and outcome. • Different crops produced. This ensures that food is available throughout the year. • Empowers farmers. Farmers are active agents in ensuring food security for their households and empowers women • Encourages young people to participate in agricultural activities. • Encourages informal trading • Strong leadership and good relationship between project leaders and farmers • **Opportunities** • Income generation from increased sales of vegetables • Elders in the community generally prefer vegetables from the garden • Receive financial support from development agencies and private donors	• Lack of funds or support services • Inadequate access to markets • Inadequate access to land and Insufficient borehole equipment • Lack of social capital i.e. insufficient engagement with other supporting actors • Poor monitoring of the project **Threats** • Theft of garden equipment and crime in the area • Poor soil fertility • Water restrictions • High temperature and low production due to climate

Source: Fieldwork, 2019

The findings of the study revealed that the strengths of the project outweigh its weaknesses. First, the organisation provides facilitated participatory workshops which empowers farmers with knowledge and skills. This is significant because knowledge about crops translates to proper crop production and better crop quality. The organisation produces different crops throughout the year. This guarantees constant availability of vegetables thus decreases vulnerability to hunger.

The role of women in agriculture particularly in Africa is well documented. The findings of the study revealed the organisation empowers women and encourages young people to participate in gardening. This is significant because it teaches unemployed youth to be self-sufficient.

Concerning the weaknesses of the project however, the study revealed that most of these weaknesses are due to broader socio-economic problems such as crime in the area, lack of funds, inadequate access to land as well as lack of access to markets. The study revealed that access to natural capital i.e. land and physical capital i.e. resources such as tools and manure enables gardeners to be more productive in the garden which in turn yields positive results such as food security. However, though farmers wish to expand their production, they are often restricted by their inadequate access to land. Not having access to land restricts farmers' output of the product because farmers are often restricted to the area that they can work on. In addition, the study also found that the profitability of the produce was inconsistent, and this posed a major challenge for farmers wanting to diversify their income. Further, inadequate access to farming equipment and lack of financial support was a challenge for cultivators as they had to take turns when using the equipment. These findings suggest that having sufficient support from various external supporting actors such as larger and NGOs, the City of Cape Town, Department of Agriculture in the form of stipends would be a motivating factor for the cultivators.

Another aspect of SWOT analysis is opportunities. Opportunities are external factors within an organisation that are likely to contribute the organisation's success. The potential opportunities of the organisation include income generation of potential sales from vegetables. In addition, elders in the community generally prefer vegetables from the garden. The threats identified in the case study are include theft of crops, crime in the area, water restrictions and soil quality.

Based on the empirical findings and the SWOT analysis of Moya Wekhaya Peace Gardens, there is some evidence supporting the organisation's contribution to food security. However, the extent to which the organisation contributes to food security is questionable. Surely, if more

emphasis is placed on addressing the weaknesses and external threats, the organisation's impact could be profound. Further, better monitoring and evaluation of the project could help project leaders analyse and determine the objective of every intervention enhance the project's effectiveness.

6.2 Recommendations

The potential of urban agriculture in improving food security and livelihoods is apparent. Local governments play a significant role in facilitating urban agriculture in South Africa for example in Cape Town, Johannesburg, Durban and Pretoria (Rogerson, 2003). The success of community gardens depends on policies, institutions and processes that govern the city. The City of Cape Town's agricultural policy is a great document and if implemented well, it could contribute significantly to poverty alleviation and improve food insecurity. For most smallholder farmers in Cape Town, access to land is a major challenge. Therefore, it is recommended that City officials identify vacant land which could be used for urban agriculture and ensure that it is productive.

The growth of community gardens is often constrained by the lack of garden equipment and financial support. Financial support plays a pivotal role in facilitating the growth of urban agriculture therefore the government needs improve financial support for agriculture as farmers need support on many issues from training to equipment as well as infrastructure.

Establishing networks and relationships is vital for the growth of NGOs. Social capital is essential for successful urban agriculture (Nel et al. 2001). Establishing networks of relationships with different supporters is important for the promotion of urban agriculture, therefore it is important to encourage relationships between smaller and larger NGOs. Engaging small NGOs with more reputable and experienced NGOs is an important aspect of generating information as some farmers are not aware of the procedures to follow when seeking assistance from the City of Cape Town and the Department of Agriculture. The participants in this study indicated that urban agriculture has economic benefits either as a source of income or as means to supplement household income. Therefore, the government should provide training on entrepreneurial skills and financial management. In addition, monitoring and evaluation training workshops must be facilitated with project leaders to ensure the success of the project.

6.3 Conclusion

The relationship between urban agriculture, poverty alleviation and improved food security is evident. Literature on the potential of urban agriculture on food security is broad and some researchers argue that the potential of urban agriculture on food security is often exaggerated (Reuther & Dewar, 2005; Karaan & Mohamed, 1998). The increasing number of undernourished people in Sub Saharan Africa has aggravated the calls for efforts to improve agricultural productivity to enhance food security (Kleeman, 2012). Food insecurity levels are high and persistent in low income communities. As a result, some households in Khayelitsha have pursued urban agriculture as a survival strategy. Gardening is largely practiced by people between ages 51-60 in Khayelitsha. They practice gardening to reduce vulnerability to hunger, access a healthier diet and generate an income.

In Khayelitsha, the potential for urban agriculture is limited by the lack of physical and financial capital. This poses a challenge for the effectiveness and sustainability of community gardens in the area. Addressing these challenges will require a collaborative effort by various stakeholders such as the City of Cape Town, the Department of Agriculture and the Department of Social Development. This thesis provides an example of how the Sustainable Livelihoods Framework can be used to reconceptualize the urban reality, food supply and food security. Applying the SLF in this research helped to understand that the benefits of urban agriculture transcends economic benefits due to its holistic potential. Understanding the contribution of urban agriculture on food security and overall wellbeing is critical to stimulate a political context that will be designed to bring about structural change.

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APPENDICES

APPENDIX A RESEARCH INSTRUMENTS

Appendix A1 Information sheet for questionnaire

INSTITUTE FOR SOCIAL DEVELOPMENT
University of the Western Cape
UNIVERSITY of the WESTERN CAPE

Private Bag X17, Bellville 7535, Cape Town, South Africa
Telephone :(021) 959 2988
*E-mai**research-ethics@uwc.ac.za***

Project Title:
Investigating the effectiveness of urban agriculture in addressing the dynamics of food insecurity in Khayelitsha: A case study of Moya Wekhaya Peace Gardens

What is this study about?
This research project is being conducted by Bontle Moloinyane, a student at the University of the Western Cape. You are invited to participate in this project as a project leader, community member and a community gardener as it focuses on the role of urban agriculture in addressing food security in Khayelitsha. The purpose of this study is to generate a better understanding of urban agriculture, while highlighting the problems faced by urban farmers and how these challenges can be addressed in order to improve production.

What is Questionnaire about?
The questions are formulated in a way that will give a better understanding of the socio demographic profile of households. The questionnaire also seeks to establish the level of food security amongst households i.e. whether they skipped meals or worried about about having meals. It will take 15-20 minutes to complete the questionnaire.

Would my participation in this study be kept confidential?
All participation will be treated with confidentiality and integrity. All personal information will be kept confidential and will remain anonymous. You will be required to sign a consent form before partaking in the study to protect your privacy and confidentiality. The researcher shall not reveal the identity of the participants and will safeguard the confidential information obtained in the course of the study.

What are the risks of this research?
There are no risks involved in participating in this research project. From the beginning, aims and objectives will be clear.

What are the benefits of this research?
There are no material benefits for the interviewee.

Do I have to complete the questionnaire and may I stop participating at any time?

Your participation in this research is completely voluntary. Should you feel the need to withdraw from the study you can do so at any time.

How long will it take to complete the questionnaire?
The full questionnaire will take about thirty to forty minutes to complete

Do I need to bring anything to the interview?
You do not have to bring anything.

Is any assistance available if I am negatively affected by participating in this study?
There are no negative effects that could happen from participating in this study.
Is my anonymity and confidentiality guaranteed?
Yes your anonymity and confidentiality is guaranteed. Anything you say during the interview will treated with strict confidentiality.
What if I have questions?
This research is being conducted by **Bontle Moloinyane** a student at the University of the Western Cape. Her contact number is 0603380976.

If you have any questions about the research study itself, please contact **Dr Penderis** at The Institute for Social Development (ISD), University of the Western Cape, his telephone number (021) 959 3848.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Dr Sharon Penderis
Acting Director
Institute for Social Development
School of Government
University of the Western Cape
Private Bag X17
Bellville 7535

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.
HSSREC, Research Development, UWC, Tel : 021 959 2988,
email: research-ethics@uwc.ac.za

APPENDIX A2

Appendix A2 Household questionnaire

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The purpose of the Research Questionnaire is to gain a better understanding of the socio demographic profile of participants. The questionnaire also seeks to establish the level of food security amongst households.

KINDLY CIRCLE YOUR ANSWER

Annexure 1

Section 1: Demographic information

- **Age:**

18-25	1	43-50	4
26-33	2	51-60	5
34-42	3	60 and above	6

- **Gender:**

Male	1	Female	2

- **Educational status:**

No formal education	1
Primary school	2
High school	3
College	4
University	5

- **Employment status:**

Full time employed	1	Disability grant	5
Part time employed	2	Elderly grant	6
Unemployment	3	Own business	7
Sorely reliant on social grants	4	Other? Please specify	8
Child support grant	5		

- **Monthly income:**

R500 or less	1	R4 100- R5 000	5
R1 000- R2 000	2	R5 000-R 5 500	6
R2 100- R3 000	3	R5 100- R6000	7
R3 100- R4 000	4	More than R6000	8

- **How much of your income is allocated to food?**

10%- 15%	1	30%-40%	4
15%- 20%	2	40%-50%	5
20%-30%	3	50%-60%	6

- **Are you the sole breadwinner in your household?**

Yes	1	No	2

- **How many people are in your household?**

1-3	1	6-8	3
4-5	2	More than 8	4

- **Are there any children in the household?**

Yes	1	No	2

- **Are they attending school?**

Yes	1	No	2

Section 2: Level of household food security

- **In the past six weeks, did you worry that your household would not have enough food?**

Yes	1	No	2	Sometimes	3	Never	4

- **In the past six weeks, did any child in the household have to eat a limited variety of foods due to a lack of resources?**

Yes	1	No	2	Sometimes	3	Never	4

- **In the past six weeks, did any adult in the household have to eat some foods that were not desired due to lack of resources to obtain other types of food?**

Yes	1	No	2	Sometimes	3	Never	4

- **In the past 4 weeks did you skip any meals?**

Yes	1	No	2	Sometimes	3	Never	4

- **What is included in your daily diet?**

ead		eat		getables		uit		aize		her	

- **Livelihood strategies adopted to be more food secure?**

Food from food garden	1	Self employed	6
Work part time	**2**	**labourer)**	**7**
Social grant	**3**	**Fruit and vegetable trading**	**8**

- **What are your livelihood outcomes?**

Improved health	1	Improved nutrition	4
Improved food security	**2**	**Income**	**5**
Increase well-being	**3**	**Reduce vulnerability**	**6**

APPENDIX A3

Appendix A3 Key informant Interview guide

UNIVERSITY of the WESTERN CAPE

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Key informant Interview questions: The purpose of the interview is to understand why people participate in gardening and the impact that community gardens have on household food security. The interview also seeks to determine what other livelihood strategies are adopted by households to be more food secure.

1. How does gardening contribute to food security in Khayelitsha?

2. What are the primary motivations for participating in gardening in Khayelitsha?

3. Do gardeners comply with the City of Cape Town's guidelines for farming?

4. How can you expand the benefits of gardening I Khayelitsha?

5. How effective is the City of Cape Town's agricultural policy in facilitating community gardening in disadvantaged communities like Khaylitsha?

11. What do you think can be done to ensure sustainability of the project?

12. What are the challenges in gardening?

13. Does the community receive support from the government or other non- governmental organizations?

14. What has been the successes and failures of the project?

Thank you for taking your time to participate in the discussion

APPENDIX A4 Focus group Interview guide

University of the Western Cape

Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone :(021) 959 2988

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Focus group interview questions: The focus group interview seeks to establish why people participate in community gardening, their understanding of food security and how participating in community gardens contributes to household food security.

1. When did you learn of the community gardening project?
2. What does being food secure mean to you?
3. Why did you participate in the community gardening project?
4. Why in your opinion, is it important to participate in community gardening?
5. How has participating in community gardening benefited your family?
6. What other livelihood strategies does your family adopt to be more food secure?
7. What challenges do you encounter in the project?
8. How can you ensure the sustainability of the project?
9. How has the project contributed to household food security?
10. Does the project receive any funding from the government and other non-governmental organizations?
11. What do you think the government could do more to meet the objective for households and communities to be more food secure?

APPENDIX A4 Interview guide

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Telephone :(021) 959 2988

E-mail: ***research-ethics@uwc.ac.za***

Interview questions: The interview seeks to establish why people participate in community gardening, their understanding of food security and how participating in community gardens contributes to household food security.

1. When did you learn of the community gardening project?
2. What does being food secure mean to you?
3. Why did you participate in the community gardening project?
4. Why in your opinion, is it important to participate in community gardening?
5. How has participating in community gardening benefited your family?
6. What other livelihood strategies does your family adopt to be more food secure?
7. What challenges do you encounter in the project?
8. How can you ensure the sustainability of the project?
9. How has the project contributed to household food security?
10. Does the project receive any funding from the government and other non-governmental organizations?
11. What do you think the government could do more to meet the objective for households and communities to be more food secure?