

THE INTEGRATION OF URBAN AGRICULTURE INTO SUSTAINABLE CITY
DEVELOPMENT. A CASE STUDY OF ACCRA AND KUMASI CITIES

By

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DECLARATION

I hereby declare that this submission is my own work towards the award of MSc. Development Planning and Management and that to the best of my knowledge it contains no material previously published by another person nor material which has been accepted for the award of any degree of the University, except when due acknowledgement has been made in the text.

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ABSTRACT

The concept of sustainable city/urban development have emerged over the last decades as a new requirement for metropolitan and urban level public action which involves conceptual principles and practices as applied in land use planning. The need for sustainable urban planning and development reached an important point in 2007, when half of the world's population was defined as living in cities. A sustainable city enables all its citizens to meet their own need and to enhance their well-being, without degrading the natural world or the lives of other people, now or in the future. Planning as the framework within which urban development occurs, can and should play a major role in helping to ensure sustainable urban development.

The main thrust of this research was to identify the potential role of planners and policy in the urban food security debate and how to incorporate urban agriculture into urban planning and management. A triangulation of both quantitative and qualitative methods was used in order to give the research statistical and conceptual significance.

A two-stage stratified sampling design was followed. The study focused on the two largest cities in Ghana, Accra and Kumasi. The primary sampling units were Urban Agriculture zones drawn from research from International Water Management Institute (IWMI) in these two cities. Within each stratum three major sites in each region in relation to probability proportional to size (PPS) of the zones were looked at.

The Simple Random sampling method was used to interview the Urban Farmers. The Purposive Sample which involves selecting "typical" individuals or cases from the population based upon

professional experience, knowledge, or judgment was adopted. For the purpose of this research, a sample of 129 respondents from the two Metropolises was used considering a confidence interval of ninety based on the population of urban farmers.

The research demonstrates that urban agriculture is an important feature of the urban land use system. Since the colonial era, urban agriculture remains outside the urban land use system. Despite the fact that it is not integrated into the urban land use system, it is an important feature of the urban economy. It is evident that urban agriculture makes important contribution to employment, income and food supply. The urban economies can greatly benefit from urban agriculture, if all the Metropolitan/Municipal/District Assemblies can develop a policy and institutional framework on the sector.

It is therefore clear from the study that adoption of policies by Urban Planners is key to the realization of urban food security and sustainable city development. In order to realize the full potential of urban agriculture, there is need to develop a policy and institutional framework for the sector. This would enable urban farmers unlock critical technical and financial support services. Also, urban agriculture would be carried out in designated and safe places. This would be mutually beneficial to the farmer as well as the unsuspecting consumer who would be guaranteed of safe produce.

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Table of Content

DECLARATION	i
ABSTRACT	ii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENT	v
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xi

CHAPTER ONE

1.1 Introduction	1
1.2 Problem Statement	2
1.3 Research Objectives	5
1.4 Scope	6
1.5 Research Methodology	8
1.6 Justification	13

CHAPTER TWO

THEORETICAL FRAMEWORK FOR DATA ANALYSIS

2.1 Introduction	17
2.2 Definition and General Principles	17
2.3 Urbanisation and City Growth	18
2.4 Relationship between Urbanisation and Urban Poverty	19
2.5 Urbanisation and Food Insecurity	21
2.6 Urban Food Security	22
2.7 The Importance of Urban Agriculture to Sustainable City Development	24
2.8 Sustainable City Development	27
2.9 Urban Agriculture's Place in Sustainable City Debate	29
2.9.1 Role of the Urban Planners in feeding the city	31
2.9.2 Opportunities of Urban Planners to Effect Land-Use Change	33
2.9.3 Implications of Urban Planning Limits for Urban Agriculture	36
2.10 Integrating Urban Agriculture into Sustainable City Development	37
2.11 Case studies examining integration of urban agriculture into sustainable city development	38
2.12 Lessons on Integrating UA into Sustainable City Development for Ghana	43
2.13 Conceptual Framework	45

CHAPTER THREE

AN OVERVIEW OF URBAN AGRICULTURE IN ACCRA AND KUMASI

3.1 Introduction	49
3.2 Historical Overview of Urban Agriculture in Ghana	49
3.3 Urban Agriculture in Accra	51
3.4 Irrigated urban agriculture in Kumasi	55
3.5 Summary of Urban Agriculture in Accra and Kumasi	58

CHAPTER FOUR

ANALYSIS OF INTEGRATING URBAN AGRICULTURE INTO SUSTAINABLE CITY DEVELOPMENT

4.1 Introduction	60
4.2 Characteristics of Respondents	60
4.3 Demographic Characteristics of farmers	61
4.3.1 Age and Sex of Respondents	61
4.3.2 Educational Status	62
4.4 Employment and Occupational profile of farmers	63
4.4.1 Occupational Status	63
4.5 Urban Agriculture farming characteristics	65
4.5.2 Farming constraints	66
4.6 Understanding planning institutions, policy and decision making process	66
4.7 Recognizing and permitting urban agriculture	67

4.8 Locating urban agriculture activities	68
4.9 Understanding spatial land use planning practices	69
4.10 Integrating urban agriculture into city development	69
4.11 Institutional Analysis	71

CHAPTER FIVE

FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction	75
5.2 Findings	75
5.3 Recommendations	78
5.4 Conclusion	83
References:	85
Appendix 1: Institutional Questionnaire	90
Appendix 2: Household Questionnaire	98

LIST OF TABLES

Table 1:1 Summary of Research Methods and Sample size	16
Table 2.1 Integration of urban agriculture through various planning instruments	35
Table 3.1: The two major categories of urban and peri-urban crop farming in Ghana.	51
Table 4.1: Number of Respondents Interviewed	60
Table 4.2: Age and Sex Structure of Urban Farmers	61
Table 4.3: Educational Levels Attained	62
Table 4.4: Types of Economic Activities	64



LIST OF FIGURES

Figure 1.1: Urban Agriculture sites in Accra Metropolitan Area	6
Figure 1.2: Urban Agriculture sites in Kumasi Metropolitan Area	7
Figure 2.1: Conceptual Framework on integrating UA into sustainable city development	48
Figure 3.1: Map showing open spaces and activities in Accra	53
Figure 3.2: Map showing Major Urban Agriculture and sites in Accra	53
Figure 3.3: Map showing Major Urban Agriculture and sites in Kumasi	57



LIST OF ABBREVIATIONS

AMA	Accra Metropolitan Assembly
APA	America Planning Association
FAO	Food and Agriculture Organisation of the United Nations
FCC	Freetown City Council
IWMI	International Water Management Institute
KMA	Kumasi Metropolitan Assembly
MAFFS	Ministry of Agriculture, Forestry and Food Security
MMDAs	Metropolitan, Municipal and District Assembly
MoFA	Ministry of Food and Agriculture
NAFSL	National Association of Farmers of Sierra Leone
NDPC	National Development Planning Commission
OFY	Operation Feed Yourself
RUAF	Resource Centers on Urban Agriculture and Food Security
SPSS	Statistical Package for Social Sciences
SSA	Sub-Saharan Africa
SUDP	Strategic Urban Development Plan
TCPD	Town and Country Planning Department
UA	Urban Agriculture
UN	United Nations

CHAPTER ONE

1.1 Introduction

Although most of the world's poor people now live in rural areas, the numbers of urban poor, from market towns to megacities, are substantial and cannot be ignored. Between 2007 and 2050, the world population is projected to increase from 6.7 billion to 9.2 billion, and most of this growth will occur in urban areas of less developed countries. Virtually all of the 2.5 billion increase will occur in the developing world's urban areas (United Nations, 2008). Urbanisation *per se* is often a positive development, as urban areas tend to be more productive than rural areas; and therefore driver of economic growth and development. (Overman and Venables, 2005). Rapid population increase in urban areas however can overstretch the capacities of cities to absorb and cater for the overgrowing number of inhabitants.

Most of the world's urban growth in the next two decades – 92 percent – will be absorbed by cities of the developing world, which are least equipped to deal with rapid urbanization. This will be particularly notable in Africa and Asia, where the urban population will double between 2000 and 2030, making up 81 percent of urban growth during that period, with harmful consequences if governments do not prepare now for the coming growth. (United Nations, 2008)

The challenge of supplying nutritionally adequate and safe food to city dwellers is substantial. Accomplishing this task under conditions of growth and congestion demands that policy-makers seize opportunities for integrating resource management and planning efforts, understanding potential linkages between rural and urban areas, and anticipating the changing needs of a country's citizens - both rural and urban.

The concept of sustainable urban development has emerged over the last decades as a new requirement for metropolitan and urban level public action which involves conceptual principles and practices as applied in land use planning. The need for sustainable urban planning and development reached an important point in 2007, when half of the world's population was defined as living in cities. A sustainable city enables all its citizens to meet their own need and to enhance their well-being, without degrading the natural world or the lives of other people, now or in the future. Planning as the framework within which urban development occurs, can and should play a major role in helping to ensure sustainable urban development.

1.2 Problem Statement

In Accra and Kumasi, the cities supply up to 90 percent of the most perishable vegetables (Drechsel et al., 2007). Many of these vegetables are “exotic” ones, and not part of traditional diets. But with increasing urbanization, also diets change. In Accra and Kumasi, for example, street vendors selling fast food purchase 60 percent to 83 percent of the lettuce available in the markets. The remaining share goes to restaurants, canteens and hotels. Private households take only about 2 percent in each of the two cities (Obuobie et al., 2006).

Especially poorer urban households spend about 40 percent of their food budget on street food due to lack of water or space for cooking. It was calculated that about 200,000 people from all walks of life consume in Accra's streets uncooked vegetables from urban agriculture on daily basis. If canteens and restaurants are added, another 80,000 beneficiaries of urban agriculture are possible (Obuobie et al., 2006). But this large group also comprises the part of Accra's

population at risk of food contamination due to polluted irrigation water used for vegetable production as it is common in and around most African cities (Drechsel et al., 2006).

For all urban centres in Ghana, the UN World Food Programme found that the urban poor spend over 67 percent of their income on food as 80 percent of urban dwellers in Ghana have markets as their source of food (WFP, 2009). In the WFP study, 2 percent of 69,000 people surveyed in Accra were food insecure while 4 percent were vulnerable to food insecurity.

UN-HABITAT (2008) states that: “Rather than applying crisis management through ad hoc responses, African governments should consider how they can strategically position themselves for changing urban food requirements and the need for supply strategies and systems in the short, medium and longer term so that they will continue to be able to feed their increasingly urban societies. Policies are needed that protect (peri-) urban agricultural land, land rights and agricultural livelihoods of the poor. Solutions can be found in stimulating urban and peri-urban agricultural production; improving infrastructure to facilitate inputs into agriculture and outputs from agriculture to cities; and better water management to convert the non-productive territories of the continent to food production for internal use and future export” (p. 34).

Despite the needs posed by urban growth with the need for activities of high economic and social value, urban agriculture (UA) is not included in urban development plans and regulated by city authorities. The productive or potentially productive areas of the city that have not been paved over are not limited to communal farms and private gardens. Riverbanks and roadsides, parks, lands under high-voltage electrical towers that cannot be used for buildings and those

surrounding refuse dumps make up much of a city's territory. Spatial Planning of the use and exploitation of these spaces requires the involvement of settlement planners and policy makers with the use of appropriate management tools to avert any sprawl development.

Despite its importance as a major food provider sector, employment generator and its importance in sustaining livelihood for the urban poor and for environmental resources, urban agriculture practice seems hardly integrated in land use planning processes and structures. How to adequately feed this rapidly expanding urban population and maintain the urban environment in urban and peri urban settings in order to satisfy urban demand is a challenge.

There is an evident lack of institutional involvement and methodologies for participative and multi sector planning, for generating viable and sustainable conditions for urban agriculture, with the aim of establishing urban sustainability (Redwood, 2009). Urban agriculture is therefore worthy of appropriate institutional recognition and direct public policy support towards its integration into urban planning and development goals (Drechsel and Dongus, 2010).

The main thrust of this research was to identify the potential role of planners and policy in the urban food security debate and how to incorporate urban agriculture into urban planning and management. The research was also sought answers to the following questions;

- How can urban agriculture be incorporated into urban development?
- How can urban agriculture help reduce the incidence of poverty in the urban areas?
- What is the potential and actual role of urban planning policy and urban planners in promoting and facilitating urban agriculture?
- What are the existing policy frameworks that support or inhibit urban agriculture?

1.3 Research Objectives

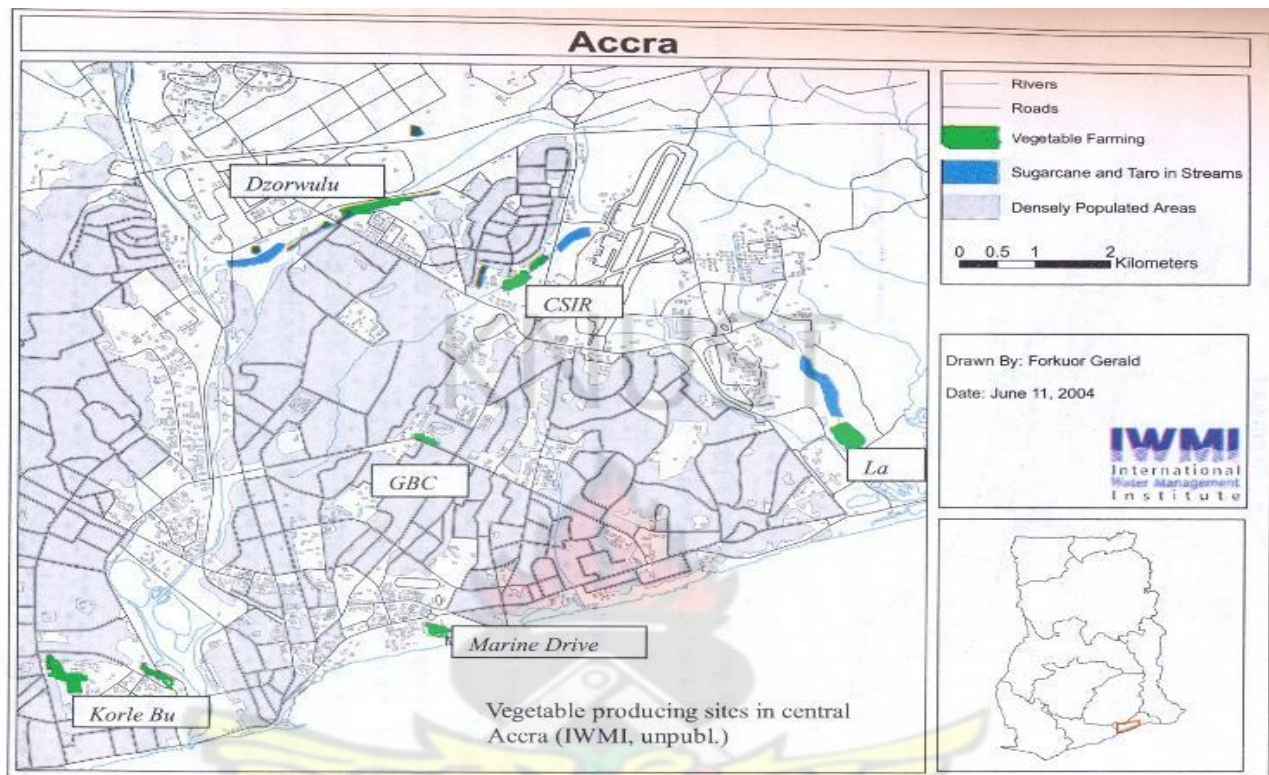
The general objective of the research was to identify critical approaches that will facilitate the integration of urban agriculture into sustainable urban planning. The specific objectives include:

- To assess how urban agriculture can be incorporated into urban development;
- To assess how urban agriculture can reduce the incidence of poverty in the urban areas;
- To analyse the potential and actual role of urban planning policy and urban planners in the promotion of urban agriculture
- To review existing policy framework and make appropriate recommendations.

1.4 Scope

The geographical scope of the study is Accra and Kumasi Metropolitan areas of Ghana.. Accra is the capital city of Ghana and covers an area of about 170 km² and has an estimated population of about 2.121 million. The population growth rate is estimated at 3.4 percent per annum in the city itself but up to 10 percent in its peri-urban districts (UN 2008). Dzorwolu, Marine Drive (Independence square area), GBC and Korle Bu near Salvation Park were the focus of the research. These are the main areas where vegetable production is going on in Accra as can be seen in the figure 1.1.

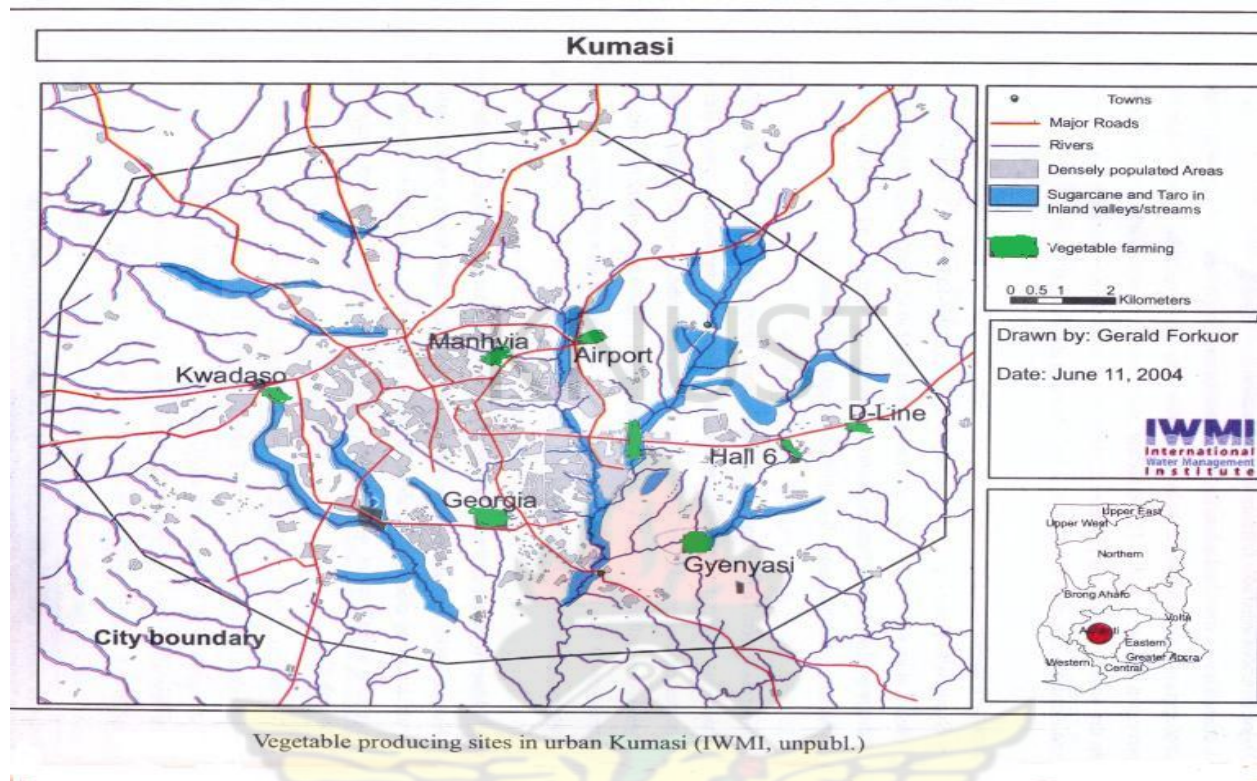
Figure 1.1: Urban Agriculture sites in Accra Metropolitan Area



Source: Obuobie et al, (2006)

The second largest city Kumasi has a total land area of about 225 km², with an average radius of about 7 km (Drechsel, et al. 2006). According to the Ghana Statistical Service (2005), Kumasi has a population of about 1.5 million and an annual growth rate of 5.6 percent. Rivers Wewe and Subin are the main rivers that flow through Kumasi. Urban Agriculture activities along and around these two water bodies was studied. KNUST, Gyenyasi, Manhyia and Hall 6 are the main areas this research was focused on since these are the major areas that urban agriculture is very intensive.

Figure 1.2: Urban Agriculture sites in Kumasi Metropolitan Area



Source: Obuobie et al, (2006)

Conceptually, this work seeks to increase the researcher's appreciation and insight into urban agriculture activities and how planners can help integrate it into policy document and schemes.

1.6 Research Methodology

a. Research Design

A case study approach was adopted for this research. Research constraints as well as the depth of the study were taken into consideration in adopting the case study approach. The study was also based on field data on agriculture in the two Metropolis; these were collected through various data collection methods and techniques. This is because it is not possible to cover all the urban areas in the Metropolis. This is partly due to logistic and resource constraint.

b. Data Collection Techniques

An integrated methodological approach was employed in conducting the research to come out with meaningful findings for implementation. A triangulation of both quantitative and qualitative methods was used in order to give the research statistical and conceptual significance. Relevant information was obtained from both primary and secondary sources. With the primary source of data, questionnaires and interviews were the main tools to obtain primary information.

Majority of the primary data was collected through household survey administered to urban farming households, field observations, and key informant interviews. Key informant interviews and targeted group discussions were carried out to substantiate the data obtained through the questionnaire survey.

Interviews were held with heads and representatives of different institutions including: Accra and Kumasi Metropolitan Assemblies, the Town and Country Planning Department, Ministry of Food and Agriculture, Urban Agriculture Farmers and Accra Working Group on Urban and Peri-

urban Agriculture. Interview guides were prepared and used to elicit information from the various stakeholders involved in urban agriculture.

The secondary data was obtained from published and unpublished literature, internet sources, dailies, news items (radio) among others. This was done with the view of assessing the availability and relevance of secondary data for the study. Again, the secondary data provided the theoretical framework within which the study was carried out.

c. Sampling Techniques

A two-stage stratified sampling design was followed. The study focused on the two largest cities in Ghana, Accra and Kumasi. The primary sampling units were Urban Agriculture zones drawn from research from International Water Management Institute (IWMI) in these two cities. Drechsel et al (2006) categorized urban farming into two farming systems which are market and subsistence productions. The market production refers to cultivation on undeveloped urban land while the subsistence refers to backyard or front yard farming.

The intensity of agriculture being done in these areas was the basis for selecting these sites. Three major sites-market productions- where urban agriculture was intensive in each of the two regions were selected and one area (subsistence production) where it is not so intensive was also included. This design was chosen in order to spread the sample across the strata, ensuring that there would be sufficient sample size in each of the zones. Within each stratum three major sites in each region in relation to probability proportional to size (PPS) of the zones were looked at. After selecting the Urban Agriculture zones, farming households were identified. In addition to providing a list of households for selecting the sample, the household listing provided population

information needed for the weights. The proportional stratified was employed to apportion the number of questionnaires to be administered in each of the farm zones. The purpose of stratified random sampling was to increase research precision by ensuring that key populations of subjects are represented in the sample.

The Simple Random sampling method was further used to ensure that each member of the population (that is the Urban Farmers) has an equal probability of being selected into the sample. The questionnaires were used to collect data since it allows for the collection of information from a large number of individuals relatively inexpensively. It also contributes to reliability by promoting greater consistency through eliminating the variation in questioning that can occur when a number of different interviewers are used. The Simple Random sampling method reduces the introduction of bias by eliminating the ability of interviewers to influence answers either intentionally or inadvertently.

Also the Purposive Sample which is a non-probability sampling method was also used. This involves selecting “typical” individuals or cases from the population based upon professional experience, knowledge, or judgment.

Sample Determination

Before any sampling can be done accurately, it requires that there is {a} an identification of a sampling frame. {B} a determination of the appropriate sample to be a representation of the whole {c} spreading the sample to ensure equal representation.

Sample size: For the purpose of this research, a sample of 129 respondents from the two Metropolises was used considering a confidence interval of ninety based on the population of urban farmers.

This was selected using the formula;

$$n = \frac{N}{1 + N(\alpha)^2},$$

Where, n= sample size N= sample frame. 1= a constant. α = margin of error.

A summary of the various research methods used and the sample size is shown in Table 1:1.

d. Method of Data Analysis.

The data obtained during the survey was analysed using both qualitative and quantitative techniques. Deductive and Inductive methods were used in the analysis. The methodologies employed to analyze the data for this research included both descriptive and inferential statistics. Quantitatively the Statistical Package for Social Science (SPSS) was used in the conversion of data into frequencies and percentages. Statistical tools such as frequency distribution and cross-tabulation were used in the process of presenting and analysing data from the field. Qualitatively, information gathered from the interviews and key informants were summarized into statements and used to clarify some of the results obtained in the study. This also form the basis in coming out with findings and recommendations to inform policies.

e. Organization of Report

Chapter one of the studies consist mainly of the general introduction to study, it objectives, problem statement and research questions, scope and methodology. The subject under discussion set out the problems to guide the conduct of the research.

Chapter two which provided the framework for data analysis deals with a review of the relevant literature on the subject matter. Review of the topic, was based on both theoretical and empirical evidence, which are relevant to the study. It explored the nature and extent of the literature on the subject and thus serves as foundation for the rest of the study. A critical assessment of the contribution of urban agriculture to poverty reduction and the issue of sustainability was explored. The role of the planner and policy in the context of urban sustainability were looked at and how it has been applied elsewhere in the world. The problems associated with it and it successes.

Chapter three looked at the general overview of the study area, and it took a detailed look at the study areas, Accra and Kumasi Metropolitan Areas. It outlined certain aspects of the study area like the location, historical development and growth, size and physical characteristics, demography and socio economic characteristics. It also looked at an overview of urban agriculture in the two Metropolitan areas.

Chapter four looked at the qualitative and quantitative analysis of the study. This included data analysis and presentation that were collected during the primary survey.

Finally chapter five discussed the summary of findings and made recommendations that will help to integrate urban agriculture into sustainable city development.

1.6 Justification

Increasing population growth, rural-urban migration and the re-classification of settlements from rural to urban have contributed to the rapid urbanization of our towns and cities. The Ghana Shared Growth and Development Agenda (2010) project an average urban growth rate of around 3 percent between 2000 and 2030. Ghana's urban population is expected to increase from about 52 percent of the total population in 2010 to around 65 percent by 2030. The rise in urban population, however, puts a strain on limited social infrastructure resulting in congestion, urban economy and the emergence of slums.

Sustainable land and environmental management practices is also to be mainstreamed in agricultural sector planning and implementation as well as the creation of awareness and sensitization of stakeholders on environmental issues and the development of an effective and efficient policy framework for collaboration with appropriate agencies to ensure environmental compliance.

Amongst the key strategies for ensuring sustainable land management include:

- Establishment of land banks by District Assemblies and land owners and stools to resolve the problem of land acquisition and security of title;
- Promote the development of community land-use plans and the enforcement of their use, particularly in urban and peri-urban agriculture;
- Promote the establishment of agri-business zones and land banks with special consideration for needs of women and

- Improved access of operators in peri-urban agriculture to sustainable land and environmental management practices.

When carried out properly under safe conditions, Urban Agriculture (UA) can contribute to food security in three ways.

Firstly, the quantity of food available is increased through both Urban Agriculture and, Urban peri-urban Agriculture. Poor urban dwellers often lack the purchasing capacity to acquire adequate amounts of food. Urban agriculture appears to reduce food insecurity by providing direct access to home-produced food to households and to the informal market. Even for people who have little or no land part-time farming of vegetables can provide food and income.

Secondly, UA enhances the freshness of perishable foods reaching urban consumers, increasing overall variety and the nutritional value of food available. While not universal, case studies have shown differences in nutrition, especially among children, when poor urban families farm. An important reason appears to be that food produced by consumers or in close proximity to them is often fresher than food that travels long distance to markets.

Thirdly, UA offers opportunities for productive employment in a sector with low barriers to entry. UPA is estimated to involve 800 million urban residents worldwide in income-earning and/or food-producing activity. (Urban Harvest; <http://www.cipotato.org/urbanharvet/> accessed 29. 11. 2010)

Urban agriculture is often carried out on a part-time basis by women, who can combine food production activity with child care and other household responsibilities. Case study data indicate that both food availability and incomes in poor farming households are significantly higher compared to households of non-farmers. Interestingly, the urban gardeners are not typically the poorest residents but rather those families that have lived long enough in the city to secure land and water, and become familiar with the market channels for selling surpluses.

Planners implement policies by using tools such as land-use zoning and ordinances, reviews, capital investment, subdivision control and various economic instruments. But the integration of UPA requires going beyond traditional planning approaches. In most of the world's cities, little is known about the actual extent to which inner city areas are used for agricultural purposes. Also, little is known about the spatial distribution of urban agriculture in the cities.

This research therefore aimed at increasing the knowledge on Urban Agriculture in the two major cities of the country. Also how all the various stakeholders particularly planners can help to ensure urban food security looking at the high rate of urbanisation in the country.

Table 1:1 Summary of Research Methods and Sample size

Unit of Enquiry	Data Required	Sampling Technique	Sample Frame	Sample size
Urban Agriculture Farmers	Reasons for engaging in UA Location of farm(s) and period in UA What stops them from growing more food	Stratified Sampling Simple Random Sampling	365	129
Accra and Kumasi Metropolitan Assemblies	Information on official response in the city to urban agriculture Whether areas have been identified for UA activities Whether UA is defined in any of these documents	Interview Guide	2	2
Town and Country Planning Department	Whether UA is recognized as a land use category that is distinct from other land uses How do they promote UPA as positive, productive and essential component for sustainable cities	Interview Guide	2	2
Ministry of Food and Agriculture	Key constraints to urban agriculture Tools and strategies to meet constraints Needs and priorities for future action Is there any policy on UA	Interview Guide	1	1
Accra Working Group on Urban and Peri-urban Agriculture	Why the focus on urban agriculture How do they ensure the provision of safe and better food supply, with increased value	Interview Guide	1	1

Source: Author's Construct, January 2011

CHAPTER TWO

THEORETICAL FRAMEWORK FOR DATA ANALYSIS

2.1 Introduction

In order to get a strong basis for analysis of data, this chapter reviewed literature from various sources on the concept of urban agriculture and sustainable city development. This is to give informed decision on how urban agriculture can be integrated to city development. Also how urban agriculture has been used in different parts of the world to enhance the sustainability of cities and urban centers. The chapter also gives further insight into the issue of urbanization and food security and how urban planners and managers can help to integrate them to ensure sustainable cities feeding themselves.

2.2 Definition and General Principles

The UN HABITAT (2008), defined urbanization as ‘the outcome of social, economic and political developments that lead to urban concentration and growth of cities, changes in land use and transformation from rural to metropolitan pattern of organisation and transformation’.

According to Nord et al (2007), Food security is conceptually defined as “access by all people at all times to enough food for an active, healthy life”.

Urban agriculture can be defined as “the growing, processing, and distribution of food and nonfood plant and tree crops and the raising of livestock, directly for the urban market, both within and on the fringe of an urban area” (Mougeot, 2006). So, it’s a productive economic activity done mainly on open air situations in the urban realm.

“Sustainable development represents a balance between the goals of environmental protection and human economic development and between the present and future needs. It implies equity in meeting the needs of people and integration of sectoral actions across space and time.” (Cruz et al, 2007).

2.3 Urbanisation and City Growth

There is not a definite definition for urbanization, as a result of the different parameter used from country to country. Unfortunately, different countries define urban areas in different ways and change their definitions from time to time. Despite these problems, the UN database is by far the best for cross country comparisons, national databases often being plagued by even worse inconsistencies and even less comparability to the data of other countries

In virtually all countries, the definition of urban ensures that settlements with populations over 20,000 and densities over 1,000 people per square kilometer are considered urban (Satterthwaite, 2007).

Most of the world’s urban growth in the next two decades – 92 percent – will be absorbed by cities of the developing world, which are least equipped to deal with rapid urbanization. This will be particularly notable in Africa and Asia, where the urban population will double between 2000 and 2030, making up 81 percent of urban growth during that period, with harmful consequences if governments do not prepare now for the coming growth (UNDESA. 2007)

A key challenge of the urbanization process is the rapid conversion of large amount of prime agricultural land to urban land use (mainly residential construction), mostly in the urban periphery (Owusu and Agyei 2007). Urban expansion inevitably covers some agricultural land while changes in land values and land markets around cities often result in land left vacant as then owners anticipate the gains they will make from selling it or using it for non-agricultural uses.

When the physical expansion is not checked and regulated it brings many serious consequences. These include the segregation of low-income groups in illegal settlements on the worst-located and the most hazardous sites (they would not be permitted to settle on better-located and safer sites) and a patchwork of high- and low density land uses to which it is both expensive and difficult to provide infrastructure and services.

2.4 Relationship between Urbanisation and Urban Poverty

Urban growth combined with limited employment opportunities in cities is leading to a more rapid increase in poverty in urban areas than in rural areas. A massive 43 percent of African's urban populations live below the poverty line. In several Sub-Saharan nations that share even exceeds 50 percent and Africa's urban slum populations continue to grow: 69 percent of all households in Addis Ababa, 65 percent in Dar es Salaam and 50 percent in Kampala and Nairobi are slum households (UN-HABITAT, 2008).

Poverty is now increasing more rapidly in urban areas than in rural areas, especially in Africa, but most assessments underestimate the scale and depth of urban poverty (UNFPA 2007). Recent comprehensive studies show that unemployment and underemployment are characteristics of

urban economies, and that the populations which are growing most in urban areas are those which cannot access the formal labour market. Further, the infrastructure of cities cannot meet the increased demands for services and this has led to increased crowding and a deteriorating urban environment.

Urban employment opportunities increasingly require higher levels of skills, hampering the ability of the urban poor to access a wide range of jobs due to their lack of skills. Changing occupational structures that favour high skills are even impacting the middle classes, which have to fight for lower-paying jobs in severely constricted and competitive job markets, becoming the “new poor.”

Poverty in the urban areas of developing countries is growing faster than in rural areas. A recent World Bank and IMF report based on more than 200 surveys in 90 developing countries documented a slower pace of poverty reduction during 1993 to 2000 than in the past. The report showed that the growth in urban poverty was 30 percent higher than rural poverty during that time period. This translated into an additional 50 million poor people in urban areas (those living on less than \$1 a day) in a period of just 7 years (IMF, September 2007). In absolute terms, rural poverty remains higher than urban poverty, but urban poverty is growing at a faster rate.

It is therefore clear from the foregoing that, high urbanization without corresponding opportunities for alternative livelihoods is deepening the incidence of poverty in urban areas. This makes it difficult for urban areas in developing countries and Ghana to achieve the first goal of the Millennium Development Goal of eradicating extreme poverty and hunger. With the

growing economic crises and issues of climate change with its effect on urban food security, some countries including Ghana have resulted to dependence on food imports. High dependence on food imports, especially for lower income countries with limited foreign exchange reserves, means that any increase in import prices or decline in export earnings could force a decline in food imports, causing their food security to deteriorate further, hitting first and foremost the urban poor.

2.5 Urbanisation and Food Insecurity

Food insecurity is a complex, multifaceted phenomenon that varies along a continuum of a successive stage as it becomes more severe. It is likely that the proportion of the global population not producing food will continue to grow, as will the number of middle and upper income consumers whose dietary choices are more energy- and greenhouse gas emission-intensive (and often more land-intensive) and where such changes in demand also bring

Rapid urban growth and growing urban poverty should raise concerns particularly about African urban food security, supply and distribution systems. The urban poor are particularly vulnerable to variations in food and fuel prices and in income since food (often over 60 percent) and fuel (often more than 10 percent) make up a large part of their household expenses. It is estimated that the rise in food prices between 2007 and 2008 increased the number of people living in extreme poverty in urban areas in East and South Asia, the Middle East and Sub-Saharan Africa (SSA) by at least 1.5 percent (Baker, 2008).

Although prices of food and fuel have declined in the latter half of 2008 and early 2009, they still remain much higher than they were for much of this decade. Though the food security situation

in SSA improved from 2009 to 2010, nearly half of the region's population remains food-insecure. By 2020, the number of food insecure people in the region is projected to exceed 500 million (USDA, 2010).

The FAO points out that the urban poor are disproportionately affected by rising food prices. There are two main reasons offered for this. First of all, city dwellers are more likely to consume foods that are tradable commodities (wheat, rice), and thus more exposed to market changes. Conversely, in rural areas, diets are often made up of traditional staples such as roots and tubers. Second of all, city residents have much less access to land and other inputs required to grow one's own food (FAO, 2008). This naturally increases their exposure to fluctuating prices and leaves them with few options to react to changing prices.

Although prices of food and fuel declined in the latter half of 2008 and early 2009, they still remain much higher than they were for much of this decade. Though the food security situation in Sub Saharan Africa improved from 2009 to 2010, nearly half of the region's population remains food-insecure. By 2020, the number of food insecure people in the region is projected to exceed 500 million (USDA, 2010).

2.6 Urban Food Security

Food security was first defined in the Proceedings of the 1974 World Food Summit as: 'availability at all times of adequate world food supplies of basic foodstuffs...to sustain a steady expansion of food consumption...and to offset fluctuations in production and prices'. In 1983

FAO expanded its concept to include a third prong: ‘Ensuring that all people at all times have both physical and economic access to the basic food that they need’.

In the World Bank’s (1996) report of Poverty and Hunger, this concept of food security has been further elaborated in terms of: ‘access of all people at all times to enough food for an active, healthy life.’ (UNFAO, 2001).

This definition is again refined in The State of Food Insecurity 2001: ‘Food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary food preferences for an active and healthy life’ (UNFAO, 2001).

Urbanization brings major changes in demand for agricultural products both from increases in urban populations and from changes in their diets and demands. This has brought and continues to bring major changes in how demands are met and in the farmers, companies, corporations, and local and national economies that benefit. It can also bring major challenges for urban food security.

This includes more scope for urban and periurban agriculture. It is difficult to predict how this will change—for instance, if there is a sustained increase in the price of oil and natural gas, this might provide local agricultural producers with some advantages in meeting local demands as their production and transport to market is less carbon intensive, or disadvantage local producers that were serving foreign markets.

At the other end of the spectrum, there is a very large urban population in nations or sub-national regions lacking prosperous economies where demand for agricultural products is likely to change much less. There are many nations where most of the urban population still has no electricity (Legros et al. 2009) and where the profits to be made in food retailing are too small to attract large corporations.

Urban areas provide at the same time a clear potential for food security and an increased risk. Urban diets can be more varied and nutritious than rural ones for those who have the means to access diversified food. However, cities and towns are cash-intensive and residents often have to pay for goods and services (such as fuel, water and housing) that they do not have to pay for in rural areas. High costs for non-food essentials means that urban dwellers must stretch their incomes across a wider range of goods such as housing, energy, transportation, household items, education, health care and personal items, in addition to food.

2.7 The Importance of Urban Agriculture to Sustainable City Development

Urban agriculture has been practiced throughout the world for thousands of years and is an integrated urban form in many places. It is practiced in many areas that city planning is concerned with: on city streets, in public gardens, parks and schools, and in community gardens and offers many benefits to city life. Urban agriculture, although often overlooked in policy development and by city planners, is vital to enhance the health and well being of its citizens (Bentley, 2005).

The potential for food production in cities is great and the benefits to cities are many. Dozens of municipalities are demonstrating that urban agriculture is a necessary and viable urban land use. Urban agriculture, and the food system more broadly, is an integral part of the physical, economic, social and spiritual well-being of places that planners care about (Balmer, 2005).

The potential benefits of urban agriculture is enumerated as follows:

➤ **Urban agriculture as a means to food security**

Urban households involved in UPA are generally more food secure and benefit from a more diverse diet. Studies reveal that in Nakuru, Morogoro and Mbeya (Tanzania) a household's own urban agricultural production was among the most important food source for many poor (and even less poor) households (Foeken, 2008).

➤ **Urban agriculture as a means to a productive city**

Urban agriculture policies can also be part of a local economic development policy that focuses on income generation and employment creation, for a whole range of producers, not only home-based or community-based and not necessarily poor. In this case the rationale for urban agriculture is its economic value and its capacity to generate local economic development. The main aim is to achieve a productive city, one in which produce from outside the city is substituted by locally-grown produce (Cabannes, 2006).

Food production, processing and marketing also contributes to generating income and employment for many poor urban households. According to the World Bank (2007), intensive peri-urban horticultural and livestock rearing are extremely fast-growing sectors that employ many workers and produce high value added products that yield reasonable incomes and returns.

Income and employment are not only generated in production, but also in processing, marketing and agricultural input supply. Although the production levels and turnover of individual urban producers or vendors in many cases will be small, their high number in each city makes their overall contribution to the urban economy highly relevant.

➤ **Urban agriculture as a means to an environmentally healthy city**

Urban agriculture is in other cases part of an integrated *environmental policy*, with its main benefit being the *greening* of the city, increasing citizens' access to nature, *recreation* and *leisure* and their awareness of their environment. Increasing the access to a healthy environment or *reducing the ecological footprint* is both dimensions of an environmentally healthy city (Cabannes, 2006).

If well planned and integrated into urban design, urban agriculture (and specifically urban forestry or tree culture) can help to improve the physical climate. The production of trees, shrubs, flowers, and ornamental plants and food crops can beautify the city, cool its climate, curb erosion and absorb air pollution and odours. Urban agriculture can also positively increase *biodiversity* through ecological, divers and associated production systems.

➤ **Urban agriculture as a means of building resilient cities**

Building more resilient cities is a key issue for future urban development. City adaptation to climate change has become a growing concern. The World Meteorological Organization (2007) suggested more urban farming as a response to ongoing climate change and as a way to build more resilient cities.

UA helps cities to become more resilient by:

- ***Maintaining green open spaces and enhancing vegetation cover*** in the city with important adaptive (and some mitigation) benefits by reducing impacts of high rainfall by storage of excess water, increased and increased infiltration in green open spaces; and maintaining biodiversity in the city, thus protecting a wider base of plant (and animal) genetic diversity (Santandreu *et al*, 2002).

- ***Reducing energy use and green house gas emissions*** by producing fresh food close to the city (less transport, cooling, storage, processing and packaging). Individual health and a sense of empowerment are enhanced when urban dwellers have access to and greater control over their own food system. The city's residents can benefit from cleaner air, lower summer temperatures and recycled waste water and trash.

➤ ***Reducing waste streams and recycling nutrients***

In addition, urban farming systems recycle liquid and solid wastes, thereby reducing waste streams and recycling nutrients that would otherwise be lost. But this recycling advantage also creates risks. It may pollute the soil and water, and it raises questions about the safety of the food produced. Because urban agriculture tends to be part of the informal economy in most countries, municipal authorities do not systematically monitor or regulate these risks.

2.8 Sustainable City Development

The concept of sustainability became widely fashionable after the UN's World Commission on Environment and Development published the Brundtland Report, *Our Common Future* in 1987. Sustainable development was defined as 'development that meets the needs of the present

without compromising the ability of future generations to meet their own needs’ (The World Bank Group).

The UN 2005 World Summit Outcome Document refers to the ‘interdependent and mutually reinforcing pillars’ of sustainable development as economic and social development and environmental protection (The World Bank Group). The concept includes ideas about inter-generational equity, social justice and environmental awareness. It also implies that a global perspective is necessary and that cross-boundary impacts should be considered. Sustainable development is achieved through interactive social, economic, political and environmental processes and policies and considers patterns of development and their environmental, social and economic impacts (Pugh 2000, 206).

Sustainable city/urban development specifically means achieving a balance between the development of the urban areas and protection of the environment with an eye on equity in employment, shelter, basic services, social infrastructure and transportation in the urban areas. (Cruz et al (2007).

Sustainable city planning therefore aims at achieving social and environmental equity while improving the lives of the people. For that to happen we need to have a sustainable city form as well as provision and proper management of the services. Thus, in order for a city or urban area to be sustainable, it needs to produce and manage basic services like water, waste, energy, and transportation in a way that it conforms to the principles of sustainable development. In other words, the city should be able to produce and distribute the services in an economic,

environment friendly and equitable way. Cities in the developing countries are deficient in the provision of basic services that pollute the environment.

Thus one side of the problem is inefficient land policy, which blocks supply of land for efficient and equitable housing, social infrastructure, basic services and transportation. The other side of the problem is how best or optimal the urban areas can be planned so that the urban form can be sustainable. This has prompted the need for finding an urban form that will be sustainable. Various ideas have come up with solutions. One such idea for sustainable urban form is compact city. This necessarily means a high density, mixed land use and efficient public transport planning, which encourages pedestrian oriented habitation.

2.9 Urban Agriculture's Place in Sustainable City Debate

Given the community benefits that UA offers, it is somewhat surprising that the planning policy context (that is, the policy, legislation, organization of government and elected officials and government staff involved in planning communities) is so often accused of posing the greatest challenges to urban farmers and that urban planning professional's lack information on how to cope with UA.

Until now, food system planning has fallen outside the scope of most planning departments. Planners have generally seen the food system as the territory of the private sector, functioning well without public policy intervention. However, advocates recognize the problems with the current food system, and are exploring land use policies as a tool for change.

Because land use is central to food production and distribution, land use planning can be a powerful tool for creating healthier food environments. Just as public health officials have acknowledged the built environment's contribution to the obesity epidemic and have promoted pedestrian- and bike-friendly policies, food system advocates are beginning to engage local governments to set policies that support community-based food systems as a means to create healthier, sustainable, and democratic communities.

Municipal authorities have much to do, in a direct and indirect way, with food security; for example in the promotion, regulation and control of commercialisation, processing and production of food products. Decisions on how to manage available resources (specifically land, water and wastes) and how local governments intervene in this management, affect, positively or negatively, the access poor households and other vulnerable groups have to food. Such policies may take special importance during crisis, and support to urban agriculture can be part of a crisis mitigation strategy and *social safety net*.

Urban agriculture can support the sustainable management of vacant and risk-prone land and water areas by applying specific production techniques and optimising productive use of lands not suitable for construction (steep slopes, roadsides, and water harvesting areas). Urban agriculture may also contribute to cleaning of the city by turning derelict open spaces and vacant land areas into productive and green zones.

Urban and peri-urban farms take on an important role in providing recreational opportunities for citizens (recreational routes, food buying and meals on the farm, visiting facilities) or having

educational functions (bringing youth in contact with animals, teaching about ecology). In more developed cities, urban agriculture may be undertaken for the physical and/or psychological relaxation it provides, rather than for food production per se. Finally, urban agriculture contributes to reduction of the ecological foot print of the city and reduction of energy use for transport, packaging, cooling, etcetera, by producing fresh foods close to the consumers.

2.9.1 Role of the Urban Planners in feeding the city

Among the basic necessities of life –air, water, shelter and food- planners have traditionally addressed them all with the conspicuous exception of food. This was the ‘puzzling omission’ that provoked the American Planning Association (APA) to produce its seminal Policy Guide on Community and Regional Food Planning in 2007, a belated attempt to make amends for the fact that planning community, academics and professionals alike, had failed to engage with the food system (APA, 2007).

Urban planners might justify this ‘puzzling omission’ by claiming that the food system is largely a rural issue and therefore beyond the scope of the urban planning agenda. But there are two reasons why this argument fails to provide a convincing explanation.

Firstly, the multifunctional character of the food system means that it has a profound effects on a host of other sectors- including public health, social justice, energy, water, land transportation and economic development- and these are all sectors in which planners are deemed to have a legitimate interest.

Secondly, the notion that food production is an exclusively rural activity fails to appreciate the significance of urban agriculture, an activity that never disappeared in the hungry cities of the

global south and one which is re-appearing in the more sustainable cities of the global north, where urban designers are re-imaging ‘the city as a farm’.

With the rapid urbanization going on, it means cities must be conscious of the fact that they need to feed themselves given their sensitivity to food shortages. Food planning has therefore become an important and legitimate part of the planning agenda now in both developed and developing economies.

The preservation of agricultural land is increasingly becoming a regional priority, with cities being asked to reduce sprawl as part of the solution. Urban planners can assist in a number of ways:

- Support smart growth and other initiatives that manage urban and suburban sprawl without loss of critical open space and farmland.
- Develop ways for governments, and businesses to preserve existing farms and to convert idle and under used urban lands to areas of food production.
- Secure long term use commitment for community gardens, entrepreneurial farms, and other urban agriculture ventures to ensure the horticultural, social and economic value of the venture.

Urban planners therefore have an enormous task particularly in developing countries like Ghana where planning is ad hoc. Planners are therefore required to put in measures to ensure the overall goal of the Healthy Cities programmes in ensuring health equity in all local policies.

Planners can make the strongest formal contribution through policy reform, and through presenting new ideas about the urban area and appropriate urban activities and overcoming their own biases against urban agriculture.

2.9.2 Opportunities of Urban Planners to Effect Land-Use Change

➤ Land use regulations and policies

Land use regulations also can affect the way food is produced, distributed, and consumed, which in turn can have major impacts on the health of consumers, communities, and landscapes. Land use planning and policies largely occur at the local government level. Unfortunately, planning decisions that influence the food system often are made in an uncoordinated fashion, without an understanding of their impacts on the food security of residents, especially those in lower-resource neighborhoods.

Land use policies can contribute to cities losing farmland on the urban edge, make it difficult or impossible for grocery stores to locate in underserved areas, or allow the concentration of fast food outlets in certain neighborhoods. These impacts can reduce access to healthy foods, contribute to rising rates of obesity and diet-related disease, and diminish the quality of life for residents. Alternatively, more coordinated food systems planning can help to keep family farmers on the land, create jobs, support the local economy, and ensure that everyone has access to quality food.

➤ Zoning

Zoning ordinances also can be used to promote mixed-use development to ensure the cohesion of a local food system. Mixed use is the combination of residential, retail, office, schools, or other uses in the same building or on the same block. Growth is focused into areas where infrastructure for additional residents already exists. To support a local food system, mixed-use development may allow multi-family residential, neighborhood commercial (public markets), small-scale food

processors, and community gardening. This can enable residents to grow some of their own food and supplement it from a public market, both within walking distance of their home.

➤ Urban renewal

This (also called **urban regeneration**) is a process of land re-development in areas of previous moderate to high density urban land use. Urban Renewal is the process of redeveloping deteriorated section of a city, often through demolition and new construction. The typical program attempts to demolish concentrations of dilapidated housing and attract developers of middle-income or mixed housing.

➤ Development control regulations

Development control seeks to harmonies the different uses of urban land according to the approved plan of the area and to ensure that building constructed adhere to standards specified in the building by-laws and planning legislation. Development control emphasizes proper land use planning and includes among other activities subdivisions, extension of lease and building plans.

Takawira, et al (2006) further describe and analyse levels of planning (Table 2.1) and how to integrate urban farming and actors.

Table 2.1 Integration of urban agriculture through various planning instruments

Level of Planning	How To Integrate Urban Agriculture	Actors
Land use Management	Partnership among planning institutions in decision making, outcome implementation, financing, coordination and control <ul style="list-style-type: none"> • Designation of areas for urban agriculture by the city, municipality, town to ensure sustainability • Ensuring security of land tenure to smallholder farmers and other actors 	NDPC, MMDAs, TCPD Private sector, civil society and development partners
Master Plan	<ul style="list-style-type: none"> • State-wide policies and goals for the planning • Designation of areas for urban agriculture by the city, municipality, town or board 	M LGRD, MMDAs, Consultants
Strategic plan	Address issues of urban agriculture on a thematic basis	MMDAs, Town and Country Planning Department
Land use (Layout) Plan or Detailed planning scheme	<ul style="list-style-type: none"> • Create a map indicating land for urban agriculture, among other uses • Show designated land in blocks and plots • Use of surveyors to peg urban agriculture plots 	Metropolitan, Municipal and District Assembly Town and Country Planning Department
Zoning	In periurban areas where land is available and low population density experienced	MMDAs Town and Country Planning Department
Site plan	<ul style="list-style-type: none"> • Indicate areas for urban agriculture within an individual plot or stand 	Individual developers Consultants

Source: Adopted from Takawira, et al, in Van Veenhuizen (2006) with modifications

2.9.3 Implications of Urban Planning Limits for Urban Agriculture

Urban planners in less-developed countries may experience additional challenges, lacking the resources, training or a supportive planning policy context to assist them in their jobs. Increasingly, planners are seeking alternate ways to achieve urban planning goals. The changing role and powers of urban planners have implications for how planners can facilitate or support urban agriculture.

Land is vested in the hands of chiefs and private individuals in many developing countries like Ghana. Therefore even though, the urban planner has more regulatory than supportive and encouraging tools and strategies to effect land-use changes, these becomes ineffective in planning well into the future to ensure sustainable city development. Therefore, a planner may be constrained from doing much more than creating wishful policy. While planners may be able to regulate UA activity and promote opportunities for UA, they may not be able to create new opportunities for UA.

The high rate of urbanization coupled with ad hoc planning makes it difficult for planners to keep pace with development. Planners are therefore chasing development in developing countries instead of setting the pace for development. Therefore, urban planners must react to rather than plan for this kind of settlement. Being a response by the urban poor to a lack of food or employment, Urban Agriculture is practised more in the built city centres, where the planner may have fewer opportunities to support or facilitate the activity.

Many development plans, policies and schemes have been drawn by planners. These normally are left on the shelves without being implemented. The political will and commitment to implement these are the major problems bedeviling the planning profession. With the limited resources available, there is the need for all stakeholders to come together to ensure that laudable plans are implemented to ensure sustainable city development for the well being of all.

Urban planners do have a role to play in permitting and encouraging particular land uses, such as urban agriculture. Urban planners often assist in or act as catalysts for policy development and the acceptance or rejection of land use proposals, help resolve conflict and competition over land resources, and help determine appropriate locations for different activities. However, the final acceptance and rejection of a particular kind of land use in a community is influenced also by politicians (decision makers) at various government levels, municipal staff in other departments, external agencies, especially funding agencies, and the local citizenry. The planner is well positioned to express support for particular kinds of land uses, developments or activities and urge policy and program development to support these, as well as facilitate communication between citizens and politicians.

2.10 Integrating Urban Agriculture into Sustainable City Development

Mougeot (2006), shows that for ensuring urban agriculture is integrated in urban planning for sustainable land development, institutional actors need to recognize the multifunctional character of urban and periurban farming. Likewise, recognise the advantages it brings to the urban community. Secondly, policy must encourage intercommunal approach and be nationally

decentralized. Thirdly, expert's interaction with smallholder farmers in their farming areas is rational.

This shows clear linkages and elements, which need to be instituted in coordinating and decentralizing urban land use functions for effective urban land governance. The integration of urban agriculture in urban planning is a basic need towards improving lives of the urban poor in cities. It takes human nature historical trends, urban planning and settlement design analysis towards integrated manner.

In understanding integration of urban agriculture based livelihood in urban settings there is a strong need for understanding and analysing institutional roles and the relationships between different institutions. Similarly, understanding institutional functions, characteristics, structures, and relationships existing with the urban poor that are smallholder farmers are important for increasing city productivity.

2.11 Case studies examining integration of urban agriculture into sustainable city development

Urban agriculture faces multiple challenges for its acceptability in the urban planning and management system. These include location of the activity in urban areas, accessibility to land, restrictive policy and legal instruments and health effects. Although, the literature shows its advantage in food provision, income generation, and ecological benefits these cannot be underestimated as the case reviewed in this context shows this.

Building an independent town by means of urban agriculture- the case of Freetown

Urban agriculture practice in Sierra Leone, especially in the capital, Freetown, is probably as old as the inception of the city itself. However, the importance of urban agriculture was never appreciated until 1991 when the capital was besieged by different armed fighters determined to topple the then legitimate government of Sierra Leone. The population therefore depended entirely on food aid and agricultural produce from urban agriculture (Hoekstra F 2010).

In essence, urban agriculture was the only job opportunity that existed, which only required basic inputs such as tools, fertilizers and labour to economically engage in urban farming activities. Indeed, almost all available land in the city was fully cultivated and a marked increase of over 60 per cent urban agriculture production was realized. Even today, urban agriculture continues to play a major role in contributing to poverty reduction, and to food security thereby assuring human security.

Urban agriculture is situated in private (e.g. residential) and public or institutional lands, often with complex land tenure arrangements. Most institutional lands are leased, while private and public open space lands are seasonally rented. Land is a primary constraint, agricultural land use being in competition with housing, commercial and industrial land uses. Use of external inputs, like fertilisers, is generally low, and animal manure (from piggeries and poultry units) is mainly applied. Rainwater, streams, pipe borne water, household wastewater and groundwater are common sources of water in crop and livestock activities. Apart from rainwater, most water sources are contaminated and polluted through human and animal excreta, as well as domestic and industrial effluents.

A number of institutions, such as the Ministry of Agriculture, Forestry and Food Security (MAFFS), the National Association of Farmers of Sierra Leone (NAFSL) and Freetown City Council (FCC) provide agricultural extension services (mainly on crops) to farmers. Almost all urban farmers belong to a farmers' association or a community-based organisations, except those individuals who farm the backyards of their homes.

Urban agriculture is now also seen as being fully part of the national development strategy and this has opened several opportunities for urban farmers especially for small-scale enterprises run by unemployed youth and poor women engaged in value addition and marketing of agriculture produce including financing, technical support, research and extension services, and assistance for business planning and development.

Currently the two interlinked priorities for FUPAP are mapping and allocation of land for urban and peri urban agriculture and access to credit and finance by urban and peri urban farmers.

The current FROM SEED TO TABLE (FStT) project focuses on an integrated cluster of enterprises which address the organic waste product marketing challenges through a number of uses and product development. The cluster of enterprises under development includes - besides waste collection and composting - high value horticulture, flower and ornamental plants production, bio gas, enterprises coordinated with a cluster of related enterprises in high value horticulture, compost selling, briquette making, piloting of mixed compost and human waste fertilizers products.

Integration of urban agriculture into urban planning- the case of Dar Es Salaam

In 1992, the city of Dar Es Salaam adopted the Environmental Planning and Management (EPM) approach in its City Consultation. This new approach has been the engine of change in many aspects and also related to urban agriculture.

In the consultation, stakeholders agreed that agriculture in the city contributed substantially (almost 30 percent) in household food supplies and that it had become an integral part of urban livelihood strategies. A Working Group was formed to work out strategies for putting urban agriculture on the city agenda. The Working Group used a participatory approach to come up with a strategic plan on urban agriculture for the city.

The results of this process are good: from action, plan preparation, implementation of demonstration projects and further integration of agriculture in the city's urban zonification. Findings of the working group included results of these projects and were a basis of deciding on where and to what extent agriculture can be practised in the city as reflected in the Strategic Urban Development Plan (SUDP). In this plan, special land zones have been designated for agriculture. Ideas necessary for revising municipal by-laws and regulations were also worked out and a platform for coordination established and enhanced. The SUDP also has deliberately set apart several areas to be used for large- and medium-scale urban agriculture in the future and gives corresponding development conditions. This is contrary to the earlier "zonification" where an area could only be considered for agricultural activities while awaiting to be assigned other to uses such as residential or industrial areas.

The major difference is that the Master Plan considered UA as a transitional land use whereas the SUDP considers it to be an important activity with a very important contribution to its citizens. Recognition is reflected in several laws and regulations, among them are the Agricultural and Livestock Policy (1997) and the National Human Settlements Development Policy (Jan 2000). In Dar Es Salaam, it is seen, that UA can be effectively integrated in urban land use plans.

Adopted from Van Veenhuizen(2006: 53-86) quoting Martin D. Kitilla and Anasteria Mlambo 2003, Integration Of Urban Agriucture in City Development in Dar es Salaam.

Building food-secure neighbourhoods, the role of allotment gardens- the case of Cagayan de Oro.

Cagayan de Oro is one of the three model cities in the Philippines under the UN-Habitat Sustainable Cities Programme due to its efforts in addressing the challenges of urban environmental management and food security. This is particularly evident in its allotment garden programme, which enables multi-functional land uses such as food production and income generation, treatment and nutrient recycling of biodegradable household wastes and excreta, as well as open spaces for community and family activities.

The first allotment garden of Cagayan de Oro was established in 2003 (Holmer et al., 2003). Since then, the number has grown to five self-sustaining gardens located in different urban areas of the city, enabling a total of 50 urban poor families to get legal access to land for vegetable production. These allotment gardens are characterised by a concentration in one place of six to twenty small land parcels of about 300 m² each that are assigned to individual families, who are organised in an association. In the allotment gardens, individual families cultivate the parcels.

Aside from contributing to the food security of the community, the gardens are also essential for the successful implementation of the city's integrated solid waste management programme as mandated under Philippine law. In the city districts that have an allotment garden, the amount of residual wastes delivered to the landfill site has been reduced by more than one third since the segregated biodegradable household wastes are converted into compost in the gardens.

So-called ecological sanitation ('Ecosan') toilets have been recently established in four of the five areas. They serve as show cases for improved sanitation. The city government of Cagayan de Oro is presently mainstreaming the allotment garden concept into its overall city planning and development, which will also use participatory GIS-based approaches to identify suitable areas for future garden sites. A city ordinance is presently being prepared to reduce taxes for landowners who make their land available for this purpose.

Adapted from Van Veenhuizen (2006: 53-86) quoting Robert J. Holmer and Axel Drescher, 2005

2.12 Lessons on Integrating UA into Sustainable City Development for Ghana

The question of land use planning and urban agriculture integration seems questionable particularly in urban planning and management system in the country. Many have raised issues concerning the quality of produce from urban agriculture looking at the location and water used by farmers. However, it is interesting to note that urban agriculture integration into urban planning and management systems is low when compare with other land uses in the major cities of Ghana.

It is clear from the literature that land is very critical to the survival of urban agriculture. The further integration of UPA into municipal and regional urban planning (for example by creating easily accessible farming zones) remains a challenge to be tackled. Although such official recognition of UPA as a legitimate urban land use is an important step, the challenge again remains to operationalise the policy in clear legal and institutional frameworks.

As in the case of Cagayan de Oro, London and other cities in Africa and Europe, there is the need to encourage allotment gardens. A municipal land bank for UA could be set up and conscious efforts should be made to establish allotment gardens. The inclusion of open spaces in urban planning and their protection requires protective laws and regulations. To better enable financial requirements public private partnerships should be encouraged.

A comprehensive plan on sustainability of cities including food security is essential. In Ghana Urban Agriculture is recognize in bye laws of city authorities. It is important to note that policies are only as good as their implementation. Therefore, it is imperative to continue to advocate at

the government level to ensure that these issues are addressed. This may include creating a resolution in support of these goals or addressing the zoning code.

For the city economy to grow and become resilient there is the need for extension services to be extended to these urban farmers also. This will help them to acquit themselves with best practices to minimize the health and environmental concerns raised by people. In the implementation of projects for the development of urban agriculture in Ghana the availability of an efficient system of governance, providing feedback, is a guarantee for the performance of the decisions made and acquires great importance.

The literature has made it clear that planners have a lot to do when it comes to integrating urban agriculture into sustainable city development. Planners have many opportunities or instruments available to them to effect land use changes. Takawira, *et al.*, in Van Veenhuizen (2006:53-86) further describe and analyse levels of planning (Table 2.1) and how to integrate urban farming and actors. Despite the rapid urbanization and the growing concern for food security urban planners can help ensure sustainable city development.

In Ghana urban planners have the legal backing to zone or allocate land for specific uses for the welfare of all citizens. They are supposed to prepare layout or schemes detailing the various land uses keeping in mind the main principles of planning of ensuring; *safety, equity, aesthetics and economic use of land*. They also have other instruments like the master plans, structure plan, and even the site plan to include urban agriculture in the city economy, adopting health regulation, advanced technology and waste recycling to ensure sustainable cities.

It is clear from the foregoing that, urban planners have all the instrument and legal backing to integrate urban agriculture into the city's economy but this has been relegated to the background. This could be attributed partly to the ineffectiveness of the current tools used as development control in the country. The chapter has thrown more light on social capital as a concept that can help to ensure orderly development in our urban areas. The following chapter will therefore critically analyse urban agriculture in the two major Metropolises, of the country and the opportunities available to integrate urban agriculture into city development without compromising aesthetics value, health, food security, and environment.

2.13 Conceptual Framework

It is clear from the literature that lack of social amenities, poverty and coupled with high food prices has rendered many of the urban poor vulnerable. Some therefore resort to Urban Agriculture as a livelihood strategy in order to cope with their dietary and nutritious requirements.

However, many factors are inhibiting these urban poor and others who will like to take Urban Agriculture as a livelihood strategy. Among the most frequently mentioned recommendations in the literature were changes to landuse planning policy to recognize and support urban agriculture. The issue of land, access to water and financial assistance are part of the problem.

These myriads of problems can however be overcome with the right measures in place. The Planning Institution and Policy framework are the two driving forces to ensure urban food security and sustainable city development in the long run. Many of the cities who have been successful have policy at some level that positively recognizes the practice of urban agriculture, although municipal level policy has not been adopted in all cities.

Recognition in policy might take the form of land use Zoning, Master plan, Structure plan and detailed planning scheme where agriculture is a primary or tertiary land use. These are the major tools available to planners to effect land use change and integrate urban agriculture. Policy also serves as a means to counter the potential negative health and environmental effects of agricultural activities; surveyed cities identified restrictions to livestock keeping in residential areas, and to where in the city farming can occur.

With policy in place it will lead to the promotion of urban food security. Promotion of urban food production should take into account the critical role of equitable access to land and water in sustainable urban development. The outcome of this will lead to the allocation of land for urban farmers, inputs and equipments, access to water and market.

The integration of Urban Agriculture into land use planning will lead to the achievement of many economic, social and ecological outcomes. Ecologically, it will lead to urban greening, open green spaces, reducing noise and pollution in the city and urban habitat diversity. All these ecological outcomes from urban agriculture will improve the environmental cover of the city leading to a habitable urban environment.

Socially, sustainable urban agriculture will lead to food security and meeting the dietary needs of many of the urban poor. This will improve their health status and provide them the opportunity to be out of poverty as a soaring food prices which makes them vulnerable. It has also been established that community revitalization are achieved when neighborhoods take pride in a community garden. When inner-city residents gain the ability to grow and market their own

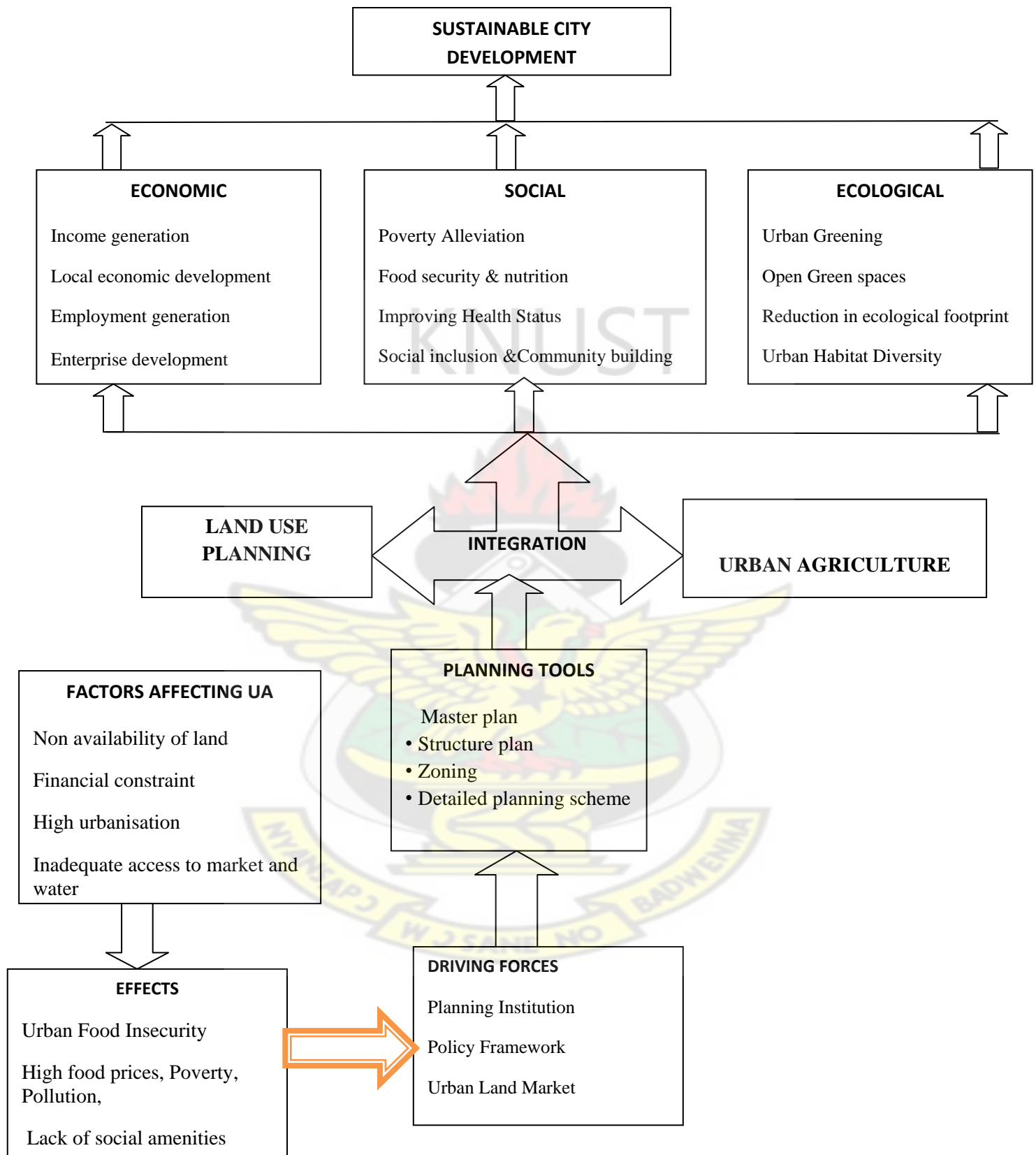
food, and when inner-city farmers' markets provide new opportunities for entrepreneurs and commercial farmers it improves their social safety net and contribute to community building.

Economically, it can lead to income and employment generation. Food production, processing and marketing also contributes to generating income and employment for many poor urban households. Although the production levels and turnover of individual urban producers or vendors in many cases will be small, their high number in each city makes their overall contribution to the urban economy highly relevant. In this case the rationale for urban agriculture is its economic value and its capacity to generate local economic development.

Economic, social and ecological benefits will lead to a productive city. The main aim is to achieve a productive city, one in which produce from outside the city is substituted by locally-grown produce. Sustainable city planning therefore aims at achieving social and environmental equity while improving the lives of the people. For that to happen we need to have a sustainable city form as well as provision and proper management of the services. Thus, in order for a city or urban area to be sustainable it needs to produce and manage basic services like water, waste, and in a way that it conforms to the principles of sustainable development. In other words, the city should be able to produce and distribute the services in an economic, environment friendly and equitable way. This is what is guaranteed when policy and the planning institution with all its tools are put in place will secure in the future.

A pictorial view of the conceptual framework on how to integrate urban agriculture into sustainable city development is shown in the figure 2.1.

Figure 2.1: Conceptual Framework on integrating UA into sustainable city development



Source: Author's Construct February 2011

CHAPTER THREE

AN OVERVIEW OF URBAN AGRICULTURE IN ACCRA AND KUMASI

3.1 Introduction

From the previous chapter various tools and techniques are been used to integrate urban agriculture in many cities in the world. These examples show that it is possible to ensure sustainable city development which the integration of urban agriculture. This chapter therefore looks at Urban Agriculture in Ghana specifically Accra and Kumasi and explores the history behind it in the two Metropolises. The chapter also looks at major sites that Urban Agriculture is being carried out in the two major cities of Ghana.

3.2 Historical Overview of Urban Agriculture in Ghana

Approximately 44 percent of the estimated population of 20 million Ghanaians currently resides in urban areas and in some cities the annual urban population growth rate is estimated at about 4.4 percent (Ghana Statistical Services 2002). This rate of urbanization is rapid and exceeds the current levels of urban infrastructural development, consequently existing limited public services, such as sanitation facilities, are woefully over-stretched and remain inadequate. Waste collection systems are inefficient and solid and liquid wastes are consistently dumped and discharged into urban spaces and open drains. Furthermore, continuous migration of people from rural areas to the cities in search of ‘greener pastures’ creates high pressures on and demands for food and municipal services, while the percentage of urban poor who cannot afford the basic amenities of life also continues to increase.

Urban farming in Ghana assumed prominence between 1972 and 1976 when the then government, through the Operation Feed Yourself (OFY) programme, encouraged farming in the cities due to the harsh economic conditions and related acute shortage of food. These conditions resulted in the devaluation of the Ghanaian currency, huge external debts and unfavourable climatic conditions (severe drought). Supplying food for the country's population became a national issue as prices of food items became exorbitant, especially in the cities (Asomani-Boateng, 2002). The OFY programme was described as the most ambitious programme to respond to Ghana's food problem. It was a crash programme aimed at increasing both food production and promoting national self-reliance by encouraging Ghanaians in rural as well as urban areas to grow their own food. Urban farming activities were tolerated and stringent regulations and by-laws that curtailed the practice were relaxed.

Despite the high interest in urban farming in Ghana after the OFY programme, primary agricultural production remains the smallest economic sector of Accra and Kumasi. It contributes to local economic development in many ways. For example, it provides a reliable and alternative source of livelihood for many unemployed youth and retirees as well as improves the family budgets of the farmers. Urban farming also contributes significantly to food security in urban areas by making food available in the households, and making food more accessible and affordable. Urban farming practices enhance price stability and helps to lower the cost of similar agricultural produce imported from elsewhere. In that way, it contributes towards poverty reduction. Urban farming in Ghana provides gainful employment and reliable income generating activity to many urban resource poor farmers, who otherwise would have been without any source of gainful livelihood to survive the harsh economic conditions.

In Ghana, urban crop farming comprises of two forms: (i) open-space production for the urban market, and (ii) backyard gardens cultivated mostly, but not only, for home consumption (Table 3.1).

Table 3.1: The two major categories of urban and peri-urban crop farming in Ghana.

Farming systems	Urban areas	Peri-urban areas
Market production (cultivation on undeveloped urban land)	Irrigated vegetables (year round or seasonal), flowers and ornamentals; rain-fed cereals	Irrigated vegetables (mostly seasonal), fruits; rain-fed cereals
Subsistence production (cultivation at the house)	Backyard or front yard farming	Home gardens, farming around home

Source: Drechsel et al. (2006)

3.3 Urban Agriculture in Accra

Accra, the capital city of Ghana, covers an area of about 170 km². The city lies along the Gulf of Guinea at latitude 5.626°N and longitude 0.1014°W. It has an estimated population of about 2 million (Ghana Statistical Services 2002) and a functional population of between 3.0–3.4 million. The population growth rate of Accra is about 3.4 percent per annum, however only about 10 percent of this population resides in its peri-urban districts. The opportunity for employment in Accra continues to attract an average of about 25,000 migrants per year and according to Duedall and Maul (2005), this is expected to increase by 82% in 2025.

Accra has a hot humid climate. Mean temperatures vary from 24 °C in August to 28 °C in March. The rainfall pattern is bimodal with the major season falling between the months of March and June, and a minor rainy season around October. Natural drainage systems in Accra include

streams, ponds and lagoons(Songo, Korle and Kpeshie). Flood water drains and gutters are used for grey water, and often drain into the natural systems.

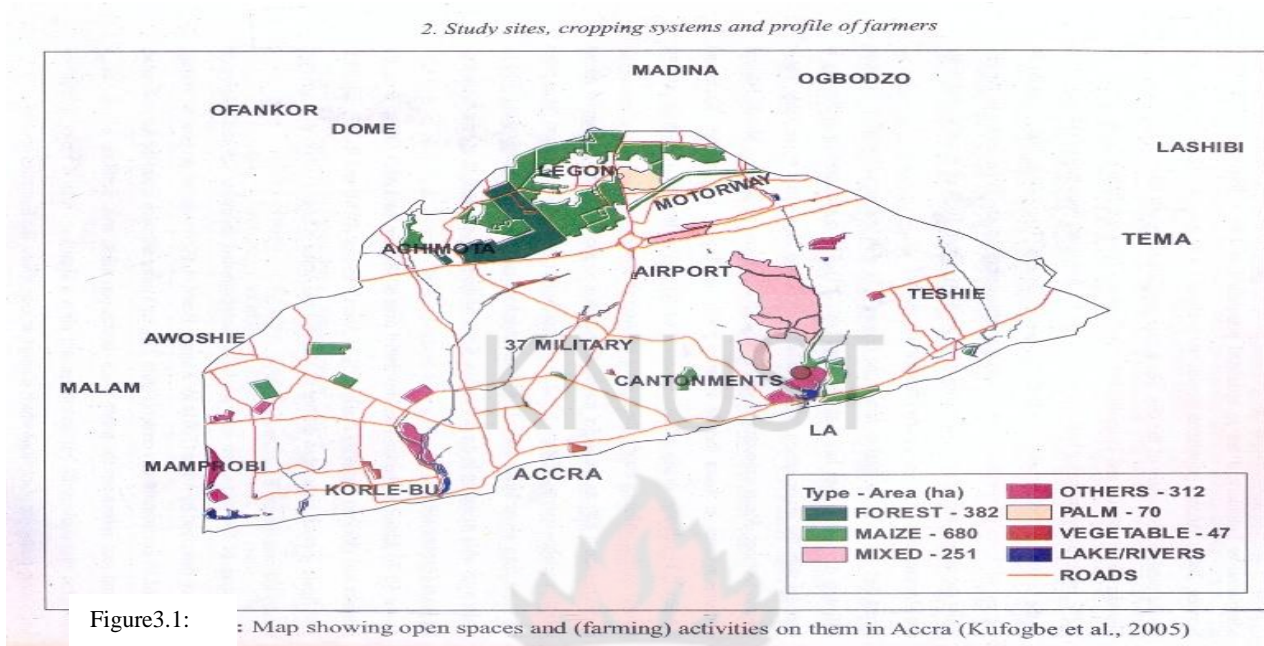
Urban Agriculture Production in Accra

There are seven urban agriculture production types in Accra. These are backyard gardening, fish farming, livestock farming, irrigated vegetable gardening, small ruminants and poultry, seasonal crop farming, miscellaneous, which entails the raising of export crops, micro livestock, snail farming, and bee keeping. Irrigated urban vegetable production has been found to be the dominant agriculture activity within urban Accra (Armar- Klemesu, 2000; Danso et al., 2002. It is mostly practiced along streams and drains in up to seven open spaces in the city. Some of these sites have been under cultivation for more than the last 50 years. Vegetables commonly grown include lettuce, cabbage, cauliflower, green pepper, spring onions, onions, *Ayoyo*, *Alefi* and *Gboma* mainly during the dry season while in the wet season, maize and okro are cultivated in addition. Besides open space farming, many households are engaged in some form of backyard gardening.

Major irrigated vegetable farming sites in Accra

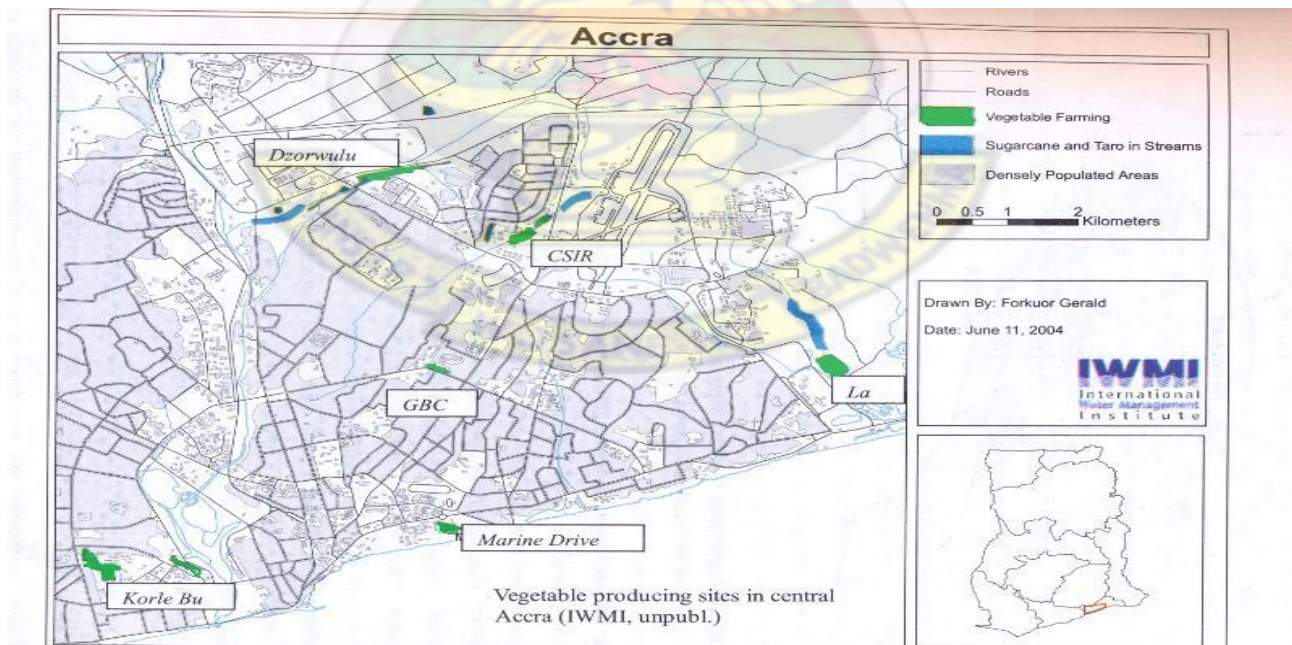
In Accra, there are about 800-1000 vegetable farmers of whom 60 percent produce exotic and 40 percent indigenous local or traditional vegetables. The major irrigated sites in Accra are Dzorwulu, Marine Drive (Independence Square), CSIR, Korle Bu, GBC. Other sites include the Airport Residential Area around the CSIR, IWMI, Mallam and Abelenkpe which are minor sites in the Metropolis.

Figure 3.1: Map showing open spaces and activities in Accra



Source: Obuobie et al, (2006)

Figure 3.2: Map showing Major Urban Agriculture and sites in Accra.



Source: Obuobie et al, (2006)

- Marine Drive at the Independence square

Farming in the area began before 1983 by a religious organization and was aimed at providing employment for the youth and reclaiming the land. The land being cultivated belongs to the Department of Parks and Gardens and was originally zoned by AMA as an open space in line with the beautification of the metropolis. However, lack of funds, time and logistics motivated the Department of Parks and Gardens to enter into informal agreement with farmers and release the land to them to promote “agro-forestry with inter-cropping”. The potential farming area covers 3.6 ha. Water is provided through a narrow wastewater drain connecting the inter-urban area “Ministries” and the ocean.

- Dzorwulu/Plant Pool

The site covers an area of 15 ha. It is divided into two sites by a major road. The farmers have a mutual agreement formalized with VRA for farming in the area as a way of maintain it and to prevent any non-agricultural encroachment. River Onyasias cuts across the farming sites. The river is channeled in this part of Accra like a drain. Some farmers use pipe-borne water, most however water from the major drain or smaller drains channeled into shallow reservoirs (dug-outs). There are about 77 of such small ponds on this site some which are filled with piped water.

- Korle -Bu

The farming site neighbours the largest hospital in Ghana. Most farmers are junior hospital staff like watchmen and cleaners, who farm to supplement their income. The cultivated land area covers about 10 ha, but is decreasing due to building activities. The land where the farming is taking place belongs to the hospital and farming is done under an informal arrangement to keep

the area clean and prevent non-agricultural encroachment. Water is derived from drains, which pass through the hospital compound and staff flats.

Managing urban and peri-urban farming activities within the city of Accra has been on adhoc basis due to lack of reliable information. Unplanned siting of farmlands and indiscriminate usage of available spaces has resulted in problems to the urban dwellers and the farmers. The quest for Accra attaining modern city status has resulted in an urbanisation drive with new structures being constructed daily. Available spaces that were formally used for urban farming are now being converted for construction activities. This situation has compelled the urban low income dwellers, who are mostly engaged in farming practices to encroach waterways for their activities. The situation has led to the creation of pools of stagnant waters, which serve as breeding grounds for mosquitoes, and thus increasing cases of malaria. Unplanned and ineffective management of Accra's urban farming practices has also resulted in the pollution of urban rivers. Encroachment of available empty spaces among development has also resulted in protracted land disputes in Accra. Significant proportions of the farms are also sited along motorways, especially within earmarked road reservations, which compromise the safety of the farmers.

3.4 Irrigated urban agriculture in Kumasi

Kumasi is the capital town of Ashanti Region and the second largest city in Ghana with a population of 1.5 million and an annual growth rate of 5.9 percent. Daytime population- attracted by Kumasi's large central market- is estimated at 1.5 to 2 million people. Kumasi itself has a total area of 225 km² of which about 40 percent is open land.

Currently, the population is estimated around 1.6 million. Kumasi is located between latitude 6°35- 6°40 and longitude 1°30-1°35 and an elevation of about 288ft above sea level. Kumasi experiences double maxima rainfall with the highest amount recorded between June and July. The rock type of Kumasi is predominantly the middle Precambrian with the soil type been that of the forest ochrosol. Again, the vegetation of Kumasi falls within the moist semi-deciduous belt. The vegetation and the nature of the soil coupled with the high rainfall have promoted the development of agriculture in the metropolis. Major crops cultivated include cassava, plantain, cocoyam, maize among others. Major tree species found in the area include ceiba, triplochloen, celtis and other exotic species

Major irrigated vegetable farming sites in Kumasi

In urban Kumasi, most land where farming is done belongs to government institutions, private developers and the stool. There are about 41 ha in the urban area under vegetable irrigation while the peri-urban area has more than 12,000 ha under irrigated vegetable farming mostly during the dry season (Cornish and Lawrence, 2001), twice as much as under formal irrigation in the whole country. The main farming sites in the urban area are shown in Figure 3.3.

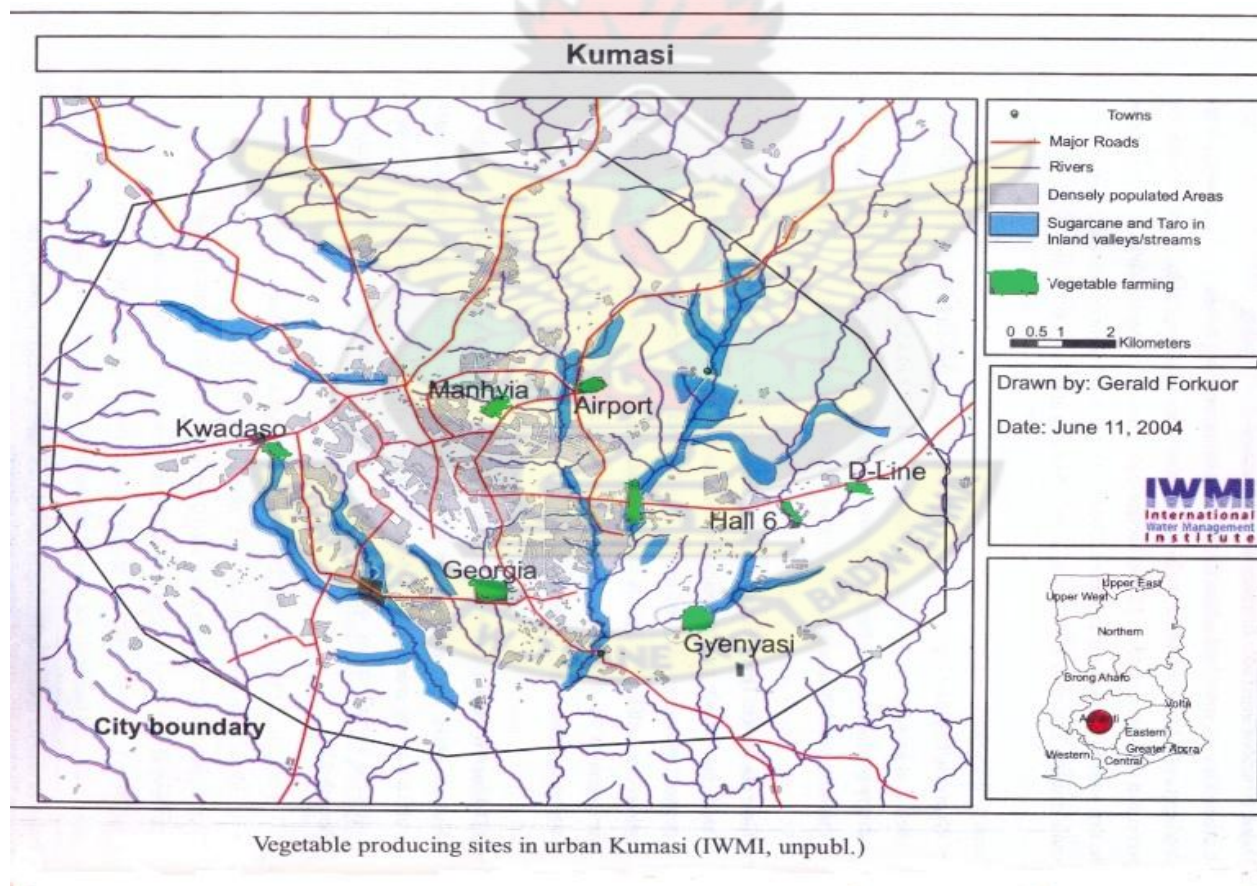
Some well-known sites are:

Gyinyase/Engineering: this is the largest urban vegetable farming site in Kumasi. It is located next to the Kwame Nkrumah University of Science and Technology in an inland valley. The site has a diversity of crops, and farmers practice in part organic farming. Shallow wells are used extensively and there is a well-established farmers organization.

D-Line/Hall 6: this site is located beside the Kumasi-Accra road and farmers predominantly cultivate spring onions. The water source is a small stream, which receives untreated effluents from a significant number of households.

Manhyia: This farming site is located just behind the Manhyia palace and located in an inland valley. spring onions, cabbage, ayoyo and pepper are the major crops cultivated on this site. The water source is a stream that flows through the site and other waste water from surrounding towns.

Figure 3.3: Map showing Major Urban Agriculture and sites in Kumasi.



Source: Obuobie et al, (2006)

Urban farming in Kumasi is typically done along water bodies and drains and backyards that ensure year-round production. The increasing land value in Kumasi is resulting in changes in the use of land for urban farming to use for commercial and economic purposes. Urban and peri-urban agriculture activities take place on residential areas, open spaces reserved for future development, as well as along riverbanks, dams and catchments areas, along roadsides, reserves and hills. Urban farming production systems identified in Kumasi include irrigated vegetable production, backyard gardening and seasonal crop farming.

3.5 Summary of Urban Agriculture in Accra and Kumasi

Most urban farmers in Accra and Kumasi have rural backgrounds and have some level of experience in farming before migrating to the urban areas. Many of them principally come to the city to seek employment opportunities, to trade or to attend school for higher education. Such migrants take up urban agriculture to earn enough money to meet these main needs. However, if they fail, they end up depending on urban vegetable production as a reliable source of livelihood. Later, their children and relatives participate in urban farming. Urban farming in Accra and Kumasi seem to be a reliable and sustainable source of income especially as people with better income levels still continues to practice it.

Increase in the urban demand for food is challenged by low agricultural productivity in rural areas. In response to this situation, an increasing number of city dwellers have resorted to various kinds of income generating activities in the urban informal sector. These activities include intensive urban and peri-urban farming, which takes advantage of urban runoff/wastewater and vacant open spaces in the city for food production. The practice of urban and peri-urban food

production has continued to increase during the last decade in efforts to address the problems of urban poverty reduction and environmental management.

Sustaining urban farming practices in Accra and Kumasi in the long term under the present harsh climatic conditions remains a major challenge to the Ghana government. Lack of reliable geospatial data has prevented developing effective and pragmatic land use management strategies. The growth of the cities, in terms of habitability and competitiveness, has undermined the sustainability of urban farming as a channel of addressing food security in Accra and Kumasi. Having recognised the dynamism of the urban environment of Accra and Kumasi, an innovative approach to address the challenges associated with urban farming is to develop effective data capturing methods. This will facilitate generating baseline information to monitor the changing trends in the city's urban farming activities that will promote pragmatic management policies.

Urban farming in Ghana, contributes to city food supply, employment creation and achievement of sustainable livelihoods, and poverty reduction. Although these benefits are well known, this knowledge has not positively influenced the recognition of urban farming as an important component of urban development and land use planning. This is mainly because of the high demand for land for other more profitable land use sectors and the fact that farming within the city is often associated with health risks by the municipal authorities.

CHAPTER FOUR

ANALYSIS OF INTEGRATING URBAN AGRICULTURE INTO SUSTAINABLE CITY DEVELOPMENT

4.1 Introduction

Having established the theoretical framework of the study, the purpose of this chapter is to use data from the case study areas to test and investigate if the theoretical issues discussed in the preceding chapter concerning integrating Urban Agriculture into sustainable city Development is achievable.

4.2 Characteristics of Respondents

The purpose of the study demanded that data be generated both from urban farmers and institutions who are directly involved in managing city development and agriculture. The institutions interviewed were the Accra and Kumasi Metropolitan Assemblies, Town and Country Planning Departments, Ministry of Food and Agriculture and Accra Working Group on Urban and Peri Urban Agriculture.

Table 4.1: Number of Respondents Interviewed

Institutions / Community	Number of Respondents
Accra and Kumasi Metropolitan Assemblies	2
Town and Country Planning Department (AMA & KMA)	2
Ministry of Food and Agriculture (Metro Offices)	2
Accra Working Group on Urban and Peri Urban Agriculture	1
Urban Farmers (AMA)	66
Urban Farmers (KMA)	63
Total	136

Source: Author's Construct, March, 2011.

In all, a total of 136 respondents were interviewed. Four (4) key informants from the four institutions responded to several questions related to urban agriculture development and city development issues within their respective Metropolitan Assemblies.

4.3 Demographic Characteristics of farmers

4.3.1 Age and Sex of Respondents

To plan effectively for the urban farmers, the various age and sex structures were looked at. 96 and 100 percent of respondents from Accra and Kumasi are males. This clearly attests to the fact that in Ghana is a male dominated activity. From Table 4.2, the survey revealed that women do not dominate urban farming in the two Metropolitan Assemblies. No woman was identified in the major sites in Kumasi whiles in Accra only four percent constitute women. This is much different from other African countries like Sierra Leone and Tanzania where women dominate the sector.

Table 4.2: Age and Sex Structure of Urban Farmers.

Age	Kumasi			Accra		
	Male (%)	Female (%)	Total	Male (%)	Female (%)	Total
15-19	5	-	5	6	-	6
25-29	17	-	17	12	2	14
30-34	47	-	47	49	-	49
35-39	10	-	10	6	-	6
40-44	13	-	13	15	-	15
45-49	5	-	5	5	2	7
65+	3	-	3	3	-	3
Total	100	-	100	96	4	100

Source: Author's Field Survey, March, 2011.

Over 95 and 96 percent of respondents in Kumasi and Accra respectively were in the economically active working group. Almost all the farmers interviewed indicated their desire to continue in this economic venture since it was their main source of livelihood.

4.3.2 Educational Status

The survey showed different patterns of educational status. In Accra Metropolitan Assembly, as many as 47 percent of respondents have had education up to the middle/ Junior High School level, 12 percent up to the Senior High or Vocational level, 6 percent up to the tertiary level and 35 percent have received no formal education.

In Kumasi none of the urban farmers interviewed had attained tertiary educational status whilst 57 percent had had education up to the middle/ Junior High School level. Table 4.3 gives an indication of the levels of educational attainment of respondents in Accra and Kumasi. Despite the fact that 35 percent and 32 percent of urban farmers in Accra and Kumasi are illiterate a high percent of over 65 percent can read and write. This is really encouraging looking at the fact that most of these farmers use agro-chemicals in their operations.

Table 4.3: Educational Levels Attained

Levels	Accra		Kumasi	
	Absolute figure	Percent	Absolute Figure	Percent
Primary	10	15	17	27
JHS/Middle	21	32	19	30
SHS/ Vocational	8	12	7	11
Tertiary	4	6	-	-
Illiterate	23	35	20	32
Total	66	100	63	100

Source: Author's Field Survey, March, 2011.

4.4 Employment and Occupational profile of farmers

4.4.1 Occupational Status

Urban farming provides employment to some youths who are unemployed because more hands are needed on the farm. 45 and 42 percent of farmers in Accra and Kumasi respectively employ on the average 2 people to assist them on their farms. Farmers, vegetable sellers, suppliers of agricultural input and entrepreneurs and all involved in the value chain gain and provide employment to many people and income generation contributing substantially to national development.

With regards to the occupational characteristics of the two Metropolitan Assemblies, 86 percent of respondents interviewed in Accra are self-employed and 8 percent are casually employed and 6 percent are students. Out of these figures, 15 percent are engaged in commerce, 7 percent are engaged in service, 74 percent engaged in agriculture as their main source of employment. In Kumasi 90 percent are self-employed and 6 percent are casually employed and 4 percent are students. Agriculture is the main source of employment for 83 percent, for commerce and service 6 and 11 percent respectively. The remaining 22 and 17 percent in Accra and Kumasi respectively involved in commerce are petty traders and some also sell the produce from their farms. There are other artisans like electricians, mechanics, cleaners, cooks and masons who are also engaged in urban agriculture before and after work each day. In Accra and Kumasi 17 and 12 percent of the respondents are artisans who work on their farms before and after work.

Table 4.4: Types of Economic Activities

Types of Economic Activities	Accra		Kumasi	
	Absolute figure	percent	Absolute Figure	Percent
Commerce	10	15	4	6
Service	7	7	7	11
Agric	49	74	52	83
Total	66	100	63	100

Source: Author's Field Survey, March, 2011.

Depending on the season and demand for their produce, urban farmers in Accra and Kumasi earn about GH¢250 in the dry season (November to March) and about GH¢150 when there is an abundance in the system. Since the vegetables require lot of water, during the rainy season many of the farmers produce more leading to reduction in the price. Box 4.1 indicates the benefits some derive from urban agriculture. Farmers in Kumasi and Dzorwulu are the major ones who normally enjoy all year farming. The rainfall pattern and presence of surface water in Kumasi is favourable as compared to Accra. Those in Dzorwulu with the help of Ghana Water Company Limited can farm throughout the year still using the watering cans.

Box 4.1 Urban Agriculture as a livelihood strategy

Korle Bu: A 66 year old farmer who owns about 35 beds in Korle Bu, cultivating mainly vegetables was a security supervisor when he retired at the Teaching Hospital six years ago. He relates “I am a pensioner and after working for about 16 years earn an allowance of GH¢28 monthly. I couldn't have survived on this meager income up till now. I can now earn about GH¢100 every month and have been able to acquire a parcel of land at Kasoa. I am able to take care of myself and family from these beds daily”.

Dzorwulu: one farmer who is a cleaner and florist with JICA also was delighted that he was engaged in urban agriculture. He has been able to employ three more people to assist him on the farm. He explains “these beds keep me and family going every time. I am able to care for my children education, give employment to others and even my wife who sells the produce from the farm.”

4.5 Urban Agriculture farming characteristics

All the farmers interviewed in the two Metropolitan Assemblies are engaged in crop farming. This they attribute to the fact that there is not enough land for them to keep animals and engage in crop farming at the same time. In Accra and Kumasi, the average farm size is less than an acre making it difficult for farmers to expand their production. Even though land is not the only factor, the relative small farm sizes leads to the under utilization of other resource like labour in their production. The farmers live within the communities and the farthest distance is about 2 km.

The main crops cultivated in the urban areas are Lettuce, Spring onions, cabbage, green/sweet pepper, okro and cauliflower. The availability of water and profits on vegetable production is the main reason why these farmers engage in it. Vegetable farming continues in the urban areas in the rainy seasons, in farm sites like KNUST, Gyinyase, Dzorwulu and Manhyia. Farmers also cultivate some maize, cassava and plantain alongside which are used for subsistence.

On the issue of whether farmers are part of an organisation or group, the study revealed that in Kumasi 40 percent are members of an organized farmer group as compared to 60 percent in Accra. Some of the benefits derived from joining the association are access to farm inputs and credit especially for urban farmers in Dzorwulu and Korle bu. In Osu, the Marine Drive Association is now defunct since 2007 when the City Authorities and Ministry of Tourism and Modernisation of the Capital city wanted to eject the urban farmers. The remaining 60 and 40 percent in Kumasi (KNUST urban farmers association) and Accra (Plant Pool, North Ridge, Dzorwulu, Korle Bu urban farmers association) do not see any need to join the farmer associations since they do not receive any direct benefit from the association.

4.5.2 Farming constraints

There are some issues that are mitigating against the activities of urban farmers. Some of the major constraints are:

- Pest and disease threats to crops
- Inadequate access to credit
- Marketing of produce
- High cost of inputs (fertilizer, pesticides, farm implements, seeds)
- Limited access to land and tenure
- Inadequate access to safe and cheap irrigation facilities (pumps)

In Accra and Kumasi some pests which farmers are finding it difficult to identify are now attacking their lettuce, cabbage and spring onions. About 63 and 47 percent of the farmers in Accra and Kumasi have lost huge sums of money this season to this development even though they could not quantify their cost. Water and land is another major constraint in Accra as compared to Kumasi. All the farmers in Accra have land as their topmost constraint.

4.6 Understanding planning institutions, policy and decision making process

In Accra Metropolitan Assembly, almost all the Departments are involved in urban agriculture. Some of the Departments therefore have a representative who is part of the Working Group on Urban and Peri Urban Agriculture in the Metropolis. However, in Kumasi, the main institutions are the Town and Country Planning Department, Kumasi Metropolitan Assembly and the Metro Office of Ministry of Food and Agriculture.

In the two Metropolitan Assemblies, there is no comprehensive plan or document on Urban Agriculture. It is however mentioned in part in the bye law of the Accra Metropolitan Assembly of 1995 which support backyard farming. The bye law states:

‘No person shall grow crops at a place other than on land within his premises unless he has registered with the Medical Officer of Health furnishing his name and address and the description of the site where the crops are to be grown’

However, open-space farming requires permission from the Medical Officer of Health of the Assembly. This is to help ensure that the land is not polluted and prevent the consumption of contaminated food. The bye laws of the Accra Metropolitan Assembly do not support or prevent open space farming since its bye laws are not enforced. Even though urban farming is seen as an “informal” activity, the Metro health directorate of AMA still goes round to inspect the activities of urban farmers from time to time. It is therefore clear that, the bye laws of AMA for instance is not to ban or promote urban agriculture but to ensure that they maintain good sanitary conditions in the Metropolitan Assembly.

The Laissez-faire style of planning is predominant in the Metropolitan Assemblies. In Kumasi there is no bye law on urban agriculture in the Metropolis. The Assembly does not frown upon or encourage the practice of urban agriculture in the Metropolis.

4.7 Recognizing and permitting urban agriculture

Urban agriculture is considered only in as far as such planning includes some kind of 'green belt' concept. Apart from earmarking such 'buffer' zones, urban planners tend to exclude agriculture from their terms of reference. Urban agriculture is not a distinct land use in the two Metropolitan areas but considered as part of Agriculture land use.

Urban agriculture activities in the two Metropolitan Assemblies according to officials of Ministry of Foods and Agriculture, Metropolitan Assemblies and the Town and Country Planning Department are an “informal” or “illegal” activity. This is because it is not regulated by these institutions and monitored by them. The reality is that urban planners and other officials have no constructive ideas about agricultural activities within and around the city. Some of the officials think looking at the land value of lands in the urban centers and the waste water used it should not be allowed in and around the city center. They consider allotment gardening as 'recreation', animal husbandry as 'pets' and farms around the city as rural activities and officials who even recognize urban agriculture tend to see it as happening in future urban areas'.

4.8 Locating urban agriculture activities

Urban agriculture tends to be carried out on urban land that is not immediately needed or suitable for urban development. In Accra and Kumasi Metropolitan areas where major urban agriculture takes place are on undeveloped government lands. For instance Korle Bu, Ghana Broadcasting Corporation, Marine Drive at Osu, Dzorwulu and Kwame Nkrumah University of Science and Technology Campus. Other places include areas liable to (seasonal) flooding, areas zoned for public open space, road and railway reservations, speculative land (to fetch higher prices for urban development). It depends on the determination of land owners (including governments) to get the maximum surface areas for construction and to develop and maintain public open space (parks), whether little or much land remains for urban agriculture. Soils are not important as UA tends to generate 'man-made soils'. Almost by definition, markets are very near for UA.

4.9 Understanding spatial land use planning practices

The main institution responsible for the preparation, implementation and monitoring of land use planning in the two Metropolitan Assemblies and the country as a whole is the Town and Country Planning Department.

Land use (Layout) Plan or Detailed planning scheme, zoning and site plans are the main tools used for spatial land use planning. The Land use Plan indicates the various uses that the land can be put to. Zoning also gives the Assemblies the opportunity to determine the use of every land.

However, urban agriculture is not recognized as a land use category in the country. It is supposed to be captured as part of the major land use which is agriculture. This is one major setback for integrating it into city development. Even though some form of guidelines exist guiding land development in the study areas, there is none on urban agriculture. The Town and Country Planning Department has provided some guidelines to be followed when developing a parcel of land for residential, commercial, industrial and education but this is silent on urban agriculture.

4.10 Integrating urban agriculture into city development

City development as conceptualized by the planning officer at the Kumasi Metropolitan Assembly refers to *“a conscious effort to create harmony and cohesion between social, economic and environmental activities for sustainable living condition.”*

The official also is perceived sustainable city development as *“a city with vibrant economic activities, reliable infrastructural activities, clean environment and efficient social service delivery.”*

Interaction with the various institutions involved indicates that much education on the benefits and contribution of urban agriculture is needed. There is the need for research institutions and all concerned with Urban Agriculture to help sensitise policy makers, and all the institutions which can contribute to integrating urban agriculture into city development on its pivotal role. Although urban agriculture may be well known by policymakers and planners, in many cases this knowledge does not automatically contribute in their recognizing urban agriculture as an important element of the city economy and land-use system. However, some city officials see urban agriculture as merely a ‘left-over’ of rural habits, which is only temporary until the people accustom themselves to urban life, as a marginal activity with little economic importance, as a health risk and source of pollution that has to be removed.

For now, it will be difficult for city authorities in the Accra and Kumasi Metropolitan Assemblies to incorporate Urban Agriculture into its development agenda. The Land use plans or schemes that exist do not include urban agriculture as a land use category since it is still seen as a rural activity. Further, the Assemblies do not own lands that it can make available to the urban farmers to use. In Accra and Kumasi all the major farm sites are undeveloped government lands which are not sustainable. Whenever the institutions involved want to expand and develop these parcel of land, the farmers will be ejected making it difficult for others to invest in the sector.

4.11 Institutional Analysis

There are various institutions apart from the Town and Country Planning Department involved in urban agriculture in Accra and Kumasi Metropolis. The key stakeholders that contributed immensely to the success of this study are the Town and Country Planning Department, Accra Working Group on Urban Peri-Urban Agriculture, Metro Directorate of Ministry of Food and Agriculture and the Metropolitan Assemblies.

In the Accra Metropolitan Assembly, the Accra Working Group on Urban Peri-Urban Agriculture is the main institution in charge of urban agriculture. It comprises of other Decentralised departments, NGO(s), the media, research institutions and farmers among others.

➤ Accra Multi-stakeholder Forum on UPA

The Multi-stakeholder Forum on Urban Peri-Urban Agriculture was held in 2005 to respond to the need of Urban Peri-Urban Agriculture and seek ways of integrating it into urban policies and planning through stronger participation of key stakeholders. This was organized by the Resource Centers on Urban Agriculture and Food Security (RUAF) in collaboration with the Ministry of Food and Agriculture (MoFA), the Science and Technology Policy Research Institute of CSIR (STEPRI-CSIR), the Food and Agriculture Organisation of the United Nations (FAO) and the International Water Management Institute (IWMI).

The main objectives of the forum were to articulate stakeholders' interests in UA reach a consensus on key issues and make decisions on how to translate decisions into actions. Discussion and decisions at the forum were based on the premise that:

- UA will continue to be practiced in Accra and its surroundings as in other African cities because of its contribution to the livelihoods of urban poor and to respond to the increasing demands for its products;
- The benefits of UA can be maximized while minimizing the associated health and environmental risks if the practice is institutionalized, regulated and integrated into urban planning agenda.

Key issues pertaining to UA were discussed. Among them included the human health, environmental quality and urban development implications of current UA practices, the types and locations of UPA sites, SWOT analysis was also carried out and major gaps and intervention areas needed to effectively promote the production system.

A consensus was therefore reached and it was agreed that research development and policy issues are the priority. A fifteen member Working Group to develop UA Action Plans for implementation and participatory learning through joint monitoring and evaluation was constituted. Now the Working Group constitute twenty members.

The Accra Working Group on Urban Peri-Urban Agriculture therefore formulated a strategic action plan for UA in Accra. In coming out with this policy document, a policy seminar was held to create awareness among policy makers on the importance of UA to urban food security and local economic development and to discuss strategies for minimizing the perceived risks associated with the UPA practices.

➤ The Town and Country Planning Department

The department is charged with the preparation of land use plans (structure plans) to direct and guide the growth and the sustainable development of human settlement in the Metropolis. Creating awareness about the need to obtain planning and development permits as well as the right procedure to use. Assessment of zoning status of lands and proposals of re-zoning where necessary and processing of development/building permit application documents for consideration by the Statutory Planning Committees.

The major tool used to check development is the layout/schemes prepared. Site plans are also prepared to be in line with the schemes this help to ensure that development conform to the scheme. The building inspectorate is charged to ensure that people comply with this in the Metropolis. The Town and Country Planning Department did indicate that the people are involved in plan preparation and implementation. As required by law, the Department is to publish any scheme twenty one days for people to comment about it but people do not attend or visit their officers to add their inputs.

➤ Metro Directorate of Ministry of Food and Agriculture

The Metro Directorate is the main institution at the Assembly level in making and implementing agriculture policies. It is therefore mandated to coordinate the day-to-day activities of the Metropolitan Agricultural development unit. Other responsibilities include;

- ❖ Analysing participation and adoption of appropriate technologies by farmers as well as fisher folks;
- ❖ Organizing and participating in all meetings, workshops related to agriculture to clarify MoFA position;
- ❖ To liaise with all stakeholders and the public at large on program related to the development of agriculture in the Metropolitan Assembly; and
- ❖ To monitor the performance of all agricultural developments in the metropolis and their impact on food production.

The benefits derived from urban agriculture from the city authorities clearly show that it should be encouraged. Some of the benefits include providing jobs and / or food, ornamental plants and amenity (managed open space, fresh air) for the urban residents. In addition, if properly carried out, it could also help controlling floods, limit soil erosion, educate urban people about food production, recycle urban waste as well. These are all functions that would otherwise involve long-distance transport. In order to contribute to sustainable city development UPA needs to be more than just agriculture that happens to be in or next to built-up areas.

CHAPTER FIVE

FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This chapter entails a summary of the major findings emanating from the study and also seeks to summarise issues brought to bare regarding urban agriculture and sustainable city development for a better understanding of the study. The chapter goes further to give recommendations aimed at informing policies on integrating urban agriculture into sustainable city development so as to minimize the risk associated with urban agriculture and strengthen the positive ones to contribute to city development.

5.2 Findings

➤ Demographic Characteristics of farmers

Over 95 and 96 percent of respondents in Kumasi and Accra respectively were in the economically active working group. The sector is male dominated in all the two major cities studied. About 75 and 82 percent these males are migrant who came to the city in search of none existence jobs.

Also about 65 and 68 percent of farmers in Accra and Kumasi respectively have some kind of education. There are also some in tertiary institutions that are 6 percent in Accra who are engaged in urban agriculture activity which is very encouraging looking at the fact that it is perceived to be an activity for those who are drop outs.

➤ **Employment and Occupational profile of farmers**

Agric is the main source of employment for 74 and 83 percent of respondents in Accra and Kumasi respectively. Depending on the season and demand for their produce, urban farmers in Accra and Kumasi earn about GH¢250 in the dry season and about GH¢150 when there is an abundance in the system. This is therefore a major source of livelihood for urban farmers and helps to reduce the incidence of poverty among some of the urban poor.

➤ **Urban Agriculture farming characteristics**

All the farmers interviewed in the two Metropolitan Assemblies are engaged in crop farming. This they attribute to the fact that there is not enough land for them to keep animals and engage in crop farming at the same time. Furthermore, there are no lands designated for urban agriculture in the study areas.

In Accra and Kumasi, the average farm size is less than an acre making it difficult for farmers to expand their production. Farmers use watering cans to carry water from a water source which mostly comprise of hand dugouts, streams and pipe system. There exist farmers organization/groups in the various sites studied even though some are not functioning now. The major constraints affecting the operations of farmers are crop disease, lack of input, water, credit and marketing.

➤ **Understanding planning institutions, policy and decision making process**

In the two Metropolitan Assemblies, there is no comprehensive plan or document on Urban Agriculture. Even though the Accra Working Group on Urban and Peri-Urban agriculture has revised the 1995 bye law and presented to the Accra Metropolitan it has not been approved yet. Guidelines on urban agriculture in Accra have been prepared and presented to policy makers yet still much attention have not given to it. In Kumasi however, there is no bye law on urban agriculture in the Metropolis.

➤ **Recognizing and permitting urban agriculture**

Urban agriculture activities in the two Metropolitan Assemblies according to officials of Ministry of Foods and Agriculture, Metropolitan Assemblies and the Town and Country Planning Department is an “informal” or “illegal” activity. This is because it is not regulated by these institutions and monitored by them.

This is considered only in as far as such planning includes some kind of 'green belt' concept. Apart from earmarking such 'buffer' zones, urban planners tend to exclude agriculture from their terms of reference.

➤ **Understanding spatial land use planning practices**

Land use (Layout) Plan or Detailed planning scheme, zoning and site plans are the main tools used for spatial land use planning. The Land use Plan indicates the various uses that the land can be put to. Zoning also gives the Assemblies the opportunity to determine the use of every land. However, urban agriculture is not recognized as a land use category in the country.

➤ **Integrating urban agriculture into city development**

The Land use plans or schemes that exist do not include urban agriculture as a land use category since it is still seen as a rural activity. Further, the Assemblies do not own lands that it can make available to the urban farmers to use. In Accra and Kumasi all the major farm sites are government lands which are not sustainable.

Although urban agriculture may be well known by policymakers and planners, in many cases this knowledge does not automatically in their recognizing urban agriculture as an important element of the city economy and land-use system.

5.3 Recommendations

➤ **Employment and Occupational profile of farmers**

Urban agriculture however is not the sole solution to poverty alleviation and economic empowerment for the urban poor but is rather complementing rural agriculture. There is therefore the need to link and integrate urban agricultural development activities with other policies and strategies, as well as a comprehensive planning in the future. Specific assistance should be given to food insecure households engaged in urban or agriculture activities, including food production, processing and distribution, to help in achieving a more sustainable livelihood.

➤ **Urban Agriculture farming characteristics**

There is the need to improve access to input and output markets for smallholder farmers. Connecting farmers to markets through rural feeder roads, credit institutions, information and communication technologies, and vertical coordination along the food supply chain is essential

to reducing farmers' risks and marketing costs. The private sector, supported by friendly government policies, can play a leading role in investments in value chains.

Quality control along the entire food chain from production to consumption is essential so that urban consumers can have access to safe and healthy foods. But ensuring a better quality of urban agriculture products will also help producers obtain a better price from the sale of their production.

The organisation of urban farmer associations is a prerequisite to the improvement of urban agriculture. A participatory analysis of local constraints and opportunities is needed as the basis for an interdisciplinary approach to the design and implementation of required assistance.

The **FROM SEED TO TABLE (FSTT) programme needs to be intensified.** This will help improve the production and marketing of lettuce and other vegetables, including direct sale to restaurants and at farmer kiosks.

➤ **Understanding planning institutions, policy and decision making process**

Policy makers should be aware of the benefits of UA and should encourage (1) collaboration between practitioners and researchers, and (2) support to urban farmers to continue producing safe and nutrient-rich products for both home consumption and city markets. Policy makers should ensure that the needs and benefits of UPA are taken into account in physical planning (land tenure, water availability, drainage). They should investigate whether UA is a viable

strategy to improve food security among the urban poor who are not cultivating, and advise municipalities accordingly.

Coordination among the various sectors involved should be encouraged from the urban, local level up to municipalities and the national level. Moreover, all sectors, as well as representatives of the producers themselves, should participate in policy research and formulation.

It is therefore important for the planning institutions, policy and decision makers to have knowledge of some key issues to formulate a comprehensive plan. This includes knowledge:

- i) of who wants to undertake UA and why;
- ii) of where people want to undertake UA and why;
- iii) of what people want to grow and why;
- iv) of the potential negative and positive environmental impacts of UA in the city in question, and of how the positive effects can be optimised, and the negative effect mitigated; and
- v) of the constraints on urban producers and how best to mitigate them

➤ **Recognizing and permitting urban agriculture**

The interdisciplinary approach should be facilitated by Metropolitan/Municipal/District Assemblies who should encourage collaboration between the various sectors and stakeholders involved (research institutions, agronomists, nutritionists, health specialists, post-harvest specialists, home-economists, consumer organisations) in order to better address the needs of both small-scale urban producers and urban consumers.

For instance with the presence of a working group in other Metropolitan /Municipal area will go a long way to help recognize urban agriculture activities since various Departments and organizations are involved. Without affordable land, there will be no space for urban agriculture. City authorities and entrepreneur must make clear agreements concerning land, including price and availability as well as issues such as easement. Entrepreneurs can play a role in the management of green areas in the city.

➤ **Understanding spatial land use planning practices**

City planners will also need to focus attention on strategies to promote physical activity. Urban residents need to be encouraged to exercise, both through promoting healthier environments in which to do so and reinforcing the positive health benefits of regular exercise. These actions should be combined with educational campaigns and community activities to advocate exercise.

In terms of physical planning, urban agriculture should not result in agricultural land becoming part of residential and commercial land uses. It is also important to reorient the sense of socio organization in the area of study, in order to achieve an integrated city, which is habitable and sustainable, by organizing agricultural activities in the City.

Regulations remain restrictive as long as things cannot be settled locally. Zoning plans for urban environments are often obstructive. Fortunately, an increasing number of municipalities are able to find ways to fit in more flexibility and tailor-made work into the spatial planning policy.

➤ **Integrating urban agriculture into city development**

To integrate urban agriculture effectively into city development it is imperative for the following to be addressed.

- ❖ An analysis of existing and future city planning ideas, norms and regulations for land and water use (land use plans, territorial plans, strategic plans) is very critical;
- ❖ Inclusion of UPA in zoning plans;
- ❖ Construct in each of the cities a "urban territorial map", including a spatial classification of different (peri) urban land and water bodies and its uses. In order to do this effectively, there is the need for the Metropolitan and research institutions to collaborate.
- ❖ Elaborate a classification and land use map of different urban and peri- urban spaces (using GIS) since wet lands and “green belts” in the cities are encroached on always;
- ❖ Analyse and classify spaces where UA could be converted into a sustainable and viable land use (compared to other forms of land use);
- ❖ The various actors farmers, consumer groups, agro industry, market-groups, NGO and community based organizations need to be brought on board. There is the need for a participatory analysis of demands and ideas for land and water use;
- ❖ Research institutions, NGOs and Metropolitan Assemblies need to analyse the potential of land and water use for agricultural production, processing and marketing and its implications for urban planning;
- ❖ Describe the actors and the urban planning process, its objectives, strategies and policy instruments; and
- ❖ Propose structures, mechanisms and practical instruments for a better incorporation of UA in urban planning.

➤ Further Research

Urban agriculture not only impacts on urban dwellers, but could also potentially impact on rural dwellers, particularly rural farmers. How could beneficial relationships between urban and rural agriculture be optimized?

Currently the two interlinked areas that need research are; mapping and allocation of land for urban and peri urban agriculture and access to credit and finance by urban and peri urban farmers.

5.4 Conclusion

The study has demonstrated that urban and peri- urban agriculture creates opportunities for poor people to generate income and improve livelihood security; at the same time, these activities can adversely affect existing livelihoods, particularly on the very poor. In fact, while access to water is a crucial requirement for year-round vegetable production, the marginal water quality affects people and the official perception and sustainability of informal irrigation in urban and peri-urban areas.

Urban Agriculture should be incorporated into the planning process at an early stage. There is a growing realization that the design of the scarce open space in the country can (and must) be different. Setting up urban agriculture is one thing, but guaranteeing urban agriculture in a dynamic surrounding such as the city is another. The availability of sufficient land must be secured for an extended period of time.

It is therefore clear from the study that adoption of policies by Urban Planners is key to the realization of urban food security and sustainable city development. In order to realise the full potential of urban agriculture, there is need to develop a policy and institutional framework for the sector. This would enable urban farmers unlock critical technical and financial support services. Also, urban agriculture would be carried out in designated and safe places. This would be mutually beneficial to the farmer as well as the unsuspecting consumer who would be guaranteed of safe produce.



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Appendix 1: Institutional Questionnaire

DEPARTMENT OF PLANNING

COLLEGE OF ARCHITECTURE AND PLANNING

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

Institutional Questionnaire

This Research Instrument is designed to seek relevant primary data for the conduct of an academic study on the topic “THE INTEGRATION OF URBAN AGRICULTURE INTO SUSTAINABLE CITY DEVELOPMENT”. Your support and co-operation is very much anticipated and please be assured that your responses will be treated with utmost confidentiality.

Name of Institution: **Metropolitan Assembly**

Name of Respondent:

Position of Respondent:

Date of Interview:

SECTION A: RECOGNIZING AND PERMITTING URBAN AGRICULTURE

1. Which **agricultural activities are officially allowed** in the city?
.....
.....
2. Name **any restrictions or conditions** that apply to the activities above (e.g., location of activity, participants in activity)
.....
.....
3. What is the Metropolitan Assembly doing to facilitate urban agriculture activities?
.....
.....
4. Is urban agriculture **mentioned in the official documents** of your city?
(a) Yes (b) No (c) Do not know

Is urban agriculture **defined** in any of these documents?

- (a) Yes (b) No (c) Do not know

If yes, please state or attach a copy of the most widely-used definition.

5. How would you **describe the official response** in the city to urban agriculture?

.....

6. Do you think that the practice of agriculture is **appropriate** in the city?

- (a) Yes (b) No (c) Do not know

Please explain

.....

7. What is city development in your context?

.....

8. What constitute sustainable city development?

.....

SECTION B: LOCATING URBAN AGRICULTURE ACTIVITIES

9. **Where** may urban agriculture activities officially occur in your city?

.....

10. Are there **areas where you think agriculture should or should not be allowed**?

- (a) Yes (b) No (c) Do not know

11. In your city's official plan and policies, is urban agriculture recognized as a **land use category that is distinct** from other land uses? (a) Yes (b) No (c) Do not know

If no, is urban agriculture permitted under a different (broader) land use category?

- (a) Yes (b) No (c) Do not know

12. Which land use category (ies) or zone(s) does urban agriculture fall? (check as many as apply)

☐ Residential
 ☐ Commercial
 ☐ Industrial
☐ Agriculture
 ☐ Park/Open Space
 ☐ Other _____

SECTION C: RESPONSIBILITY FOR CONTROL AND GUIDANCE OF URBAN AGRICULTURE

13. Is there **government department or agency responsible** for urban agriculture control, regulation or guidance? (a) Yes (b) No (c) Do not know

If yes, please **name the department(s), agency (ies) and describe the responsibility (ies)**

.....

SECTION D: TOOLS AND STRATEGIES TO INTEGRATE URBAN AGRICULTURE

14. What are the **means used to promote or facilitate urban agriculture** in your city?

.....

15. What information is needed for metropolitan decision makers to formulate good policies regarding UPA?

16. What is the best metropolitan unit for coordinating UA, and should it be a technical (agriculture, environment, planning) or more integrated unit (multi-departmental working group)?

.....

DEPARTMENT OF PLANNING

COLLEGE OF ARCHITECTURE AND PLANNING

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Institutional Questionnaire

This Research Instrument is designed to seek relevant primary data for the conduct of an academic study on the topic “THE INTEGRATION OF URBAN AGRICULTURE INTO SUSTAINABLE CITY DEVELOPMENT”. Your support and co-operation is very much anticipated and please be assured that your responses will be treated with utmost confidentiality.

Name of Institution: MOFA & Accra Working Group on Urban and Peri Urban Agriculture

Name of Respondent:

Position of Respondent:

Date of Interview:

Section A: Understanding planning institutions, policy and decision making process

1. Which institutions are responsible for urban agriculture land allocation and implementation and monitoring?
.....
2. How smallholder farmers organized?
.....
3. Is there a legal framework guiding urban agriculture implementation?
.....
4. What are the processes involved in acquiring land for urban agriculture?
.....
5. What are the suggested modes in which land acquisition can be sustainable for effective urban agriculture implementation?
.....
6. What are the factors hindering urban agriculture?
.....

7. Who are the key actors?

.....

8. Who are the stakeholders?

.....

9. Is there demand for ideas among actors and stakeholders?

.....

10. What are their agenda/voices of planning institutions?

.....

11. What key opportunities, threats, and constraints does the urban agriculture sector face?

.....

Section B: Integrating Urban Agriculture into city development

12. How can land use planning and urban agriculture be coordinated and controlled for sustained poverty reduction, environment, health, and urban land competitiveness?

.....

13. In what ways can urban agriculture be accommodated into urban settings for sustainable land governance?

.....

14. What information is needed for municipal decision makers to formulate good policies regarding UPA?

.....

15. What is the entry point for supporting UPA: the individual famers or producer groups?

.....

16. How can UPA activities be financed in the city?

.....

17. What is sustainable city development?

.....

DEPARTMENT OF PLANNING

COLLEGE OF ARCHITECTURE AND PLANNING

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Institutional Questionnaire

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Name of Institution: **Town and Country Planning Department**

Name of Respondent:

Position of Respondent:

Date of Interview:

Section A: Understanding planning institutions, policy and decision making process

1. Which institutions are responsible for urban agriculture land allocation and implementation and monitoring?
.....
2. How are smallholder farmers organized?
.....
3. Is there a legal framework guiding urban agriculture implementation?
.....

Section B: Integrating Urban Agriculture into city development.

4. How can urban agriculture production systems be developed and promoted in urban settings with reduced negative externalities?
.....

5. How can land use planning and urban agriculture be coordinated and controlled for sustained poverty reduction, environment, health, and urban land competitiveness?
.....
6. How best can urban agriculture be accommodated into urban settings for sustainable land governance?
.....
7. What is sustainable city development?
.....

Section C: Understanding spatial land use planning practices

8. How is spatial land use planning done and in which ways do different actors participate?
.....
9. What tools are used for spatial land use planning?
.....
10. Which institutions are responsible for the preparation, implementation and monitoring of land use planning?
.....
11. What are the procedures for and main components in the land use planning process?
.....
12. How does the decision making process take place in order to enable different actors involved in the land use planning process including initiation, declarations, implementations and allocation of land for smallholder farmers?
.....
13. How do smallholder farmers access land?
.....
14. What forms of land ownerships currently exist in the city?
.....

15. What are the conditions set for changes in land use?

.....

16. What tools are in place for evaluating and monitoring land use outputs?

.....

17. What are the procedures for obtaining urban agriculture permit?

.....

18. Are you aware of any policies or guidelines guiding land development including urban agriculture?

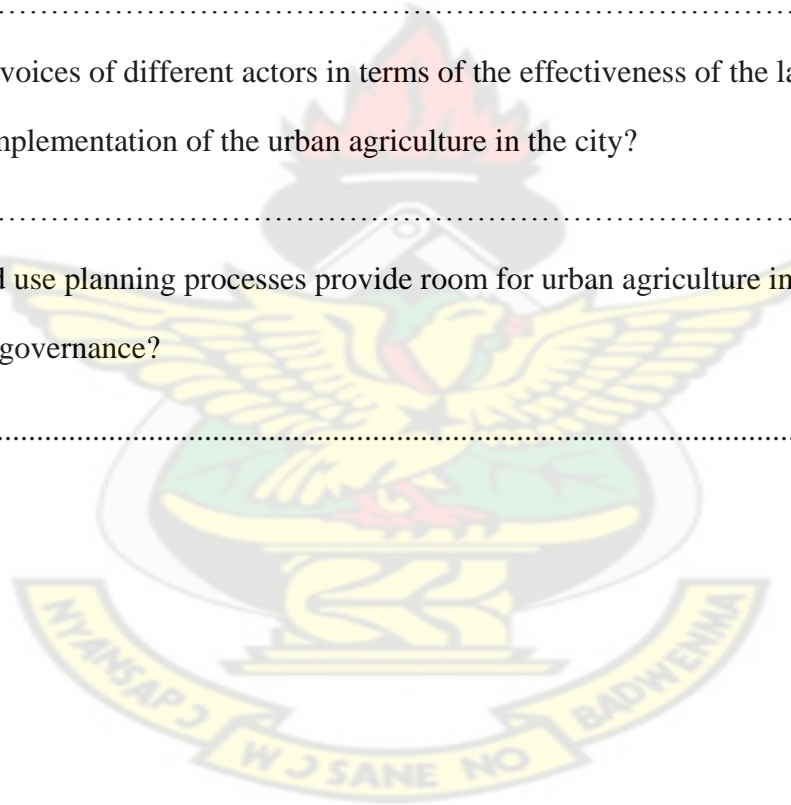
.....

19. What are the voices of different actors in terms of the effectiveness of the land use planning process and the implementation of the urban agriculture in the city?

.....

20. How can land use planning processes provide room for urban agriculture integration in order to improved land governance?

.....



Appendix 2: Household Questionnaire

DEPARTMENT OF PLANNING

COLLEGE OF ARCHITECTURE AND PLANNING

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

Household Questionnaire

This Research Instrument is designed to seek relevant primary data for the conduct of an academic study on the topic “THE INTEGRATION OF URBAN AGRICULTURE INTO SUSTAINABLE CITY DEVELOPMENT”. Your support and co-operation is very much anticipated and please be assured that your responses will be treated with utmost confidentiality.

Name of Institution: **URBAN FARMERS**

Name of Respondent:

Date of Interview:

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Sex of respondent a. Male [☐] b. Female [☐]
2. Age of respondent
3. Occupational status
a. Self Employed [☐] b. Casual Employment [☐] c. Permanent Employment [☐]
4. Educational Status a. Primary [☐] b. Middle/J.H.S [☐] c. Secondary/Vocational [☐]
d. Tertiary [☐] e. Non-formal [☐]

SECTION B: EMPLOYMENT AND OCCUPATIONAL CHARACTERISTICS

5. What is your main source of employment?
a. Agric [☐] b. Commerce [☐] c. Service [☐] d. Industry [☐]
e. Others specify
6. Do you do any other work in addition to this? a. Yes [☐] b. No [☐]

6a.If yes, what other work

7. Are you the only worker in this house? a. Yes [] b. No []

8a. If No, how many people work in this house?

9b. What work do they do?

Name

Work

.....

.....

SECTION C: URBAN AGRICULTURE

10. What type of farming activities are you engaged in?

a. Crop farming [] b. Animal farming [] c. Fish farming []

11. What is the scale of your farming activities?

a. Subsistence [] b. commercial []

12. What type of crops/animals/fishes do you cultivate/rear?

.....

13. What is your reason for cultivating/rearing these crops/animals/fishes?

.....

14. What is the size of your farm?

a. less than acre [] b. 1 – 3 acres [] c. 4 – 6 acres [] d. 7. – 9 acres []

e. more than 10 acres []

15. What is the yield per acre for a season?

16. Where is the farm located? a. within settlement [] b. outside settlement []

17. What is the average distance to the farm?

a. less than 500 m [] b. 500 m – 1 km [] c. above 1km []

18. Where do you market your farm produce?

a. within settlement [] b. other settlement []

19. What was the source of your initial capital?

- a. Own income [] b. Relatives [] c. Parents [] d. Micro-financial institution []
e. Informal money lender []

20. How many people have you employed in your work?

21. Do you belong to any farmers association? a) Yes [] b) No []

21a. If yes, how many members are in the association?

22b. If yes, what benefits do you derive from the association?

23. Do you have access to extension services? a) Yes [] b) No []

24. Do you receive any support from the government? a) Yes [] b) No []

24a. If yes, in what form

.....

25. What problems do face with this work?

.....

26. How do you think they can be solved?

.....

27. Do you have problems with any public institution? a) Yes [] b) No []

28. If yes, what are the problems and institutions?

PUBLIC INSTITUTION	PROBLEMS

KNUST

