

## **Examining the Livelihood Strategies of Intensive Vegetable Farmers in the spate of Urbanisation in Kumasi Metropolis, Ghana**

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**Frank Yeboah Adusei**

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## **DEDICATION**

I dedicate this piece of work to my mother, Madam Elizabeth Serwaah for her immense inspiration in my life.

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## **LIST OF ABBREVIATIONS**

CFSC	Community Food Security Coalition
DFID	Department for International Development
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GSS	Ghana Statistical Service
IWMI	International Water Management Institute
KMA	Kumasi Metropolitan Assembly
KNUST	Kwame Nkrumah University of Science and Technology
MADU	Metropolitan Agricultural Development Unit
MoFA	Ministry of Food and Agriculture
NCSU	North Carolina State University
NGO	Non-Governmental Organisation
NPAS	Northern Presbyterian Agricultural Services
PNDCL	Provisional National Defence Council Law
RUAF	Resource Centres on Urban Agriculture and Food Security
SLA	Sustainable Livelihood Assets
SLF	Sustainable Livelihood Framework
UA	Urban Agriculture
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFPA	United Nations Population Fund
UN-Habitat	United Nations Human Settlements Programme
W H O	World Health Organisation



## **ABSTRACT**

The general objective of the study was to explore and describe the livelihood strategies of intensive vegetable farmers in Kumasi Metropolis as their land for farming is decreasing. The specific objectives were: to investigate the contributions made by intensive vegetable production, assess the livelihood strategies of the farmers involved and make new strategies for intensive vegetable farmers in Kumasi Metropolis to cope with the decreasing land size.

The study used the case study technique for data collection. Eight intensive vegetable farmers were randomly selected from 4 different vegetable producing sites and two key informants from Metropolitan Agricultural Development Unit. Checklists were used for data collection through semi-structured interviews. Descriptive and qualitative methods were used to present the primary data collected and Sustainable Livelihood Framework was also used for the analysis.

The results showed that all the farmers interviewed were food secure although livelihoods were primarily constrained by loss of lands for residential purposes due to urbanisation. The main livelihood strategies employed by the farmers were growing particular vegetables that are early maturing like lettuce, growing to meet particular festive season and growing all year round. There is also tendency to farm cash crops more at rural areas.

It was evident from the data collected that intensive vegetable farming provides fresh vegetables for a large segment of urban population. It provides employment and income to a host of people including the farmers, marketers and the input dealers. It also provides employment for the urban poor as farm labourers which help them to earn wages to buy food to improve their food security status. Farmers generally realise a decent income and cash generated from vegetables is put for beneficial use outside immediate vegetable farming like cash crop farming as access to land is insecure. It could be inferred that the significant features of intensive vegetable farming as a food security strategy have not been fully understood by some sectors of the policy makers. The features and changing aspects of the operation need to be understood by both farmers involved in the practice and the relevant stake holders so as to develop the sector as a viable solution for food security. Understanding the practices can help promote it and be a driving force for the growth and development of the sector. The sector can be a relevant strategy not only for food security but also for the improvement of livelihoods of the people involved by creating jobs.

The drawn conclusion put forward is that the loss of land coupled with growing populations in Kumasi Metropolis will slowly lead to an increasing dependence on imported vegetable from other regions. Again, the use of contaminated water for irrigation and inefficient monitoring of pesticide use will lead to contamination of vegetables. It is the opinion of the researcher that the future of intensive vegetable farming is not optimistic in the Metropolis if the situation continues as the farmers are not sure about their land security coupled with water contamination. Therefore, policy-makers, NGO's civil societies and other stakeholders need to address these issues so that quality vegetables will be available all the time.

## **CHAPTER ONE**

### **1.1 General Background**

Ensuring food security for the urban population especially for the household poor is a challenge mostly where rural food production is limited and where poor road infrastructure and storage facilities constrain rural-urban food movements. However, for people in cities to be healthy, urban households must be able to have the access and meet their food expenses. In the developing world, it has been estimated that about one-quarter of the underprivileged people live in urban areas but also comparing the population as a whole, the poor are growing faster (Ravallion 2007).

The peri-urban upsurge has brought accompanying myriad of socio-economic problems including unemployment, undernourishment, environmental degradation and a threat to food security (Maxwell et al., 2000). The present situation of the volatile food prices, financial economic and fuel prices makes it uncertain for the urban poor. Urban consumers are almost totally dependent on food purchases and the most affected ones are the urban poor. This is because they are the first to lose their jobs and 60-80% of their income is spent on food, therefore these households suffer from both decreasing purchasing power and rising food prices. Among the urban dwellers, the most vulnerable of them are the underemployed or unemployed citizens, refugees, the incapacitated, people dislocated by rural violence and conflict and immigrants escaping from poverty and hunger. Children and women are the most vulnerable within these groups (FAO, 2009).

In developing countries farming in urban areas has become a common feature for a long time. The activity has helped the urban and peri-urban low income dwellers to make a living. In spite of its significant and long history, urban agriculture (UA) receives considerably lesser recognition by authorities in the developing countries than in the developed world. Most recently, however, there is increasing need to sustainably manage UA in developing nations (FAO, 2007).

In considering the broad development and sustainability of UA practices, many assumptions are often made. These assumptions have to do with the possible risks and public health hazards to urban farmers, marketers and the consumers of the products. The benefits that accrue from urban farming, such as increased availability of fresh vegetables and contributions to food security and sustainable livelihoods, are often underestimated and undervalued. However, in times of harsh economic situations and periods of food insecurity, UA is often adopted as an important livelihood strategy for survival. Thousands of urban people from various strata of the population have taken up food production as an important strategy to cope with household demands. Urban agriculture has become a widely practiced phenomenon involving more than 20 million people in West Africa alone, and 800 million worldwide (Drechsel et al. 2006, UNDP 1996).

### **1.2 Problem statement**

Urban agriculture contributes to food security through increased food availability, accessibility, utilisation and stability. With the world's cities growing rapidly, farming in urban areas needs to play a major role in feeding urban populations. In 2008, for the first time in history, about 3.3 billion people accounting for more than half of the world's populations were living in urban areas. This

development, which directed the UN Secretary General, Kofi Annan to announce the “Urban Millennium” (UN-Habitat 2001), brings a significant challenge to emerging and exploding cities, not only in providing urban services, like shelter, water, energy and sanitation, but also in ensuring urban food security. The number of people expected to live in urban areas is predicted to be 5 billion by 2030 and particularly Sub-Saharan Africa is experiencing one of the fastest rates of urbanization (UNFPA, 2007, UN-Habitat, 2008).

According to Ghana’s 2010 Population and Housing Census, Ashanti region’s share of population increased from 3,612,950 to 4,725,046 in 2000 and 2010 respectively, amounting to 30.8 percent growth rate (GSS, 2011). Between 1960-2000 Ashanti region’s population has changed from three fourth (75.1%) rural in 1960 to little over half (51.3%) urban in 2000 (Modern Ghana, n.d.). The rapid growth of the metropolis has negatively translated to widespread and increasing urban poverty and threat to food security. This is because efforts to improve and support livelihood initiatives have usually targeted rural areas since they assumed to be worse off than urban areas. But the problems of underprivileged dwellers within and around urban areas have become very critical, with issues of how livelihoods are earned and a corresponding influence on fundamental indicators of well-being such as food security gaining a great deal of attention. Urban farmers are also often discouraged and ignored in policy reforms and the society (Mougeot, 2000a).

Agriculture in Kumasi Metropolis however, has seen a dramatic transformation due to rapid urbanisation in the last twenty years. The agricultural land use has turn out to be less great than the demand for commercial, industrial and residential land use. Following this, it has been projected that about 80% of arable lands have been displaced for the construction of houses and other physical infrastructure. It is projected that 48%, 46% and 6% of Kumasi Metropolis are urban, peri-urban and rural respectively, which confirms the fast rate of urbanisation (KMA, 2006a).

From the Food Security Ghana (2011) point of view, the Chronicle stated that more than half of the Ghanaians (12.7 million out of 24 million) are unable to meet their food expense according to Gallup poll. These figures were initially criticized by the Government of Ghana, who later accepted that certainly in the “Northern regions” there are problems of food insecurity. Nevertheless, some reports begun saying that Ghanaians are battling to make ends meet all over the country and are also struggling to afford food. The question now is there are 12.7 million people who do not have access to enough food. So how can UA be organised that there can be enough and affordable fresh vegetables in the city? Also the Kumasi Metropolis is growing and there are other competing activities which are absorbing 80% of arable land. So how can urban farmers whose livelihoods depends UA make a living?

### **1.3 Objective of the research**

The general objective of this research is to explore and describe the livelihood strategies of intensive vegetable farmers in Kumasi Metropolis as their land for farming is decreasing. In line with this, the specific objectives are to:

- a. Assess the livelihood strategies of intensive vegetable farmers in Kumasi Metropolis.
- b. Investigate the contribution of intensive vegetable production.

- c. Make new strategies for intensive vegetable farmers in Kumasi Metropolis to cope with the decreasing land size.
- d. Make recommendations for Ministry of Food and Agriculture (MoFA) and other stakeholders to sustain the operation.

#### **1.4 Research questions**

Main research question

Is intensive vegetable farming having the future of improving living conditions of urban farmers and what are their effective livelihood strategies with decreasing rate of arable land in Kumasi Metropolis?

#### **Sub-questions**

- a. What is the current state of intensive vegetable production in Kumasi Metropolis as compared to the previous years?
- b. What are the main characteristics of intensive vegetable production in Kumasi Metropolis?
- c. What are the effective strategies intensive vegetable farmers employed in the spate of increasing competition of arable land for other physical infrastructure?
- d. Who are the actors involved in the input supply?
- e. How is the produce marketed?
- f. Is intensive vegetable production in Kumasi Metropolis profitable?
- g. What is the state of living conditions of the intensive urban farmers?

#### **1.5 Justification**

Due to absence of cold transport and storage facilities in Ghana (Obuobie et. al., 2006), perishable vegetables should be produced near the consumer in order to preserve its freshness. But owing to urbanisation land needed to grow these vegetables are becoming scarce. And this will affect the livelihood of the people involved. However, information is needed by Kumasi Metropolitan Agricultural Development Unit (MADU-MoFA) to adjust its activities. This will also add information to intensive vegetable farmers and other stakeholders. See annex 3 for background of MoFA.

#### **1.6 Structure of the study**

The study is structured into six (6) chapters. The chapter one above has introduced the general background, study objective, research questions and justification of the study. Chapter two (2) presents literature review focusing on food security, urban agriculture, conceptual framework and land tenure system in Ghana. This is followed by chapter three (3), underlining the research methodology. This clarifies research design, sampling size and data collection method used for the study and how ethical issues were handled. Research findings would be presented in chapter four (4) and results would be discussed and analysed in chapter five (5). Finally, chapter six (6) presents conclusions and recommendations for MoFA, intensive vegetable farmers and other stakeholders.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Numerous researches have been carried out to reveal and conceptualise urban agriculture. Some focus on contaminated water, poor waste management and health issues and others also focus on the relationship between urban agriculture and food security. Previous knowledge should be recognised because they provide thorough fundamental understanding of the situation under inquiry. As a result, this chapter begins with reviewing literature on food security concept, urban agriculture and Sustainable Livelihood Framework (SLF) and land tenure systems in Ghana.

#### **2.2 Understanding food security**

The right to food is a human right recognised under the international law which recognises that all human beings to feed themselves in dignity, either by producing food or buying it. To produce food, a person needs land and other resources like seeds and water. But to buy food a person needs money and market access. The right to food therefore requires governments to provide the supporting environment in which people can use their full potential to produce or buy adequate food for themselves and their households (De Schutter, n.d.).

According to the World Development Report (World Bank, 2008) food security goes beyond food availability and embrace food access and its use. It also recognises that food availability could be achieved in areas but access and use which is dependent on financial means remain the sole challenge to achieving ultimate food security. For instance, India has been able to move from food deficits to food surpluses and attaining a per capita income higher than that in most parts of Sub-Saharan Africa, yet it remains home to 210 million undernourished people and 39% of the world's underweight children.

#### **2.3 Defining Food Security**

According to MoFA (2007) food security is defined as good quality nutritive food, hygienically packaged and attractively presented, available in sufficient quantities throughout the year and can be found at appropriate places at reasonable prices. The key elements of the definition, as is compared with other definitions, are nutritive quality of food, self-sufficiency and physical availability. WHO (2000) also defined food security as giving populations both economic and physical access to a supply of food, sufficient in both quality and quantity, at all times, regardless of climate and yield, wages and social structure.

However, World Food Summit (1996) defined food security as when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their nutritional supply and food preferences for an active healthy life.

## **2.4 Dimension of Food Security**

Food security reflects a complete approach taking up different related dimensions. Four dimensions need to be fulfilled for food security to be realised, these are; availability, accessibility, utilisation and stability (FAO, 2006).

### **Availability**

The availability indicates that there should be adequate and physical presence of food supply on all levels ranging from global, national, regional, community to household levels either through local production or importation (including food aid).

### **Accessibility**

This relates to the individuals legal, economic and social access to entitlements or resources to attain appropriate foods for their nutritional requirement (FAO, 2006). Access to food happens to be the most challenging dimension of food security. This is because food could be available in enough quantities but cannot be accessed by various households since it involves money which most households lack.

### **Utilization**

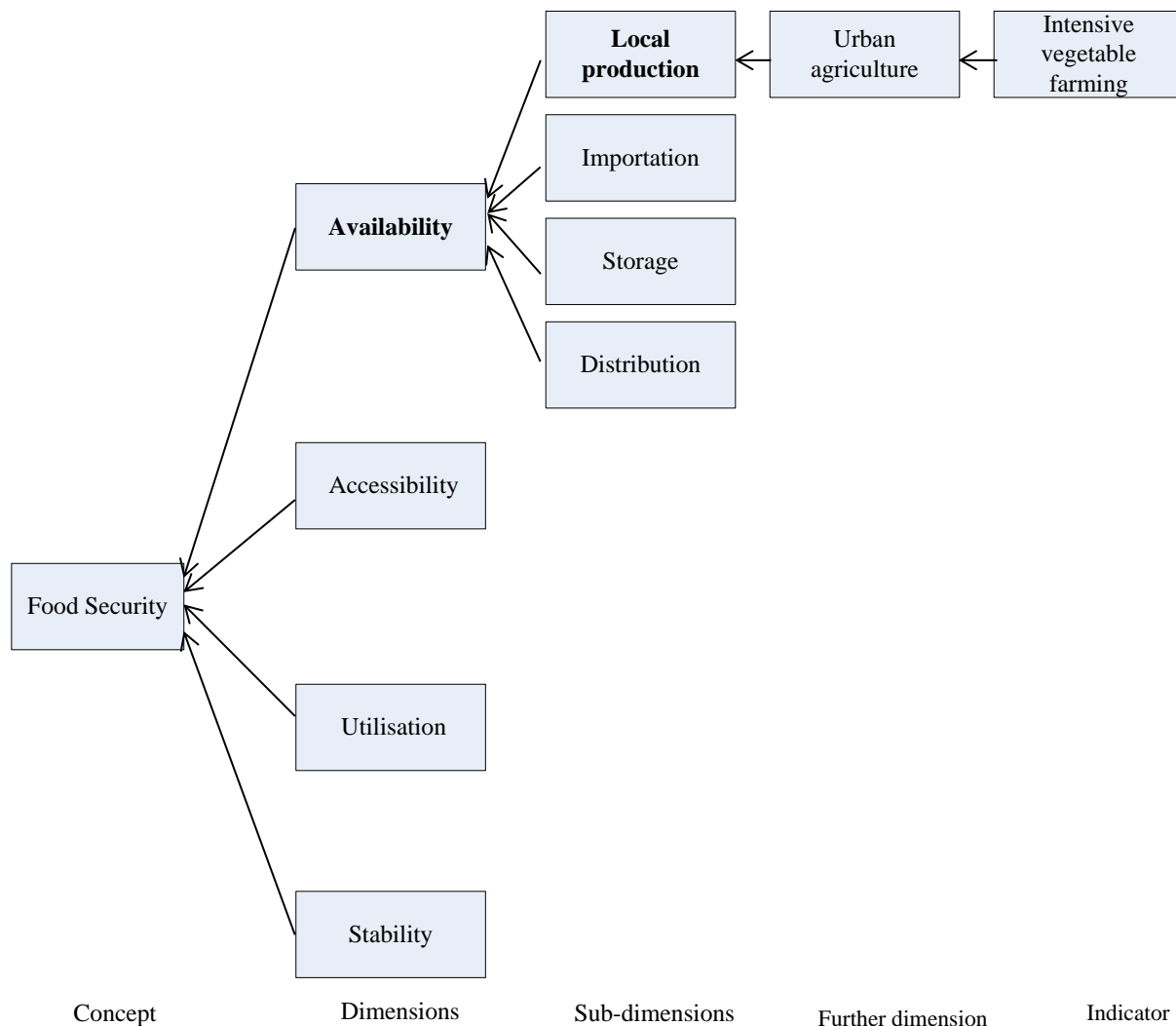
According to FAO (2008), utilisation describes how the body makes use of various nutrients in the food. Adequate nutrient and energy intake by individuals are the result of good food preparation, feeding practices, variety of diet and intra-household distribution of food.

### **Stability**

This means that for a nation, household or individuals to be food secure, they must have access to food throughout the year and this must be protected against losing it. Such loss could take place as a result of decrease in availability of food or income scarcities arising from quick and unexpected changes including economic crisis, climate change and seasonal variations.

From the four dimensions discussed the focus of this study will be on availability to guide the researcher to answer the research questions. The food security concept is very broad but for food to be reasonably priced it must be produced locally. Due to poor cold storage and the bad nature of road network in most part of Ghana perishable vegetables must be produced near the consumers so that it preserves its freshness. The figure 1 shows the Operationalisation of food security.

**Figure 1: Operationalisation of Food Security**



Source: Author's construct, 2012

## 2.5 Urban Agriculture concept

Urban agriculture is not new phenomenon. For a very long time, humans have been raising animals and growing crops in an around urban areas since man started establishing themselves into long-term settlements over several years ago. However, land use patterns, real estate speculation and emergence of food systems in the global economy have contributed to disregarding of farming in urban areas in the past. However, this is changing as global renaissance of urban farming is well in progress. The UNDP reveals that in 1993, just 15% of food consumed in urban areas worldwide was grown in urban areas. The number increased to 30% in the year 2005. That means the share of urban food production doubled in over 10 years (Urban Farmer, 2012).

The most remarkable feature of UA, which differentiates it from agriculture in the rural area, is that it is incorporated into the urban economic and ecological system. Such linkages include using of urban residents as labourers, using organic waste as fertilizer, urban wastewater for irrigation and direct links with urban consumers. It is also being part of the urban food system, competing for land with other urban activities which is also influenced by urban policies and plans (RUAF, n.d.). The comparative advantages of urban agriculture in relation to rural food production according to FAO (2007) explain that its contribution is the highest for perishable, high added value commodities, example vegetables while rural areas supply the bulk of long-shelf staple food like cassava, maize and rice. The vegetables contain essential nutrients which are consumed by people involved in production, processing and distribution with their households. As a result, they contribute directly to food security in urban areas.

## **2.6 Urban Agriculture defined**

Owing to the types and the challenges involved, UA has been defined in different ways. Mougeot (2000b) define UA: Urban agriculture is located within (intra-urban) or on the fringe (peri-urban) of a town, a city or metropolitan area and produces or raise, processes and distributes a diversity of food including non-food products which is (re)use by people within that urban area. Urban agriculture can also be defined succinctly as the cultivation of plants and the rearing of animals within and nearby cities (RUAF, n.d.).

For the purposes of this report UA is defined as: the intensive production of vegetables within or around the limits of a city or metropolis.

## **2.7 Actors involved in Urban Agriculture**

A large segment of people are involved in UA and majority of these people are urban poor. They include suppliers of inputs (seeds, agrochemicals), transporters, processors, supermarkets, retailers and of course the urban farmers. These actors belong to either formal or informal economy (public or private sectors). Contrary to general belief, urban farmers are often not recent migrants who have moved from country side (rural) since the urban farmers need time to acquire urban land and other productive resources. In many cities, one will commonly also find low or mid-level government officials, civil/public servants involved in UA, as well as richer people who are seeking a good project for their capital. Women represent a significant part of urban farmers, since farming and its associated processing and selling activities, among others, can often be more easily combined with their household responsibilities (RUAF, n.d.).

## **2.8 Types of products grown and animals reared**

The type of product grown and animals reared can conveniently be grouped into two (2); food and non-food products. The food products can further be divided into two (2); crops and animals. Crops include staple foods (grains, root crops), fruits, vegetables and mushrooms. Animals' production includes poultry, rabbits, pigs, goats, sheep, cattle, grass cutter and aquaculture. The non-food products include ornamental plants and tree products. Most often than not, perishable and relatively



high-valued vegetables are cultivated in urban areas. Production units in UA in general tend to be more specialised than rural enterprises since land is a challenge.

## **2.9 Importance of urban agriculture**

Mougeot (2000a) argues that, UA is an important supply source of urban food system and a critical food security valve for poor urban households. It affords simple and flexible tool for productively using open urban places, treating and improving urban liquid and solid waste, generating employment, income and resolving otherwise unsuitable urban land use issues. The nature and magnitude of UA vary depending on many factors including agro-ecological conditions, market conditions, local policies and household characteristics. Urban agriculture complements, rather than replaces, rural supplies. When cities are able to grow their own food, they lower their food deficits.

Household income can be supplemented through urban agriculture. Keeping of small livestock practiced by over a quarter of household, provides more than 60% of household cash income in Cairo. According to research by Drechsel et al. (2006) the net revenue per farm per year is between US \$400 and \$800 in Accra while in Kumasi the net revenue per farm per year is between \$420 and \$1920 (Eriksen-Hamel and Danso, 2009). Thus the aggregate benefits of UA to local economic development are significant. Although the contribution of UA to the Gross Domestic Product (GDP) may be small its importance for certain commodities, such as vegetable production, might be substantial (Borne, Satornkich and Anwar, 2003; Nugent 2001). Recent research (Adeoti, Cofie and Oladele, 2012) carried out in Accra, Ghana shows that UA is vital for the survival of the urban poor. For many citizens, it is a paramount addition in the quest for improving urban food security. It has, therefore, become a vital element in the household survival strategies in the urban areas through the improvement of nutrition and the economic base of the households.

In Dar es Salaam UA is the next largest employer after small traders. High-valued specialty foods for example, vegetables and non-food crops like flowers that require little space for producing are particularly good for providing desired cash income. But most of the urban farmers are poor and cultivate food mainly for their own use with little support or protection, on small land that belong to someone else. According to Mougeot (2000a), urban agriculture has helped improved the nutritional status of some households in Harare, Kampala and Nairobi. According to numerous surveys, women predominate in urban agriculture, which conveniently helps them to earn cash income, improve household diets, perform household chores, and exert greater control over household resources, budgets, and decision making (Mougeot, 2000a).

## **2.10 Challenges of urban agriculture**

Due to insufficient cold transport and storage, most of the perishable vegetables are produced in the cities or around the fringes. Urban agriculture can lift vulnerable groups out of poverty and can help to reclaim land and greening the city. Nevertheless, the poor farmers have many problems finding in and around the cities uncontaminated water sources for irrigation (Obuobie et al., 2006).

Urban farmers may lack the knowledge and skills in production, processing and marketing that may bring about successful yields as well as income. Many people involved in UA do not own the land

they use for production and they risk losing their job and investment when the land is taken for other purposes. In many developing countries, food production in urban areas is seasonal and not dependable as a year-round source of food security. And many urban residents have limited knowledge and access to equipment for preserving food that they grow. There are however, particular health challenges connected to UA, for example urban soils can be contaminated with heavy metals such as lead. Another concern is that there is little regulation about the use of pesticides and this may affect food safety. Also there is a concern about theft and vandalism by stray animals and human beings (CFSC, 2002).

According to studies by Cofie (n.d.) lack of adequate land and land security are key problems facing urban farmers who resort to informal use of government lands of which they are frequently ejected. Farmers who have rented plots easily lose their lands to competitive land use especially for residential purposes within the cities. Nevertheless, research by Aberra and King (n.d.) reveal that in Kumasi urban farmers respond to the pressures on land by employing short term coping strategies (e.g. reduction in fallow periods). They also seek to diversify into non-farm occupation activities such as construction work, yet such opportunities are not always available or accessible. Urban farmers regulate their choice of crops according to market opportunities and constraints such that crops for which there is a better urban demand are favoured. Others go into sharecropping arrangements with other landowners, to access land. Another popular livelihood activity is trading practiced by urban farmers. Even loan recipients, who had opted for crop farming in the initial cycles of loan disbursement, change into trading. The fact that trading involves less space/land than crop farming was also recognised as a reason for its popularity.

Other challenges are inappropriate irrigation system and financial assistance from Banks and other financial institutions are difficult to access by urban farmers due to insufficient collateral. From the studies conducted by RUAF (2007) in Kumasi Metropolis, marketing has been a main problem. This is because marketing is carried out by marketers (mainly women) who also regulate market prices. At the time RUAF (2007) conducted the studies, each farmer has to sell his/her vegetable to marketers who come to the farms to buy from the farmers. The farmers often did not know how much these marketers sell the vegetables for, but they strongly suspect that they are not being paid a reasonable price. The farmers, most of whom are men, have not been able to sell their own produce because the marketers control vegetable markets and because vegetable trading is culturally the women's domain. Besides there has often been friction between local authorities and farmers as the practice of urban farming is seen as unsafe and informal. As a result, farmers have been neglected by the extension services. However, this is now changing as the benefits of urban vegetable farming are become more documented and with the support of research institutions to reduce health dangers.

RUAF (2007) concluded that, in Kumasi MoFA is now increasingly extending their extension service to vegetable farmers. The Directorate of the MoFA in Kumasi is now also involved in many projects at vegetable farming sites. Farmers have been facilitated and encouraged to form groups said the Director. It makes it much easier for MoFA to give them technical services and even seek financial assistance for them (RUAF, 2007).

## 2.11 Typologies of Urban Agriculture

### Micro Farming

Micro-farming is growing of plants (food or flowers) in containers rather than in a plot of land. The size of the garden and type of crop to be grown are completely up to the farmer to decide and the produce is consumed by the households. Buckets, barrels, tyres, plastic, sacks and pots are all excellent containers to be used for micro-gardening. Because the plants are grown in containers, it could be seen in areas such as balcony, veranda or porch.

**Figure 2: Typical example of Micro farming**



### Subsistence urban farming (Backyard farming)

This is the type of farming whereby animals are reared and or crops are grown around a house. The produce is mainly for household consumption and this helps to lower the cost of providing the family with healthy food. It reduces the environmental impact of transporting food and makes meals more personal because foods grown are what the family likes.

**Figure 3: Typical example of Backyard farming**



### **Small-scale semi commercial**

This farming type is similar to the backyard farming. The different is that, the surplus after the family has taking the household requirement is sold for cash income and the size is usually bigger than the backyard farms.

### **Larger farming (Intensive urban vegetable farming)**

The aim of an intensively grown farming is to harvest the most yields possible from a given space. Techniques used in intensive vegetable farming include raised beds, wide and multiple rows, intercropping, vertical trellising and succession cropping. Farms traditionally comprise of long, single rows spaced apart. Much of the farm area consists of space between rows. An intensive farming keeps unused space to a maximum. A good intensive farming involves planning for the optimum use of time and farm space. The practice can be done either in greenhouse (glass house) especially in the developed countries or open space in developing countries like Ghana. Urban farmers who practice the urban agriculture are also classified according the type of farming or gardening they engage in (NCSU, n.d.).

It has been identified by Obuobie et al. (2006) that two main types of urban agriculture occur in Kumasi: backyard gardening and open-space farming (intensive vegetable farming). The intensive vegetable production is characterised by high labour requirements for land preparation, weeding, watering and harvesting. The use of technology like water pump and sprinklers and the kind of vegetables grown which are mostly exotic distinguishes it from backyard gardening. Examples of vegetables grown are spring onions, lettuce, cabbage, cauliflower and carrot. Vegetable farming in



Kumasi is done using poultry manure which is the preferred and cheapest nutrient source, but also chemical fertilizer is used, especially for cabbage.

According to MoFA (2011) the total arable land in Kumasi Metropolis is 15,920 ha but the area used for all farming activities is 11,930 ha. The state of intensive vegetable production has passed through some changes over the years. As noted by RUAF (2007) urban farmers in Kumasi have formed groups (farmer associations) whereby they can get support from other stakeholders and good for bargaining for better prices for their produce. Another feature is that the market women in Kumasi are much concerned about the appearance of their produce, which includes its quality. Nevertheless, the quality of vegetables in this situation is not associated with bacterial contamination levels. Vegetable market women have common criteria for evaluating the quality of vegetables. This is mainly by observing and inspecting them. They look for the following: size, shape, freshness of leaves, colour, and firmness of leaves (particularly with cabbage), spots, dirt, and holes. Consumers also use the same standard to buy. Another noticeable feature is the specialization that sometimes occurs in farming sites. For instance, farmers in D-line in Kumasi predominantly plant spring onions while their counterparts at Gyinyase plant lettuce. While others specialise in organic vegetable farming some groups grow conventional vegetables (Obuobie, et al., 2006, RUAF, 2007).

Nevertheless, for the purpose of this report urban farmers are those who practice the intensive vegetable farming in the open space and whose land sizes are decreasing.

**Figure 4: Typical example of Intensive vegetable farming**



## **2.12 Sustainable Livelihoods Framework (SLF)**

According to DFID (1999), the main constituents of livelihood include material and social resources, capabilities and actions required by a person to make a living. A livelihood is sustainable when it can

cope with and recover from shocks and stresses and can maintain its capabilities and assets both for now and in the future without damaging the natural resource.

### **2.12.1 Vulnerability Context**

Tamarack (n.d.) noted that the issues that make and spread vulnerability and poverty can be seen at two levels: one is individuals and their circumstances, and the second one is the wider context. From the DFID's (1999) point of view the external environment in which people exist is framed by the vulnerability context. The livelihood of people and the broader availability of assets are basically affected by critical trends as well as by seasonality and shocks over which they have limited or no control.

Shocks can force people to abandon their home and dispose of assets such as land prematurely as part of coping strategies. Civil conflict, storms and floods also come about due to shocks. Trends may (or may not) be more favourable, though they are more predictable. Seasonal shifts in prices, employment opportunities and food availability are one of the greatest and most enduring sources of hardship for poor people in developing countries. These have a specific meaning on the chosen livelihood of a person.

### **2.12.2 Sustainable Livelihood Assets (SLA)**

Assets are resources needed to escape poverty on a sustainable basis. They depict the critical mass of assets needed to handle with shocks and stresses, and to maintain and enhance capabilities at present and in the future. This means that everyone has an asset on which to build upon and support the individual and the families as well. They may focus on a more limited, specifically economic or a wider set of assets like cultural, social, political (Tamarack, n.d.). The SLA are grouped into five (5), they are human, natural, financial, social and physical.

#### **Human capital**

Human capital denotes the knowledge, skills, capability to labour and good health that collectively enable people to do different livelihood strategies and attain their livelihood goals. It also includes motivation, self-esteem, self-confidence, self-perception and emotional well-being. At a household level, human capital is a component of the amount and quality of labour available and this differs according to household size, skill levels, leadership potential and health status.

#### **Social capital**

This is the social resources upon which people rely on in order to achieve their livelihood objectives. They include:

- ❖ Connectedness and networks, either by vertical (between patron and client) or horizontal (between individuals who have common interest). This helps people to increase trust and expand their access to a wide range of institutions including civic bodies and political.
- ❖ Membership of more formal or informal groups which often entails adherence to commonly accepted norms, rule or sanctions.
- ❖ Relationships of trust, mutuality and exchanges that facilitate co-operation.

## **Natural capital**

Natural capital is the expression used to denote natural reserve base from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived. There is an extensive variation in the resources that make up natural capital, from intangible public goods such as biodiversity to divisible assets used directly for production (trees, land, etc.)

## **Physical capital**

Physical capital consists of basic infrastructure and producer goods needed to support livelihoods.

- ❖ Infrastructure comprises of changes to the physical environment that help people to meet their basic needs and to be more productive.
- ❖ Producer goods are the tools and equipment that people use to function more efficiently.

## **Financial capital**

Financial capital means the financial resources that people use to attain their livelihood goals. These include stocks as well as flows that can contribute to production and or consumption. There are two (2) key sources of financial capital.

- ❖ Available stocks: Savings are the preferred type of financial capital because they rarely have liabilities attached and usually do not entail reliance on others. This could be in the form of bank deposits, cash or other assets like jewellery and livestock. Financial resources can also be obtained through credit-providing institutions and income from productive activity.
- ❖ Regular inflows of money: Excluding earned income, the most common types of inflows are pensions, other transfers from the state, gifts and remittances (DFID, 1999).

### **2.12.3 Institutions, policies and processes**

Policies, institutions and processes play a vital role in shaping people's livelihoods: they can support or hinder people in making a living. These include:

Policy: A course of action designed to achieve particular goals or targets.

Institution: It can be formal (laws that manage land tenure) or informal (client-patron relationships)

Organisation: Political bodies, businesses, schools, churches.

Processes: The change being brought about in policies, institutions and organisations (Ruedin, 2007)

### **2.12.4 Livelihood Strategies**

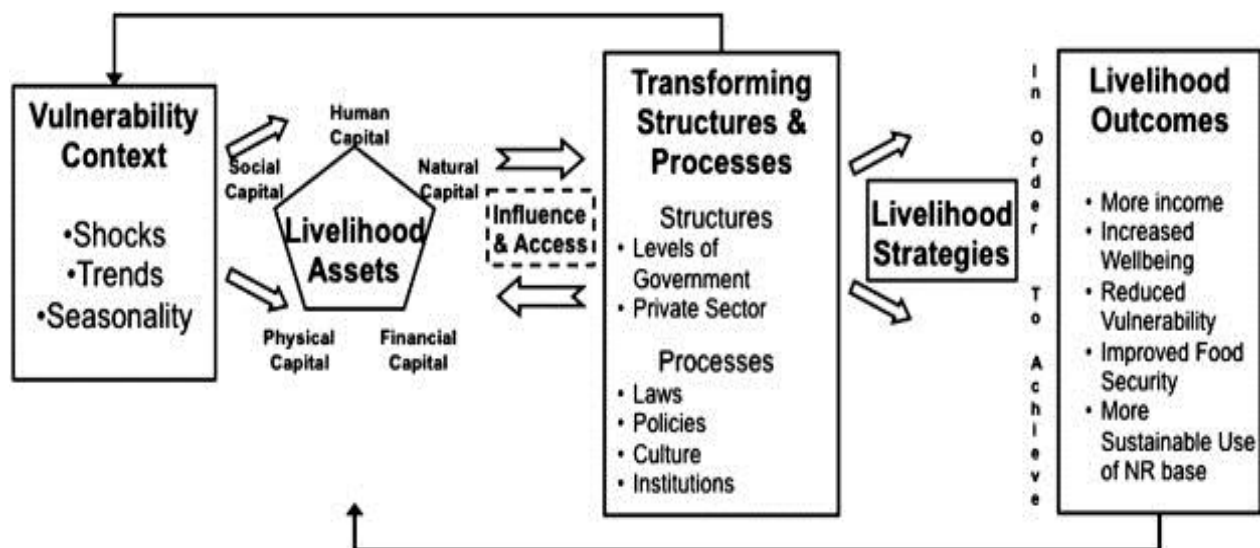
According to Eldis (2012) livelihood strategies consist of activities that people choose to carry out in order to achieve their goals or means of support. These include productive activities, investment approaches and reproductive choices. The choice of strategies is a dynamic procedure in which people combine activities to meet their varying needs. For instance, in farming households, activities are not necessarily limited to agriculture but also include non-farm activities for them to diversify their income to meet household requirements. Migration, whether periodic or permanent, is one common livelihood strategy. And even in agriculture, strategies may include intensification that is more output

per unit area of land through capital investment of increases in labour. Another strategy in agriculture is extensification that is more land to be used for cultivation. A main influence on people's choice of livelihood strategies is their access to assets and the policies, institutions and processes that impact on their ability to use these assets to attain positive livelihood outcomes. People are often forced to compete for scarce resources: fundamental to livelihoods approaches is the principle that development support intended to improve the livelihood strategies of some should not be a burden to others.

### 2.12.5 Livelihood outcomes

These are the results or consequences of livelihood strategies that a person applies. According to Ruedin (2007) if people's livelihood goals are achieved they then become outcomes. These include improved food security, more income, increased wellbeing, reduced vulnerability and more ecological use of natural resources. Figure five (5) presents conceptual framework Developed by Department for International Development (DFID).

**Figure 5: Sustainable Livelihood Framework**



Adapted from DFID (1999)

### 2.13 System of land tenure in Ghana

According to MoFA (2011) land ownership could conveniently be grouped into four (4):

- Stool land: the land is entrusted in traditional authorities
- Leasehold: where a person is granted permission to occupy a portion of a land for specific period.
- Family land: where land belongs to a clan or family
- Share cropping: granting tenancy to a person with the aim of sharing the agricultural produce either into two (abunu- half share) or three (abusa- third share)



The state has the powers granted through legislation such as the 1962 Administration of Lands Act, the 1962 State Lands Act, the 1963 Lands Acts and the 1965 Public Conveyancing Act. This allows the government to acquire and hold land in the communal interest or for public purposes (Sarpong, 2006)

## **2.14 Summary**

The literature review which was in line with objective of the this research point out that the UA plays a significant role in the lives of urban farmers and other stakeholders (input suppliers, transporters, processors, supermarkets and retailers) along the value chain. The important role includes source of food supply and food security, productive use of open urban space, income generation, creation of employment and making use of urban solid and liquid waste.

Despite the numerous importance, urban farmers still encounter some challenges ranging from; inappropriate irrigation system, difficulties in accessing loans, problems in marketing as market women offer low prices for produce, friction between farmers and the local authorities and last but not least inadequate land and land insecurity. Some urban farmers have resorted to enter into sharecropping arrangement with land owner to access land whiles other have entered into trading and still, others have changed their choice of crops to suit market demand. It is also important to note that two types of urban farming exist in Kumasi Metropolis; backyard and intensive vegetable farming.

To conclude, much effort is needed from all the stakeholders including local authorities like Kumasi Metropolitan Assembly (KMA), MoFA, marketers and financial institutions to make intensive vegetable farming viable. Literature so far did not reveal much about the living conditions of urban farmers and the strategies they employ in the spate of decreasing land size. Therefore, the field study will focus on these issues and also to verify what the literature has already presented.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Research Design**

The research has qualitative approach based on two strategies; desk study and field research (case study).

##### **Desk study**

Desk study was done to obtain secondary data from journals, scientific books and proceedings of symposia, unpublished reports and internet search. The secondary data generated helped to review literature and also provided a deep insight into primary data; both the empirical and theoretical base for data collection and analysis.

##### **Field research (Sampling method)**

For the primary data collection, case study was used. Convenience sampling which is a type of non-probability sampling was initially to be used. This was preferred since the researcher is not familiar with all the producing areas of intensive vegetable farming in Kumasi Metropolis. However, an interaction with Agricultural officer revealed the sites where decrease land size takes place. In order to have level playing field for all the areas, two farmers were randomly selected from each site to meet the criteria set.

#### **3.2 Sample size**

The research sample size was 10 subjects and they were being interviewed individually. This was due to difficulties in getting urban farmers in the localities because of cosmopolitan nature of Kumasi Metropolis. The selection of subjects is as follows;

1. Eight (8) intensive urban farmers (2 from Georgia, 2 from Manhyia, 2 from Gyinyase and 2 from Kwame Nkrumah University of Science and Technology (KNUST) vegetable growing areas). These areas are major vegetable producing areas in Kumasi Metropolis.
2. Two (2) Agricultural officers from MADU-MoFA (Technical officer and Municipal Director) as key informants. Data from these officers were needed to depict the general structure of Metropolitan farming and the government involvement.

The criteria for selection of urban farmers;

1. Those who were willing to take part in the interview.
2. Those who have farmed continuously for at least five (5) years. It is of the researcher's opinion that those who have farmed continuously for 5 years would have acquired substantial amount of experience due to more years spent. As a result they also have emotional attachment to their job as their land is decreasing.
3. Those who rented the land and work on the land as well
4. Those who have experience in intensive vegetable production under decreased land size.

Criteria for selection of Agricultural extension officer;

1. Agricultural officer who works with the MADU-MoFA and have worked with farmers for at least five (5) years.
2. An officer who have knowledge about UA.

### **3.3 Data collection**

The researcher used semi-structured interviews to collect primary data which took a form of open-ended questions to help induce further discussion. The issues covered in the interview were being designed in the checklist before the interviews. The interview took a form of face-to-face with one participant at a time so as to collect data and learn about ideas, beliefs and activities. Semi-structured interviews involve pre-set questions, allowing for probing and explanation of answers. The issues selected were those that meet the objective of the study. In this research, the title and the research questions were set and linked to the objective of the study, as the objective have to be achieved at the end of the study. The research questions were set out in two checklist guides that were used to gather data from the research participants, namely the eight (8) urban farmers and two (2) Agricultural officers in Kumasi Metropolis (See annex 2 for checklist).

The researcher, after developing the checklist, tested for its practicability to be used in a study and it was done through the process called pre-testing. Pre-testing involves developing a first version of a measure and asking people about their opinion before applying the final version in the study. The pre-testing was done with two respondents who were not part of the actual research participants. This helped the researcher to form an opinion on the consequence of the questions to be used and aided in reviewing the checklist. In addition, direct observation and participation also form part of primary data collection. As a result the researcher participated in vegetable bed preparation, transplanting, watering and weeding. Kumasi Metropolis is mostly Twi speaking and it is a language that the researcher is conversant with therefore for the participants who cannot speak English language interviews were conducted in the local language and translated to English. A voice recorder was used to ensure that data is not lost.

To avoid oversimplification and for validating raw data collected after carrying out the interviews, the researcher verified the raw data with four (4) farmers and one (1) officer for exactness. This was done after the main interview for clarification and to capture a clear understanding of views.

**Figure 6: Data collection activities**



### **3.4 Ethical Considerations**

The main ethical concerns regarding this research are confidentiality and safeguarding participant interests. In this research, voluntary participation and confidentiality were observed as a result, the researcher respected participant's unwillingness to disclose some information. A number of actions were used to safeguard the farmers and to guarantee anonymity. Consequently, all names were pseudonym and the interviews with the farmers were done without the presence of the Agricultural officers. Inform consent form (see annex 1) was used but explained verbally to the participants.

### **3.5 Conceptual framework**

Sustainable Livelihood Framework was used to discuss and analyse results as described in literature review. The framework helped to understand the intensive vegetable farmers' access to land and their diverse livelihood activities and relationship between relevant factors at micro level. The advantages of SLF are that it includes assets, but also other factors that influence the livelihood strategy, like access and vulnerability context. It assumes that actors are capable and knowledgeable, which makes them able to improve their own livelihood strategies, but also develop a perception on their food security status (Adato and Meizen-Dick 2002).

### **3.6 Limitations of study**

As it is true with most research, this one was not excluded from limitations. The main limitations were the unsuccessful schedules with potential research participants because the farmers were busy going about their activities. Second of all, one of the research area needed to be cancelled (Kwadaso) because only one farmer fit in to the criteria. The results of the study are specific to intensive vegetable farming in Hotel Georgia, Manhyia, Gyinyase and KNUST.

## **CHAPTER FOUR**

### **4.1 Introduction**

This chapter begins with describing the Kumasi Metropolis where the data collection took place and semi-structured interviews conducted with research participants. The researcher went through ten interview records from the first round, consisting of eight intensive vegetable farmers and two Agricultural Officers. And the second round consisted of five participants; four intensive vegetable farmers and one Agricultural Officer. The reason for this was to get understanding of views and clarification. The results were then transcribed in descriptive expressions and put into subthemes with relevant quotations from the participants to support the content. However, to avoid repetition and for the sake of simplicity intensive vegetable farmers will be replaced for farmers.

### **4.2 The Study Area**

The study was conducted in Kumasi Metropolis, the capital city of Ashanti region. The city of Kumasi was established in the 1680's by King Osei Tutu I to function as the capital of Ashanti State. Given its strategic position and political power, Kumasi as a matter of progress, developed into a major commercial centre with all major trade itineraries converging on it. However, it came under the influence of British rule in 1890. The city began to increase thereby making it the second largest only to Accra (which is the capital city of Ghana) in relation to land area, social life, population size and economic activity.

Kumasi is situated in the transitional forest zone and is about 270 km north of the nation's capital, Accra. It is between latitude 6.35°-6.40° and longitude 1.30°-1.35°, which ranges between 250-300 metres in elevation above sea level and covers an area of about 254 square kilometres. The distinctive centrality of the city as a traversing place from all parts of country makes it a distinct point for many people to migrate to. The metropolitan area shares borders with Kwabre East District to the north, Atwima District to the west, Ejusu-Juaben Municipal to the east and Bosomtwi to the south. It's beautiful design and greenery has given it a compliment of being the "Garden city of West Africa". It covers about 90 suburbs, mainly as a result of the process and physical development (KMA, 2006b). According to Ghana's 2010 Population and Housing Census, Ashanti region's share of population is 4,725,046 with 2,288,325 males and 2,436,721 females (GSS, 2011).

### **4.3 Results from interview with Agricultural officers (Key informants)**

The Municipal Director has worked with farmers for 24 years while the Technical officer has 17 years' experience. It was difficult for the officers to quantify the land size which is used solely intensive urban farming alone but they said that it was quite bigger than what they see now. From the past fifteen years the number of farmers has decreased from 17,583 to 5086 spread over 16 operational areas. Group formation was and until now, is not common in most of the operational areas. Currently, five (5) farmer groups are in operation.

Some farmers have specialised in growing exotic vegetables like lettuce, cabbage and carrot since they started while others grow both local and exotic vegetables. They are named exotic because

they represent a group of vegetables unlike standard tomatoes, ayoyo and okra. The viable seeds of exotic vegetables are imported but cannot be produced in Ghana. Land is assigned by various bodies including traditional authorities, individual land owners and other government bodies like Centre for National Culture. The farmers are solely responsible for arranging for land. They negotiate with traditional authorities to either buy or rent since most of the lands are under their custody. Some also negotiate with government bodies and individual land owners to arrange for the land use. In this case they become temporary users and as a result they cannot invest or plan for long term on the land. As of now, all the land used by the farmers is rented and at any point in time they can be driven out. Apart from the farmers at Hotel Georgia whose land are relatively reliable because they farm under a high tension poles the rest are not dependable. Even with the farmers at Hotel Georgia, part of their land has been allocated to Forestry Commission to be used as their nursery site.

MoFA's duty is to facilitate technology transfer and also provide credit in the form of farm inputs. As a result, MoFA has assigned an officer to the farmers who organises training, seminars, demonstration and also link them to NGO's. But these activities are not regular. The farmers are also trained in record keeping/book-keeping and are linked to hotels and to other market outlets by given them information. The marketing was between the farmers and the middlemen in the past but now MoFA link the farmers to the actors along the value chain (input dealers, hotels, restaurants and consumers).

Marketing has always been done by women who come from various part of the country (Accra, Takoradi, Sunyani and from Kumasi). The vegetables are sold to final consumers at market places and also by hawking in the streets and from house to house. Some of the factors hindering intensive urban farmers are:

- i. Land is dwindling because of urbanisation
- ii. Farmers find it difficult to develop or invest in the land as they are temporary land holders
- iii. In some places it is difficult to get clean water so some farmers tend to use contaminated water to irrigate their crops
- iv. Misapplication of pesticides
- v. Marketers dictates the prices for the farmers
- vi. Lack of cold storage facilities as a result the farmers experience glut of vegetables in the market in some parts of the season
- vii. Most of the farmers do not keep records of their activities
- viii. Most of the farmers are not in groups and those who are in groups are not well organised.
- ix. Most of the youth are not interested in farming

There is a common perception by the youth that agriculture is seen to provide low wages and thus an employer of the last resort.

For continued land use for intensive vegetable production, farmers need to be provided with land title for them to be secured. The operation have to be regulated to make it attractive for the youth to join by extending credit facilities, educating farmers on how to handle pesticides and to adopt integrated soil management to reduce decline of soil fertility and incidence of pest and diseases.

The farmers already have the knowledge, skills, strength and availability of inputs. They have market for their produce and it is believed that they can export some if the right structures are put in place. Farmers find it difficult to hire labourers to work in their farms. There is mistrust among some group members, some farmers are ageing and there are no ones to replace them because the youth are not interested in farming. There is also poor storage facility for their produce as a result they cannot attract good pricing, poor knowledge in record keeping and inadequate credit facility forms the basis of for the weaknesses and threats in the operation.

The key stakeholders are MoFA, KMA, KNUST, Centre for National Culture, marketers, traditional authorities, input dealers, individual land owners and NGO's. MoFA's support to the farmers are training (transfer of technology) and supplying of inputs on credit (fertilizers and pesticides). Other stakeholders like NGO's also assist the farmers by giving them training, example in March 2012 ACDI/VOCA from Germany trained the farmers in Gyinyase on pesticide use, early detection of diseases, good nursery practices and marketing. At times they give them inputs.

From experience, the number of farmers and even the land size has reduced and continues to decrease almost every year causing many people to lose their jobs. The decrease of the land is an autonomous development to MoFA's activities. As a result, the Ministry have also diversified its activities by training the farmers on non-traditional farming (grasscutter, snail, rabbit and mushroom).

#### 4.4 Results from interview with the farmers

The general information of the farmers has been captured in table 1.

**Table 1: General information about the farmers**

Pseudonym	Age (years)	Marital status	Family size	Years in production	Sex	Educational level	Site of intensive vegetable farm
A	47	Widower	3	15	Male	Diploma in Theology	Hotel Georgia
B	28	Single	1	6	Male	HND in Chemical Engineering	Hotel Georgia
C	42	Married	2	6	Male	Vocational training in carpentry	Manhyia
D	50	Married	4	12	Male	Primary	Manhyia
E	45	Married	3	7	Female	Middle school	Gyinyase
F	37	Married	8	12	Male	Polytechnic (division 2 )	Gyinyase
G	25	Single	2	5	Male	Junior High Secondary school	KNUST
H	39	Married	2	7	Male	Ordinary level	KNUST

From table 1, it could be inferred that the farmers started the production at the ages of A -32, B-22, C-36, D-38, E-38, F-25, G-20 and H-32 respectively. By using United Nations definition of youth which is between 15 and 24 years, only two farmers belonged to this class at the time they started (UNESCO, n.d.). The farmers also expressed having some general knowledge about agriculture from secondary schools. Although this knowledge was not enough so they ask their colleague farmers for more. One farmer expressed his experience as...***there were so many try and error when I first started (Pseudonym A)***. Five of the farmers migrated from rural places to the urban areas. They came to Kumasi with the view of searching for alternative work or to trade.



#### 4.4.1 What is the current state of intensive vegetable production in Kumasi Metropolis as compared to the previous years?

Getting affordable, quality and large-sized land is important for intensive urban farming. All the eight farmers acknowledged that land sizes have decreased. The size of the land ranges from 0.1 to 0.5 hectares (ha). It could be said that an average land size for farmers in the study area is about 0.2 ha. The decrease in land size takes three forms as follows:

- i. As a result of some farmers joining the operation and because of that part of the land have to be apportioned to the new farmers. Again part of the land was given to Forestry Commission of Ghana to nurse their trees as it happened at Hotel Georgia.
- ii. As a result of some portion of the land being used for building houses in Manhyia and Gyinyase.
- iii. As a result of some part of the land being used to cultivate food crops as occurred at KNUST.

**Figure 7: Forms of decrease land size**



Although all the farmers interviewed expressed the need to form association or groups, only those at Gyinyase have an efficient group (Peace and Love) which was formed in 2007. This farmer group have been operating for the past five (5) years. And apart from technical advice they get from each other they also cater for the social needs of their members when they have problems or when they need help in activities like funerals, outdoorings. Because they are in groups MoFA is able to supply them with inputs (pesticides, fertilizer) on credit so that they pay back bit by bit. Even though the Gyinyase farmers started as organic vegetable producers as mentioned by RUAF (2007) but at the time of this study, the farmers were using conventional method of production. The farmers commented that they could not contain the attack of the pests especially the caterpillars on their cabbage without using pesticides.

Marketing of vegetables has not changed ever since the farmers started production at all the study areas. Itinerant wholesalers always purchase from the farmers and sell to resident wholesalers. The entire farmers receive technology transfer and training from MoFA since they started their operation although they mention that training this is not regular. One farmer said that reading books and browsing internet also help to acquire knowledge (Pseudonym B). This confirms to the research done by NPAS (2012) that government extension services which can provide vital training and advice are inadequate to reach sufficient farmers regularly.

Training from other stakeholders has not been effective especially for the farmers who are not in groups. Apart from the farmer group at Gyinyase who have been receiving support from NGO's like ACIDI/VOCA and IWMI in the form of training and input supply, the rest do not receive any support. From the data collected, all the eight farmers specialised in producing lettuce. Table 2 shows vegetables specialised by each farmer.

**Table 2: Vegetables specialised by each farmer**

Pseudonym	Vegetables specialised	Site of intensive vegetable farm
A	Lettuce, cucumber and cauliflower	Hotel Georgia
B	Lettuce, cabbage, spring onion, pumpkin, radish and carrot	Hotel Georgia
C	Lettuce, cabbage, ayoyo (tossa jute) and tomato	Manhyia
D	Lettuce, ayoyo and okra	Manhyia
E	Lettuce, cabbage	Gyinyase
F	Lettuce, cabbage and spring onion	Gyinyase
G	Lettuce, spring onion and green pepper	KNUST
H	Lettuce, cabbage and spring onion	KNUST

Due to the farmers experience in growing, some of them changed from vegetables they used to produce to specialise in what is discussed in table 2. One of the farmers said... ***I started with lettuce and cabbage but now I grow lettuce, cucumber and cauliflower (Pseudonym A)***

Intensive vegetable farming in Kumasi Metropolis has been faced with a number of problems as was said by the farmers. These include;

- i. Difficulty in accessing loan and high interest (on loans)
- ii. Difficulty in getting effective pesticides
- iii. Difficulty in financing farm equipment
- iv. Disease and pest infestation

The above-mentioned problems remain unchanged since the farmers started the operation but all the problems do not happen at the same time.

#### **4.4.2 What are the main characteristics of intensive vegetable production in Kumasi Metropolis?**

All the farmers interviewed work on a piece of land between 0.1 and 0.2 ha with the exception of one who works on 0.5 ha. The land size is presented in table 3.

**Table3: Approximate size of land worked by each farmer**

<b>Pseudonym</b>	<b>Approximate land size (in ha)</b>
A	0.1
B	0.2
C	0.1
D	0.1**
E	0.2
F	0.5
G	0.2**
H	0.2

\*\* Researchers own estimation

The crops are watered using either watering cans or pumping machines. Watering usually start in the morning about 5:00am. Watering is done once but at times it is done twice depending on the weather of that particular day. For instance when the weather is having little or no sunshine it is done once but when it is sunny, it is done twice. However, during the rainy season watering is done once or not at all especially when there is heavy down pour of rain.

The sources of irrigation water vary between stream water and pipe borne water. However, most common is the use of stream and drain water since the farms are located at the valley bottom, but this water is mostly polluted. This is because these urban farmers hardly find clean surface water for irrigation. None of the farmers mention that the water quality is being checked for its quality over the years. Even though the water was not tested with chemicals to check the contamination level but it looks polluted to an inexperience eye due to some particles found in it.

The farmers use their own assessment on the usage of pesticides, commercial fertilizers and poultry droppings. Pseudonym B said that mixing two different pesticides (Lambda and champion) is more effective than using just one at a time. Table 4 presents the agro-chemicals used, number of hired labourers employed per year, farm equipment used and source of water for the farmers.

**Table 4: Farm inputs and labourers used by farmers**

<b>Pseudonym</b>	<b>Agro-chemical used</b>	<b>Hired labourers used per year (including the farmer)</b>	<b>Farm equipment used</b>	<b>Source of water (irrigation or rainfall)</b>
A	Lambda (pesticide), poultry manure and fertilizer	2	Watering can, spraying machine, cutlass, hoe, hand fork and drip irrigation implements	Both
B	Lambda, champion, fertilizer and poultry manure	2	Watering can, spraying machine, cutlass, hoe, hand fork and water pumping machine	Both
C	Wood ash and poultry manure	2	Watering can, cutlass, hoe, hand fork	Both
D	Wood ash and poultry manure	2	Watering can, cutlass, hoe, hand fork	Both
E	Champion, attack (pesticide), fertilizer and poultry manure	2	Watering can, spraying machine, cutlass, hoe, hand fork and water hose	Both
F	Poultry manure, fertilizer and pesticide	3	Watering can, spraying machine, cutlass, hoe, hand fork and water pumping machine	Both
G	Champion, diathane (pesticide) and poultry manure	2	Watering can, spraying machine, cutlass, hoe, hand fork, water hose and pumping machine	Both
H	Pesticide and poultry manure	2	Watering can, spraying machine, cutlass, hoe, hand fork and water pumping machine	Both

**Figure 8: Examples of water used for irrigating vegetables**



**4.4.3 What are the effective strategies intensive vegetable farmers employed in the spate of increasing competition of arable land for other physical infrastructure?**

According to the farmers land for farming keeps decreasing almost every year. Pseudonym E has this to say.... ***the land keeps decreasing almost every year and we are being given a short notice to vacate the place.*** As a result they have had preference for growing particular vegetables, namely lettuce, cucumber, cauliflower, cabbage and spring onion. Others also grow radish, carrot, okra, ayoyo (tossa jute) and tomato. The specific reasons why they produce those vegetables as said by the farmers are;

- i. Planning to meet the market ahead of time example lettuce and ayoyo are done around June/July in order to meet the Ramadan (Moslem fasting period). Moslems buy a lot of lettuce during their Ramadan period.
- ii. Cabbage for instance no matter what, they will sell but I also grow lettuce for quick cash because of its short maturity period.
- iii. Lettuce gives quick returns which helps to pay for labourers on time.
- iv. Vegetables help to reduce cholesterol and as people are becoming aware of their health more vegetables will be required.
- v. They are the ones that people like most.

All the farmers produce all-year-round (both rainy and dry season) since they do not know which season will bring more sales. At times there is oversupply of vegetables in the rainy season and at times in the dry season. Poultry manure is the preferred choice for improving the soil fertility because they are cheaper than chemical fertilizer. A tipper truck load of poultry manure cost between GH¢ 45-60 while a bag of chemical fertilizer cost between GH¢ 55-70. With a tipper truck load of poultry manure farmers can fertilize more land area than with a bag of fertilizer. Pseudonym B shared an experience as....previously I could use 3 bags of fertilizer for the vegetables but now I use 1 bag and one tipper truck load of poultry manure. For the cropping pattern, all the eight farmers use a portion of the land to produce a particular vegetable after harvesting different vegetable has to be grown on that particular portion. That is swapping crops as much as possible on the same piece of land. Some vegetables like cabbage, carrot are cultivated four times in a year while others like lettuce are grown

as much as nine times in a year. Table 5 demonstrates other diversifications employed by the farmers when their land started to decrease.

**Table 5: Other diversifications employed by farmers during the decrease of land**

Pseudonyms	Diversification employed
A	Cultivated rice, maize and rearing poultry birds
B	-
C	Cultivate maize and aquaculture
D	-
E	Cultivate cocoa and oil palm
F	Cultivate cocoa, oil palm, maize, cassava, plantain and sheep production
G	Plantain and cassava
H	Plantain, cassava and cocoyam

The farmers indicated that, they now spend less time in their vegetable farms as compared to when they started. They use the extra time to take care of other productions like cocoa, cassava and livestock as is shown in table 5. The livestock and cash crops like cocoa are grown specifically in the rural areas while the food crops like cassava are grown on different plot in Kumasi Metropolis. But going back to rural areas to farm cash crops is not a new strategy it has been occurring for many years.

Though the eight farmers reiterated they have enough income and food to live on but they recounted the earlier days were better than the present. This is due to many factors of which decrease of land was dominant among them.

#### **4.4.4 Who are the actors involved in the input supply?**

Many actors are involved in the supply of farm inputs for farming in Kumasi Metropolis, they are;

- i. Agro-chemicals are provided by MoFA and agro-chemical shop operators poultry droppings provided by poultry farmers. The major agro-input dealers are Sefa and Jane, Bentronic, Chinese woman, Obek, Kumark, Enepa and K. Badu.
- ii. Farm equipment is supplied by Dizengoff Ghana Limited, agro-chemical shop operators and hardware stores.
- iii. Land is provided by traditional authority, Centre for National Culture, Kumasi Metropolitan Assembly, individual landlords and KNUST
- iv. Financial support are provided by marketers, Bosomtwi Rural Bank and relatives
- v. Labourers are mainly from the Northern part of Ghana and Burkina Faso.

All the farmers acknowledged that they acquire knowledge for their farming activities from MoFA, fellow farmers and personal experience. The two farmers from Gyinyase disclosed that they acquire more knowledge from NGO's than any other source. The sources of water for all the farmers were well, streams and rainfall however, the two farmers from Gyinyase use pipe borne water in addition.

#### **4.4.5. How is the produce marketed?**

Sorting of vegetables are solely done by the marketers. There was no quality standard to conform to but all the farmers stated that they produce quality vegetables. One of the farmers has this to say:

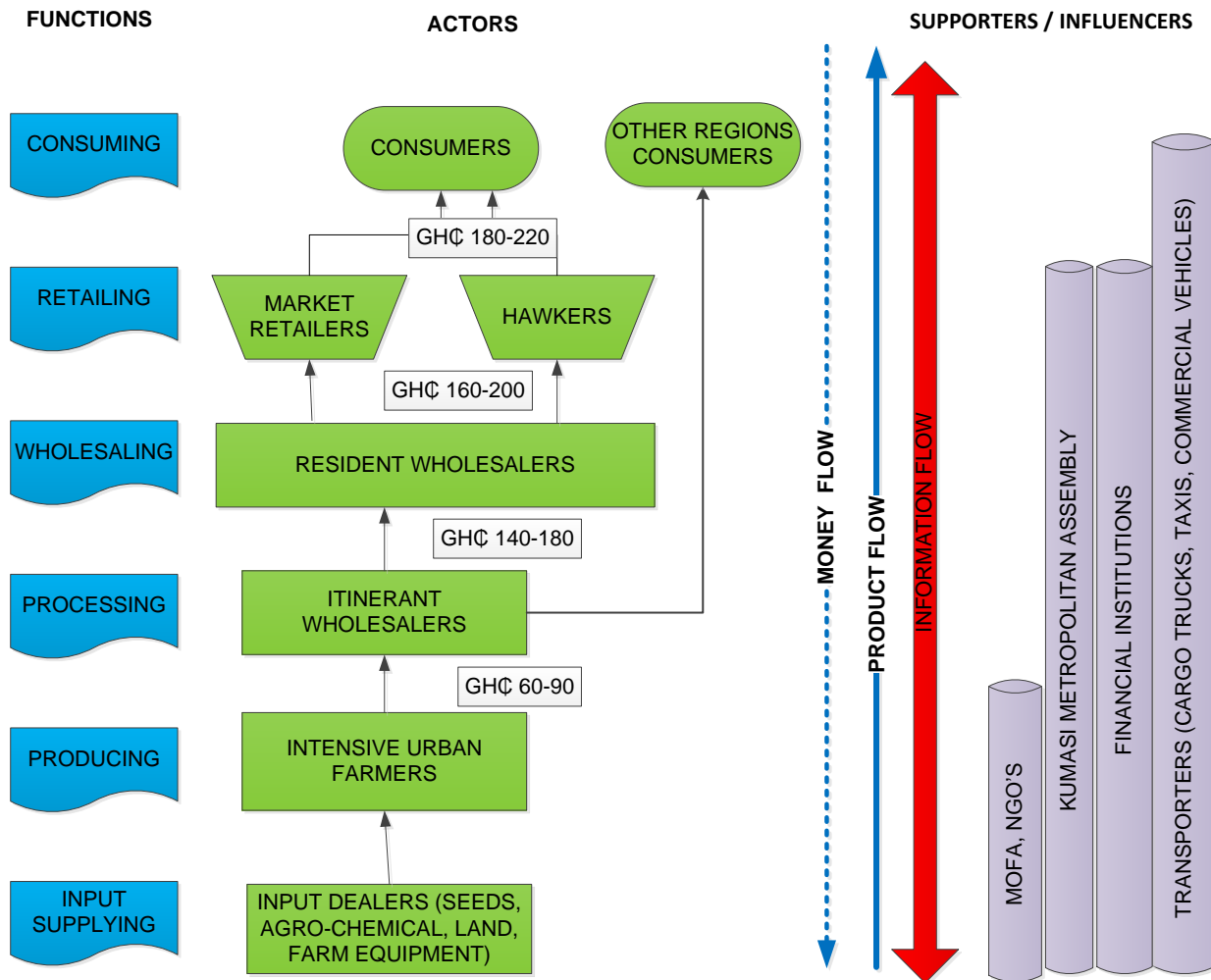
***I produce quality vegetables all the time and I have even written a book which is yet to be published about safer ways of producing vegetables (Pseudonym F).***

Marketing of vegetables has always been done by women who come from various places of Ghana to buy. It could be said that women are dominant in marketing while men are the main producers which is mainly due to the intensive nature of growing. Another reason is that men are mostly involved in market-oriented production while women are culturally engaged in marketing of agricultural produce in Ghana. Again, women have less access to land and resource to start market-oriented farming (Zibrilla and Salifu, 2004). The marketers are generally headed by "Market Queen" (Ohemma) who is selected based on her ability to manage traders and experience in the marketing. The responsibilities of the Market Queen are to settle issues between marketers and also set prices for commodities. These marketers are well organised unlike the farmers and have much information about both the farmers and the consumers. They know the type of crop each farmer is producing and at the time it is produced as well as where the consumers live and what quantities of vegetable they need. Their activities help the farmers to concentrate on production of vegetables. The actors involved in the marketing activities are as follows:

- a. Input dealers: they include providers of seeds, agrochemical and farm equipment. land
- b. Itinerant wholesalers: they are responsible for harvesting the vegetables after agreeing on the price with farmers. They also perform the cleaning and paying for transporting and market tolls. Most of the vegetables are sold in Kumasi Metropolis but some are sent to other regions in Ghana.
- c. Resident wholesalers: they operate between the itinerant wholesalers and retailers. They are located permanently at the market centres and also pay market tolls.
- d. Retailers: they include market retailers who are permanently located at one place (but not at the official market) and hawkers who move from house to house or street to street to sell to consumers. Figure 9 shows a value chain map of vegetables (lettuce) in Kumasi Metropolis.



FIGURE 9: VALUE CHAIN MAP OF VEGETABLE (LETTUCE) IN KUMASI METROPOLIS



Source: Author's construct, 2012

The prices quoted for the value chain map are for 1000 heads of lettuce (which is harvested from an area of about 17m<sup>2</sup>). It should be noted that at the time of this study, lettuce were in large quantities because all the farmers plan to meet the Ramadan period as one of their strategies and this also accounts for the money paid to each actor. It is also important to note that, at certain seasons the farmers receive nothing all (no money) because of low demand coupled with oversupply of vegetables.

None of the farmers is involved in contract selling. Although the agricultural officer mentioned that they link the farmers to the actors along the value chain but none of the farmers gave evidence of that. The number of times the farmers sell per season depends on market demand and the type of vegetable. For example, lettuce which is early maturing is sold mostly in one go per season while okra and tossa jute (ayoyo) takes several times to harvest. The total amount of sales received per



year varies between farmers and at the same time fluctuates yearly. The following are the approximate farmers' average total yearly sales in GH¢ (GH¢ 2 = \$1):

- A. 6,831
- B. 5,300
- C. 5,779
- D. 4,750
- E. 6,533
- F. 13,310
- G. 5,286
- H. 7,155

The total yearly sales were gotten by multiplying three (3) scenarios (number of vegetables grown in a year, number of times it is grown in a year and amount of sales made after each vegetable is sold).

It could be concluded that the approximate average total yearly sales for farmers in Kumasi Metropolis is GH¢ 6868. Payments to the farmers are done with cash after the vegetables are sold to the marketers.

**Figure 10: Different marketers involved in vegetables selling**



#### **4.4.6 Is intensive vegetable production in Kumasi Metropolis profitable?**

All the farmers produce exotic vegetables however, two farmers at Manhyia also produce local vegetables alongside.

Money spent on items differs between farmers according to table 6. Apart from Pseudonym A, E and F the rest do not pay the right monthly national minimum wage for hired labour. According to AfricaPay (2012), Ghana's monthly national minimum wage for 2012 is GH¢ 120.96. The labour cost has been calculated to include the farmers input. For the estimation of labour cost, the researcher

multiplied the average monthly wage by the number of months in a year. Intensive vegetable farming has also created employment for the urban poor as farm labourers. The wages they earn help them to buy food to improve their food security status. For example Pseudonym E farm labourer said he is now able to eat three times a day which he could not have afforded previously.

The money spent on the land is largely depended on the relationship between the land owner and the farmer but not strictly on the size. The size of the land has no relation with the amount of money invested. For instance, Pseudonym A has invested more than the rest but the land size is 0.1 ha while Pseudonym F has 0.5 ha of land. However, relative security of land rent allows farmers to invest more just as been happening at Hotel Georgia where farmers grow under high tension poles. For other sites, it looks a little bit secure but it cannot be an incentive to invest more.

**Table 6: Approximate yearly expenditure by farmers (Money is quoted in GH¢)**

Pseudonym	Average yearly total sales	Money spend on seeds per year	Money spend on agro-chemicals per year	Labour cost per year (including the farmer)	Money spend on land per year	Money invested in farming assets
A	6,831	90	123	3,600	30	2,700
B	5,300	130	120	2,400	30	305
C	5,779	15	80	2,400**	20	40
D	4,750	20	80	2,400**	20	25
E	6,533	100	223	3,600	40	70
F	13,310	150	400	5,400	100	1,500
G	5,286	100	110	2,400**	40	260
H	7,155	100	105	2,400	50	300

\*\* Researchers own estimation

None of the farmers hire farm equipment. Averagely, all the farmers spend 6 hours per day while their labourers spend about 8 hours working in the farm. Within a week, the farmers spend 6 days together with their labourers. The reporting and departing times are from time to time unreliable. Farmers often spent less time on the farm or do not go to farm when the rains set in. Time spent on the farm is influenced by the labour available and farmer's involvement in other activities.

Three farmers said they have never borrowed for productive activities before but the rest of them stated the need for borrowing. From the discussion so far, it could be understood that intensive urban farming in Kumasi Metropolis is relatively profitable. Comparing the monthly income of Pseudonym F per their colleagues with same qualification working as a private teacher will place the farmer higher. One of the farmers had this to say...***I always have food available and enough***

**money. I have been able to buy a car and build a house from vegetable production but the earlier days were better than now (Pseudonym F)**

#### **4.4.7 What is the state of living conditions of intensive urban farmers?**

The dependency on farmers, the number of persons living with farmers who earn income, spending on utilities, average yearly spending on food and yearly spending on consumables and average yearly net income are presented in table 7.

**Table 7: Dependency on farmers, approximate average yearly household spending and average yearly net income (GH¢)**

Pseudonym	Dependency on farmers for livelihood	People in farmers household who earn income	Average yearly spending on consumables	Average yearly spending on utilities	Average yearly spending on food	Average yearly net income
A	2	-	132	240	216	2400
B	-	-	120	-	300	2200**
C	-	-	84	1200	180	1800
D	3	1	90	180	360	1600**
E	1	-	120	360	290	1800**
F	7	-	240	420	600	6000
G	1	-	96	240	300	2000**
H	1	1	180	360	360	3600

\*\* Researchers estimation

Profitability depends on demand and supply, cultural practices observed (management techniques) kind of vegetables grown, size of land and it is also subject to negotiation. This means that only spending more money does not necessarily lead to high net profit but it is required of the farmer to combine with management techniques in order to be profitable. The average yearly net income denotes free disposable income. That is savings made possible after deducting business cost (including labour cost) from the sales and this money could be reinvested in the vegetable farming or cash crop.

None of the farmers answered that they have skipped or cut the size of their food for the past years. They also referred to their household as food secured. For the farmers who borrowed for productive purposes, it is done at least twice a year. Paying back the money borrowed is often done on time. For those who borrow from the marketers, they pay back by deducting the money from the produce sold and without any interest (but are bound to sell them). And those who borrow from other source pay back with cash. Farmers who borrow from relatives do not pay any interest but those who

borrow from financial institutions pay an interest. They complained the interest is sometimes as high as 30%.

Typical production problems mentioned by intensive urban farmers are:

- i. Lack of available land and land tenure insecurity due to the high rate of urbanisation
- ii. Marketing of produce: the market women dictate vegetable prices at harvest.
- iii. High labour input for bed preparation and watering of vegetables
- iv. Difficulties in getting farm labourers
- v. Inadequate capital funding sources and high interest on bank loans:
- vi. High cost of farm input and equipment (pesticides, farm tools, irrigation system, fertilizer)

The farmers also gave recommendations to the above-mentioned problems as:

- Government and or other stakeholders should help;
- i. By either making loans with lower interest available or give farm inputs on credit and subsidy.
  - ii. Large secured land is made available for production (long-term).

## CHAPTER FIVE

### 5.1 Data discussion and analysis

Discussion and analysis is about techniques where the researcher extracts clarifications or interpretation from primary data collected. This reflects how the researcher makes meaning of particular experience by analysing the farmer's views, approaches, feelings and know-hows. The object of the analysis is also to examine the importance and symbolic content of the data collected. The practice also permits reflection on data collected and also identify gaps to enable the researcher to go back and collect more data if the need be. After gathering all the required data and noted it in written form, data analysis begun. For clarity and simplicity in terms of outcomes and analysis, the subthemes were then discussed giving particular attention to SLF.

#### 5.1.1 Vulnerability Context

The effect of livelihood activities of farmers in Kumasi Metropolis has been affected by critical trends as well as by shocks and seasonality over which they have limited or no control. Although the seasonality, shocks and trends were predictable, according to the farmers point of view but they have limited or no control. These have particular important influence on rates of return to their chosen livelihood strategies. The following are the vulnerability context of the farmers:

a. Trends

- ❖ Decrease of land: as a result of competition for land for other physical infrastructure land has become scarce.
- ❖ Difficulty in getting clean water: farmers are dependent on rainfall and this is sometimes erratic and not all farmers can pay for pipe borne water. This has led to the use of streams and water from drains which are mostly contaminated.

b. Shocks

- ❖ Disease and Pest infestation: crops are natural food for insects and as they feed on them they become susceptible to diseases.

c. Seasonality

- ❖ During some part of the year, example Christmas, most people are involved in trading activities (for quick cash income) and this causes the labour shortage.
- ❖ Prices are determined by demand and supply. When there is oversupply of vegetable in the market coupled with less demand the prices fall. The farmers said that at times they do not receive any cash income when there is oversupply of vegetables.
- ❖ Fluctuation in quantity of vegetables harvested: producing a certain number of vegetables in a particular season is not an incentive to project the same for another year. Land size may decrease and pest and disease may also affect the crops to reduce the number.

Contrarily to what was cited by Cofie (n.d.), farmers do not only resort to informal use of government lands but also individual and private lands are used of which they are frequently driven out. This is as a result of lack of long term land security. Due to difficulties in getting clean water, some farmers have resulted to using contaminated water to irrigate their crops just as mentioned by Obuobie et al., (2006).

### **5.1.2 Sustainable Livelihood Assets (SLA)**

#### **Human capital**

Motivation, self-confidence, emotional well-being, knowledge and skills are vital to the daily practices of an intensive urban farming as the land keeps decreasing over the years. These knowledge and skills are developed through training and from fellow farmers combined with work experience. This is done by farmers to increase their human resources. Another possible way of increasing their knowledge is to read books, watch agricultural programmes on television. Knowledge is always getting old but learning is a continual process therefore the need for new knowledge. Farmers without motivation, emotional well-being and previous experience find the aspect of the farming very challenging. Growing techniques are very similar for all eight farmers interviewed as also confirmed by the Agricultural officers. All the farmers use poultry manure for their production without relying so much on commercial fertilizers as a way of saving money. Bed preparation and the use of simple farm tools like hoe, hand fork and cutlass demands a great deal of skills and knowledge.

The researcher observed that the farmers enjoy the independence of being self-employed. Besides, they also practice intensive production with the object of maximising the number of crops grown on the same portion of land over the growing period.

However, the researcher agrees with CFSC (2002) findings that some farmers lack the skills and knowledge in processing and marketing. This was evidenced when they said sorting of vegetables were solely done by the marketers. Sorting is a form of processing and adds value to the vegetables and whoever does the activity have to be paid for that service. Yet again, four out of eight farmers could not account for their average monthly net income. This presupposes that they do not take records of their farming activities.

The researcher also agrees with Obuobie, et al. (2006) and RUAF (2007) when they said some farmers specialise in organic vegetable farming while others grow conventional vegetables. Since training and monitoring of farmers are not done regularly and effectively, some farmers will be obliged to purchase cheap or unapproved agro-chemicals. According to NPAS (2012) Extension services which are supposed to provide vital training and transfer of technology to farmers are inadequate to reach sufficient farmers regularly. Also the Environmental Protection Agency (EPA) has just one inspector in each of the ten regions of Ghana. And another five in Accra, making a total of 15 throughout the country. This number is woefully inadequate for effective monitoring of pesticide use.

#### **Social capital**

From the farming sites studied, networking, relationship and membership of a group were indispensable to starting and sustaining the farming operations. Without the advice offered from experienced farmers, the new farmer would find it challenging to begin or even switch to different crop(s). These could lead to a lot of mistakes committed by the new farmers—which could be expensive. With access to membership or networking possibilities to ask questions and seek advice, those mistakes and challenges could be averted. The social interactions between the farmers were mostly positive and mutually beneficial, involving exchange of knowledge. One of the most

significant stakeholders in the network is the marketers who sometimes loan money to the farmers and thus share the risk of crop failure. Without them, farmers will find it difficult to sell their produce because of the services they perform. Network with the marketers also help them to know which crop is in high demand. Price information is not formally disseminated rather, through word of mouth by marketers or colleague farmers.

All the farmers interviewed seem eager to share advice about their farming operations with each other. It could be inferred that intensive vegetable farming in Kumasi Metropolis is a social activity. However, it was difficult to conclude if an increase in social interaction between the farmers, marketers, input dealers, MoFA and consumers or neighbours resulted in greater profits. On the other hand however, it was obvious that farmers with a greater social presence were better known and received more attention (training by NGO's, inputs on credit from MoFA) as was evidenced at Peace and love farmers' group at Gyinyase. Even though seven of the farmers had families (nuclear), none of the members were involved in the farming activities. The wives, husband and children were into either education or different occupation.

Membership of a group enhances vegetable production by learning from each other, foster unity among the members. It also helps to cater for social needs (funeral, weddings) and aid in resolving conflicts within themselves just as happening in Gyinyase. Issues relating to land and water used are also discussed as a group.

Relationship with NGO's and financial institution also helps the Gyinyase farmers to get additional training and loans respectively.

### **Natural capital**

According to the farmers interviewed, landowners benefit from them by receiving rent at the end of every year. Yet, farmers are frequently susceptible to losing access to the land, and thus cannot plan long-term for their operation, such as buying farm tractor. When soliciting land from landowners, farmers consider desirable traits such as plot size, quality of soil, exposure to erosion, proximity to their residence and source of water. Currently, there is a scarcity of land for farming. This is as a consequence of either more people joining intensive urban farming or farmers losing the land to property developers (building purposes). It was observed that, intensive urban farming in Kumasi Metropolis takes place along drains, wetlands and streams. Even though the water was not tested with chemicals to check the quality level but it looked polluted to an inexperienced eye due to some particles found in it.

Using irrigation to produce vegetables in Kumasi Metropolis has been intensified due mainly to declining land size. Because of this farmers tend to produce vegetables all year round. This practice has served as a driving force of the increase use of untreated wastewater for watering because freshwater resources are scarce during the dry seasons. As a result farmers use polluted water from streams and drains. Continued use of the polluted water means deposition and accumulation of contaminated materials on vegetables and soil. Again stream siltation through erosion from cultivated land and soil nutrient depletion through frequent crop harvest affects the quality of the soil.

## Physical capital

All the farmers interviewed possessed simple farm tools such as hoe, cutlass, hand fork and watering can which aid in their farming operation. Nevertheless, by taking part, observing the farming activities and listening to the farmers, the farm tools like cutlass, hoe and watering can make their work laborious and time consuming. This is so because of insecure land tenure and as a result they are not able to plan for long term on their land like buying farm machineries that will ease their farm work. Barriers to enter and exit are relatively low due to few cost-effective farm input like hoe, cutlass, watering can used.

Farmers sometimes spend less time on the farm or do not go to farm when the rains set in. Time spent on the farm depends on the labourers available and farmer's involvement in other work aside farming. With the exception of one farmer who lives on the land others reside close to the site of their farm. Although agro-chemicals like pesticides were available in large quantities and in different varieties but their regulations were not effectively enforced by MoFA. One farmer has this to say...

***Agro-chemicals (pesticide) selling is in the hands of private companies or individuals, so everyone is selling what he believe will bring him much profit. As to whether it will benefit the nation is not their concern. As of now getting the right pesticides is a problem and some farmers buy whatever they deem right. Some farmers even go to an extent of using pesticides meant for food crops to spray their vegetables.***

This is because many of the pesticides imports into the country are illegal. EPA's survey in 2007 showed that around 30% of the pesticides in Ghana were either unlicensed or smuggled (NPAS, 2012). All the farmers apply poultry manure and some also apply chemical fertilizer in addition (N.P.K, 15-15-15) especially for those producing cabbage. This is because chemical fertilizers boost the growth of cabbage.

## Financial capital

The gross profits from the farming activities varied between farmers. A farmer, who is less experienced in farming operation, is bound to make less profit. Pseudonym A expressed his experience as... ***there were so many try and error when I first started.***

Even though wages from the operation were relatively low, the farmers had high job satisfaction. There were several non-monetary benefits which enhance the farmers' quality of life. Some of these benefits are groceries of fresh foodstuffs which reduce household expenses. All the farmers who took loan from various sources were able to pay back within the stipulated time.

Comparing the net revenue per farm per year with the study done by Eriksen-Hamel and Danso (2009), it could be said that the figures has increase from between \$420 and \$1920 to between \$800 and \$ 3000. This could be as a consequence of the farmers intensifying their production. Example Pseudonym F who invested GH¢ 1,500 received GH¢ 6000 as his average yearly net income. This gives the farmer ability to invest in either vegetable farm activities in peri-urban areas where land is not highly competitive or diversify into other crops.



And since all the farmers in Kumasi Metropolis grow lettuce, there is at times oversupply in the market and this reduces the profitability of the farmers. The cost of renting land could also affect the prices of vegetables. Example a farmer who spend GH¢ 100 on a land will need to recover his investment by increasing the prices of vegetables. Some farmers keep livestock (sheep and goat) which they occasionally sell for cash income. Diversification into cash crops and food crops also help the farmers to have food stocks available in their household and sell surplus for additional income.

### **5.1.3 Policies, institutions and processes**

The ultimate challenge to farmers is how to secure long- term land tenure. Firstly, short- term tenure limits the kind of vegetable that the farmer can cultivate. For example, eggplant is not preference since it has relatively long harvesting (growing) period. Second of all, it takes several years to build up quality soil. It is estimated that at least it takes about three years of improving the soil to make it as productive as possible. Farmers could lose their land before they realise the benefits of their labour, money and time investment. The conditions of land agreement are similar among the farmers from all the study areas. No money is exchanged between landowners and farmers after the rent is agreed upon between them. Rent is paid at the end of the year and this is a good way of allowing the farmers to make a good start by using the money to purchase agro-chemicals, seeds. Political support from KMA is either absent or very minimal. The work of the transporters is indispensable as they are required to move vegetable from one point to another. Financial institutions are also needed as they do not only give loan but accept deposits of money for future use. Even though according to MoFA (2011), block farming and Youth in Agriculture programme has already started. Whereby inputs including land are giving to farmers on credit and pay back after harvest. This programme has not yet started in Kumasi Metropolis.

### **5.1.4 Livelihood Strategies**

The pooling together of resources to buy inputs, such as fertilizer, seeds and pesticides has been an effective way of reducing cost as was observed at Gyinyase farmers group. This is because the group receive inputs from MoFA on credit and pay back in bits instead of paying at a go. Social benefits like contribution to group member in case of funeral, outdooring help them reduce cost. In all the areas studied, farmers learn from each other which help them to improve their production. A short-cycled crop such as lettuce and cabbage does not only bring quick income but also to safeguard against loss of investment should the land be sold. Market driven production is also carried out in order for the farmers to recover their investment. Instead of borrowing from financial institutions, some farmers have resulted to taking loans from the marketers. This type of money is relatively quick to obtain and it comes without an interest. Moreover, some farmers have decided to choose additional occupations which include cocoa, oil palm production and livestock farming as a diversification. Apart from been additional occupation, the diversification also tend to bring additional stream of income to farmers. Diversification into food crops help the farmers to have food stock available in their house which reduce amount of money spent on food. Poultry manure is mostly used because it is cheaper than chemical fertilizer. With a tipper truck load of poultry manure farmers can fertilize more land area than with a bag of fertilizer.

According to studies done by Aberra and King (n.d.), farmers in Kumasi Metropolis respond to inadequate land by regulating their choice of vegetables according to market opportunities and limitations such that crops for which there is a better urban demand are grown. However,

sharecropping and trading were not found among the farmers in the study area. Currently, all the eight farmers practice intensive growing techniques by rotating the crops on the same plot over the years.

#### **5.1.5 Livelihood outcomes**

Livelihood outcomes are the results or consequences of livelihood strategies that a person applies; if the goals are achieved they then become outcomes (Ruedin, 2007). The plethora of outcomes may well be inferred that intensive urban farming could be relied upon as a way of living since it helps to increase wellbeing, reduced vulnerability and improve food security. The specific outcomes are as follows;

- i. Source of employment for farmers and their labourers
- ii. Source of cash income for the farmers and especially farm labourers (as the wages they earn could be used to buy food to improve their food security)
- iii. Source of fresh vegetable supply
- iv. Supported some farmers to establish livestock and cash crop farms
- v. Supported farmers to look after their children through school
- vi. Helped a farmer to buy a car and build a house

Although all the farmers were concerned with making profit, but that is not the only motivating factor for production. The way of life offered by this type of operation is very important for all the farmers. It could be concluded that farmers were able to achieve the above-mentioned outcomes as a result of their strategies, but this does not necessarily mean the reduced land size has increased the livelihood outcomes. This is because reduced land size must go together with intensification and effective combination of skills and technical knowledge in order to have increased livelihood outcomes.

## **CHAPTER SIX**

### **CONCLUSION AND RECOMMENDATIONS**

#### **6.1 Conclusion**

Kumasi Metropolis is increasing in size with fast physical infrastructure and population growth and this has caused the decrease of land for farming. There is an absence of coordination between the relevant stakeholders to work together to address problems related to decrease of land in the study area. Effective action to alleviate the problem is proving to be uncertain as described by the farmers and the Agricultural officers due to competition of land for housing development.

There are few institutions that are involved in the intensive urban farming sector in Kumasi Metropolis. The KMA is the main service providers with responsibility and obligation to make available open spaces where farming could be done on long term basis. As of now, there has not been any specific package to guarantee establishment and growth of farming in the study area. MoFA's duty to organise training, seminars and field demonstration has not been regular as was said by the Agricultural officers and the farmers.

There are two recognisable NGO's who have acknowledged the importance of intensive urban farming in terms of food security and improvement of living conditions of those involved. These NGO's are actively supporting farming activities through motivation, extension, training and occasional input supply (like fertilizer and seeds). However, these NGO's only work with farmer groups and most of the areas studied were not in groups. MoFA have not effectively monitored the use of quality water and pesticides. Of all the areas studied, it was only those who are in farmer group (Gyinyase) were able to get loan from financial institutions. Although they complain that the interest is as high as 30%. Intensive urban farming is one of the means that provide jobs for the farmers and other actors involved. The farming operation has also created jobs for the urban poor as farm labourers. The wages they earn help them to buy food to improve their food security status. The intensive urban farmers have been found to have lower food insecure and use their savings to buy other food items to supplement their diet. Due to the decrease of land, farmers have employed strategies in order to make a good living. Some of these strategies are specialising in particular vegetables like lettuce, growing short-cycled vegetables that will give relatively quick sales. Some farmers also cultivate several times in a year to meet particular period like Christmas, Ramadan while others have added livestock and cash crop production. Farmers generally realise a decent income and cash generated in intensive vegetable farming is put for beneficial use outside immediate vegetable farming. For instance, rearing livestock and growing of cash crops. This is done because an increased investment in intensive vegetable farming is proving to be risky due to land issue.

Farming in the study area was found to have relatively low barriers to entry and exit due to few cost-effective farm inputs like hoe, cutlass, watering can used. It does not require relatively large capital. Observation, participation and discussion with the farmers' reveal that farming activities are labour intensive. There is low number of farmer group and as a result they have limited capacity to lobby for

large land size with long term tenure secure. The farmers are not doing badly at all looking at the circumstances they are going through.

Intensive urban farming alone may not be able to provide all the vegetable need of Kumasi Metropolis, but it positively has the potential to be an important driving force in improving economic prospects and addressing food security fears. As of now, the practice remains generally unrecognised, mostly unassisted and every so often not favoured as the farming land is being used for building houses. The use of polluted water to irrigate crops means contaminated vegetable. It is concluded that the future of intensive vegetable farming is not optimistic in the Metropolis if the situation continues as the farmers are not sure about their land security coupled with water contamination. Again farmer groups as an indispensable strategy to receiving training and inputs from NGO's, inputs on credit from MoFA and loans from financial institutions has not being effective in most of the study areas.

## **6.2 Recommendations**

Based on the discussions and analysis, this section provides some strategic recommendations for intensive MoFA, vegetable farmers and other stakeholders to sustain the future of intensive vegetable farming.

### **Strategies for MoFA**

- a. MoFA receives allocation of funds every three months of GH¢ 300 for training. This money should be used to train farmers regularly on the good agricultural practices. The training should include standard chemicals for vegetables, formulations and their usage. This should be done through field demonstration. Data from fieldwork indicated that half (4) of the farmers were not able to account for their average monthly net income which is an indication of not keeping records. MoFA should train farmers on record keeping to help them to know their input and output in monetary terms and profit generated out of their farming.
- b. Farmers are major actors/stakeholders when it comes to intensive urban farming therefore policies relating to their activities must be drafted and implemented with the farmers' participation. This will help MoFA to better understand the farmers' challenges and how best to help solve it.

### **Strategies for intensive urban farmers**

- a. Farmers should form group to have a collective voice so that they can lobby for large land size with long term security. The group should have a constitution that is developed by the members themselves with committed leadership who are willing to campaign the case of the farmers. The group members should make monthly contribution of money by which they could use to project their concerns through newspapers, radio stations and television stations. This will help them to raise their concern for large land size with long term security areas where water quality is not contaminated.
- b. Currently, it is only the farmers at Gyinyase who are getting training and occasional input supply from the NGO's because they are in groups. Well organise farmer groups is another strategy for the farmers so that they can increase their negotiation power with the marketers.

- c. They should make contribution from the money they earn to dig wells where uncontaminated water will be used for irrigation.
- d. Farmers should continue to diversify into other activities like livestock outside intensive urban. This is because investment in intensive vegetable farming is proving to be risky due to land issue.
- e. Farmers should be ready to learn and practice good agricultural practices by making conscious effort to read books and research journals and attend trainings.

### **Strategies for other stakeholder's**

KMA must carry out a survey evaluation and review land use in Kumasi Metropolis to identify where intensive urban farming must be practiced in the long term. This survey should include composting sites. By doing this, urban food wastes should be changed into useful products as compost to supply to urban farmers. As a result, more jobs will be created and KMA will generate revenue from taxes not only from the input dealers and the marketers but also from compost producers.

Non-Governmental Organisations (NGOs) must support the farmers' effort by mediating among the various organisations to;

- i. Strengthen the farmer groups and their capacities to update their farming techniques and marketing through training and participating in multi-stakeholder discussions.
- ii. Enhance the capacities of local stakeholders (farmer organisations and MoFA, KMA) to participate in joint situation analysis and policy advocacy regarding intensive urban farming, planning and implementation and monitoring of sustainable farming and marketing developments.

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## ANNEXES

### Annex 1. An Informed Consent Form

You are requested to participate in a research study carried out by a student of Management of Development (MOD) Master's class of Van Hall Larenstein University (VHL). The researcher hopes to examine the livelihood strategies of intensive vegetable farmer's in the spate of urbanisation in Kumasi metropolis, Ghana. You have been invited to participate in the study to gain further insight on the issue since you are an intensive vegetable farmer in Kumasi Metropolis.

Your participation in this study is entirely voluntary and any information obtained in the study that can be identified with you remains confidential and will not be disclosed without your permission. Note that the information given is strictly for academic purpose and will not prejudice your relationship with MoFA or any other institution.

If you volunteer to participate in this study, the researcher would like to ask (interview) you on your farming activities and livelihood strategies that will require few hours of your time. You have the right to refuse any question that you may not wish to answer. If you have any questions pertaining to this study please ask before deciding whether or not to participate. If you decide not to participate you are free to discontinue.

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I have read, or someone has read to me and I understand the information provided above. I have been given an opportunity to ask questions and all of my questions have been answered to my satisfaction.

By signing this form, I willingly agree to participate in the research

Participant's Signature

Date

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Signature of Researcher

Date

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## **Annex 2. Checklists for data collection**

### **Checklist for Agricultural officers (Technical officer and Municipal Director)**

1. How many years have you been working with urban farmers?
2. What was the land size when you first started compared to now?
3. How many farmers were in your operational area when you started and how many are they now?
4. Were the farmers in groups when you started working with them?
5. How are the urban farmers organised currently?
6. Did urban farmers specialised in producing a particular vegetable when you started working with them and what about now?
7. Which organisation(s) is in charge for assigning land for UA?
8. What are the processes urban farmers go through before acquiring a land?
9. How do MoFA regulate UA?
10. How often do you offer training for urban farmers on good farming practices?
11. Are urban farmers trained on how to manage their finance?
12. Do you link urban farmers to the market?
13. How was marketing of vegetables done when you first started as compared to now?
14. Which group of people does the buying and selling of vegetables?
15. Where is it sold to the final user/consumer?
16. What factors are hindering urban farmers?
17. What do you suggest for continues land use for intensive vegetable production in Kumasi?
18. What are the strength and opportunities in UA?
19. What are the weaknesses and threats of UA?
20. Who are the key stakeholders in UA?
21. What support do MoFA give to urban farmers?
22. What assistance do other stakeholders (NGOs, KMA etc.) give to urban farmers?
23. What information do you have about intensive vegetable farming in Kumasi Metropolis?

### **Checklist for Urban farmers**

#### **GENERAL INFORMATION**

24. How old are you
25. What is your marital status?
26. How many children do have?
27. How many years have you been farming?
28. What is your education level?

#### **A. What is the current state of intensive vegetable production in Kumasi Metropolis as compared to the previous years?**

29. What was the land size when you first started compared to now?
30. How many farmers were at your operational area when you started and how many are they now?

31. Do you work in farmer groups?
32. If yes when did you start to form groups?
33. How was marketing of vegetables done when you first started as compared to now?
34. Did you get any training from MoFA when you first started as compared to now?
35. What other support did you get from other stakeholders (NGOs, KMA etc.) as compared to now?
36. Did you specialise in producing a particular vegetable when you started and what about now?
37. What problems were you facing when you first started that is different from now?

**B. What are the main characteristics of intensive vegetable production in Kumasi Metropolis?**

38. What is the approximate size of your cultivated area?
39. What inputs (agrochemicals) do you use?
40. How many labourers are used for land preparation, weeding, watering and harvesting etc. per year?
41. What farm equipment is used?
42. What is your source of water? (Irrigation or depend on rainfall)

**C. What are the effective strategies intensive vegetable farmers employed in the spate of increasing competition of arable land for other physical infrastructure?**

43. When did you see that your land size is decreasing?
44. Do you have preference for producing particular vegetables?
45. What specific reasons why you produce that crop(s)?
46. Which season would you like to produce?
47. What is your cropping pattern/system?
48. How many times do you cultivate vegetables in a year?
49. Do you have an additional source of income?
50. What strategy did you used at that time your land start to decrease? (Did you consider part-time job, trading, sharecropping, intensification, change to other crops as strategy)
51. With the chosen strategy (ies) do you think you were successful by improving your finance and food security?

**D. Who are the actors involved in the input supply?**

52. Where do you get your agro-chemicals (pesticides, fertilizers) from?
53. Where do you get your farm equipment (water pumps, sprinklers, watering cans) from?
54. Where do you get your land from?
55. Where do you get financial support from?
56. What type of labour is used for your production?
57. How and where do you get knowledge about intensive vegetable farming?
58. What is your source of water for the crops?

**E. How is the produce marketed?**

59. How are the vegetables sorted for market?

60. Do you have quality standard to conform to?
61. Which group of people does the buying and selling of vegetables?
62. Do you involve in contract selling?
63. If yes, could you give the contract details?
64. How many times do you sell per season?
65. How much sales (money) do you receive per year?
66. How is the payment done?

**F. Is intensive vegetable production in Kumasi Metropolis profitable?**

67. How many types of vegetables do you produce per season?
68. How much sales do you get per each season per crop?
69. How much do you spend on seeds per year?
70. How much do you spend on agro-chemicals (fertilizer and pesticides) per year?
71. How much do you spend hiring farm machines (water pump) per season?
72. What is the cost of hiring one labour per year?
73. How much have you invested (land, equipment etc.) in farming assets?
74. How many hours do you work on average day?
75. How many days do you spend per week on average?
76. Do you borrow money for productive activities?

**G. What is the state of living conditions of urban farmers?**

77. How many people in your household depend on you for their livelihood?
78. What is your average monthly net income?
79. How many people in your household earn income besides you?
80. How much do you spend on utilities (water, electricity) in a month?
81. What is your average monthly spending on food?
82. What is your average monthly on spending on other consumable goods (cloth, shoes, soap etc.)?
83. In the last one year did you skip or cut the size of your meals of the household?
84. How do you describe food security situation in your household?
85. Do you borrow money for consumption purposes?
86. How often do you borrow money?
87. How often are you able to pay back the loan on time?
88. What are the problems you experience while carrying out intensive urban agriculture?
89. What recommendations can you suggest to help solve the problems for future operation of your farming activities?

### **Annex 3: Background of MoFA**

The Ministry of Food and Agriculture (MoFA) is the main organisation and central point of the Government of Ghana, in charge of developing and implementing policies and strategies for the agricultural sector within the framework of a coordinated national socio-economic growth and development agenda. The Ministry programmes and plans are developed, coordinated and implemented through policy and strategy framework by means of sector-wide approach. As a result MoFA facilitated the preparation of the Food and Agricultural Sector Development Policy (FASDEP II) and the Medium Term Agricultural Sector Investment Plan (METASIP 2010-2015).

#### **Vision**

To modernised agriculture culminating in structurally transformed economy which is evident in food security, employment opportunities and reduced poverty.

#### **Mission**

To promote sustainable agriculture and thriving agribusiness through research and technology development, effective extension and other support services to farmers, processors and traders for improved livelihood.

#### **Objectives**

Based on the role of agriculture in the national development framework, FASDEP II has the following objectives:

- Food security and emergency preparedness
- Increased competitiveness and enhanced integration into domestic and international markets
- Improved institutional coordination
- Science and technology applied in food and agriculture development.
- Improved growth in incomes
- Sustainable management of land and environment