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AFRICA'S QUEST FOR FOOD SECURITY: WHAT IS THE ROLE OF URBAN AGRICULTURE?

Arku, G., Mkandawire, P.,
Aguda, N. and Kuuire, V.

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The paper highlights the history behind urban agriculture in Africa and how it flourished largely to meet consumption needs. Today, urban agriculture is becoming increasingly significant as a source of household food. Urban agriculture is generally viewed as a potentially viable policy response to the complex challenge of feeding a burgeoning mass of urban residents amidst decline in food production in rural areas. The practice of urban agriculture today faces varying degrees of opposition from urban authorities and policy-makers, who generally underestimate its actual value and contribution to urban poverty and food insecurity. Climate change and environmental management are pivotal in urban agriculture.

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Arku, G.^{*}, Mkandawire, P.^{**}, Aguda, N.^{***} and Kuuire, V.^{****}

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* Godwin Arku - is Assistant Professor of Geography, University of Western Ontario, Canada.

** Paul Mkandawire - is Assistant Professor of Geography and Development Studies, Carleton University, Department of Interdisciplinary Studies, Canada.

*** Nathaniel Aguda - is Senior Advisor, Innovation Policy Research of the Ministry of Economic Development and Innovation, Ontario Canada.

**** Vincent Kuire - is a Ph.D Candidate, Department of Geography, the University of Western Ontario, Canada

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LIST OF ACRONYMS

ACBF	African Capacity Building Foundation
AIDS	Acquired Immune Deficiency Syndrome
ARV	Anti-Retroviral
FAO	Food and Agriculture Organisation
HIV	Human Immunodeficiency Virus
IFPRI	International Food Policy Research Institute
MDG	Millennium Development Goals
NGO	Non-governmental Organisation
OFY	Operation Feed Yourself
PUA	Peri-urban Agriculture
UA	Urban Agriculture
UN	United Nations
UNDP	United Nations Development Programme

ABSTRACT

The history of urban agriculture in Africa dates to the colonial era when farming flourished in urban areas, largely to meet consumption needs of bureaucrats, settlers, and other elites. Today, urban agriculture is becoming increasingly significant as a source of household food, a trend that is closely linked to declining incomes of vulnerable urban households in the wake of neoliberal economic restructuring, high rates of urbanisation, and the need to serve an emerging niche market in African cities. Urban agriculture is generally viewed as a potentially viable policy response to the complex challenge of feeding a burgeoning mass of urban residents amidst decline in food production in rural areas. Also, recent concern regarding climate change and the need to reduce the environmental footprint that comes from transporting food over long distances has given impetus to the need for urban agriculture. The aforementioned notwithstanding, the balance of evidence from existing literature on urban agriculture indicates that the practice faces varying degrees of opposition from urban authorities and policy-makers, who generally underestimate its actual value and contribution to urban poverty and food insecurity.

The apparent lack of political will necessary to promote African urban agriculture over the years is reflected in weak or absent policy frameworks over the years, resulting in an enormous capacity deficit. Policy makers and planners need systematic information for planning and managing capacity development centered on urban agriculture. Such a focus on urban agriculture will unlock its potential to address the growing urban demand for food and to alleviate urban poverty.

Key words: Africa, food security, Ghana, livelihoods, Malawi, urban agriculture

I. INTRODUCTION

This paper addresses a puzzling and largely underserved issue: the role of urban agriculture for food security in Africa. For decades, the role of urban agriculture in enhancing the situation of urban residents has been either ignored or, at best, treated as having only marginal contribution to the urban economy. Indeed, urban agriculture has been considered a public health nuisance and an activity characteristic of rural and not urban economies. As a result, people who engaged in urban agriculture have been unsupported and harassed, even in years of food shortages. Now, as the potential benefits of urban agriculture for food security, environmental management, and economic development become better understood in policy circles, official attitudes in some countries are slowly but steadily changing.

Contrary to the earlier theoretical and policy obfuscations on the relative importance of urban agriculture, considerable evidence now demonstrates the multi-faceted ways in which urban agriculture impacts urban areas and the national and global economy (see Figure 1). Globally, urban agriculture engages more than 800 million people (UNDP, 1996). Of these, about 200 million are considered market producers, employing approximately 150 million people on a full-time basis. Thus, urban agriculture contributes substantially to food security and safety for approximately 50% of city dwellers worldwide (Appeaning-Addo, 2010). However, it is important to note that urban agriculture in Africa is not an undifferentiated activity. The nature of urban agriculture and the challenges it poses tend to vary across different social and spatial contexts. Where applicable, the paper points out these variations and how they bear on the practice and relative contribution of urban agriculture without necessarily sacrificing larger picture in terms of overall significance of city farming.

The purpose of this paper is to demonstrate the critical role of urban agriculture in Africa's quest for food security. The key proposition, based on both experience and theoretical scholarship, is that urban agriculture contributes directly and indirectly to food security, livelihood, and various aspects of the urban economy as a whole. For instance, Food and Agriculture Organization (FAO) research indicates that the condition of adults and children plagued with diseases and living in low-income areas can improve significantly if they are engaged in urban farming (FAO, 2007). Such engagement, it is argued, decreases malnutrition and increases the quantity of food intake (Bryld, 2003). Furthermore, urban residents, who generally are dependent on the urban market for access to food, purchase more than 90% of their food (IFPRI, 2003), and with the rapid growth of Africa's urban population, demand for fresh foodstuffs will inevitably increase. Urban agriculture, therefore, can resolve one of the most pressing issues for national policymakers: how to solve the increasing food need of Africa's burgeoning urban population, an issue that has also attracted the attention of international development agencies, non-governmental organizations, and a host of foundations.

For urban agriculture to play such an instrumental role, appropriate policy instruments must ensure that the sector functions well. Furthermore, strong institutional capacity at all levels of Africa's national economies will be needed to deal with challenges that arise from urban agriculture. For instance, cities will need to build the capacity to deal with negative urban ecological changes, including changes in disease ecologies as farm lands act as breeding grounds for such disease vectors as malaria and bilharzia. Given that urban agriculture is intertwined with environmental

issues (e.g., pesticide and inorganic fertilizer use), African cities will require the capacity to develop and implement policies that promote ecologically sound urban agriculture. Existing land tenure systems will also have to be adapted to ensure that they better support the cause of urban agriculture.

The paper is structured as follows: Following the introduction, Section two provides a working definition of urban agriculture and summarizes its relevant characteristics in Africa. The section also distinguishes between urban agriculture and peri-urban agriculture and explores the differences and similarities between these forms of agriculture. Section three presents a conceptual framework for understanding the role of urban agriculture. It argues that although urban agriculture has significant short- and long-term roles, those roles are mediated by factors at the international, national, and local levels. Section four provides a detailed assessment of the contributions of urban agriculture to food security in African countries, focussing on its impact on the urban poor. Section five explores urban space and planning issues in African cities and their implications for urban agriculture. Section five also examines the institutional framework and policy environment within which urban agriculture operates, and it describes the lack of adapted regulations and policies and the weak enforcement mechanisms from African states, particularly from city authorities. Section six focuses on two issues central to urban agriculture, water access regulation and land tenure policies, and discusses the role of national and local authorities in shaping these issues to better support long-term urban agriculture. Section seven addresses the issue of crops in urban agriculture. Section eight presents two case studies that highlight some of the issues discussed in the paper in practical terms. Finally, Section nine presents some policy options and recommendations for enhancing the capacity of urban agriculture in Africa.

II. DEFINITION AND KEY CHARACTERISTICS OF URBAN AGRICULTURE IN AFRICA

A general consensus about the exact definition of urban agriculture does not exist. However, many researchers tend to define urban agriculture as any agricultural enterprise within or on the fringes of a town, city, or metropolis that grows or raises, processes, and distributes food and non-food products (Moustier, 1999; Mogeout, 2000; Bryld, 2003). Some scholars have considered related practices, such as the production of agricultural goods by urban residents within officially defined urban spaces (Zezza and Tasciotti, 2010). Yet others define urban agriculture as any farming activity occurring in built-up 'intra-urban' areas and 'peri-urban' fringes of cities and towns (Thornton, 2008). These varied definitions illustrate the peculiarity and diversity of urban agriculture and, therefore, the range of policies and actors affected by it. These definitions also illustrate some intrinsic problems associated with the conceptualization of urban space.

Rigid conceptions that focus excessively on urban–peri-urban dualisms or rural–urban binaries may be useful on a range of scales, but they also gloss over important interactions that make rural and urban spaces interdependent and mutually constitutive (Tacoli, 1998; de Bon et al. 2010). Hence, a perception of urban agriculture as a dynamic concept is paramount, as is the recognition of the diversity of urban agriculture. Bryld (2003) argues that policymakers and scholars dealing with urban

agriculture issues should not only consider the particularities of the setting but also understand that urban agriculture is not an isolated phenomenon. The practice is diverse and interconnected with various urban, peri-urban, and rural activities. Although scholars have difficulty providing a classification that neatly captures the distinctive characteristics of urban agriculture, classifications can be created by using a range of attributes, including the physical location for the activity, motives and gender of practitioners, scale of cultivation, kinds of crops, sources of labour, and land tenure issues, as reflected in Table 1 below.

Table 1: Characteristics of Urban Agriculture (UA) and Peri-Urban Agriculture (PUA)

Attribute	Home subsistence farmers	Family-type commercial farmers	Multi-cropping peri-urban farmers	Entrepreneur
Location	UA-Backyard home gardening/farming	PUA-UA Open spaces and unused land spaces	PUA Unused land spaces	PUA Unused land spaces
Outlets	Home	Urban markets	Home + urban market	Urban market + export
Objective	Home consumption	Income for subsistence	Home consumption and income for subsistence	Additional income, leisure
Size	Usually < 100m ²	Usually < 1000m ²	Usually > 5000m ²	Usually > 2000m ²
Products	Leafy vegetables, cassava, plantain, maize, rice, goats, sheep, poultry, fruits	Leafy vegetables, temperate vegetables, poultry, sheep, milk	Staple food crops, local vegetables	Temperate vegetables, fruits, poultry, livestock, fish
Intensification ¹	2	2-3	1	4
Gender	F	F + M	F + M	M
Limiting factor	Small size	Small size, access to inputs, marketing risks, water and services,	Access to inputs, fertility	Technical expertise, marketing risks
Land Tenure	Secured land access	Land insecurity	Land insecurity	Secured land access
Labour	Family labour	Family and hired labour	Hired labour	Hired labour

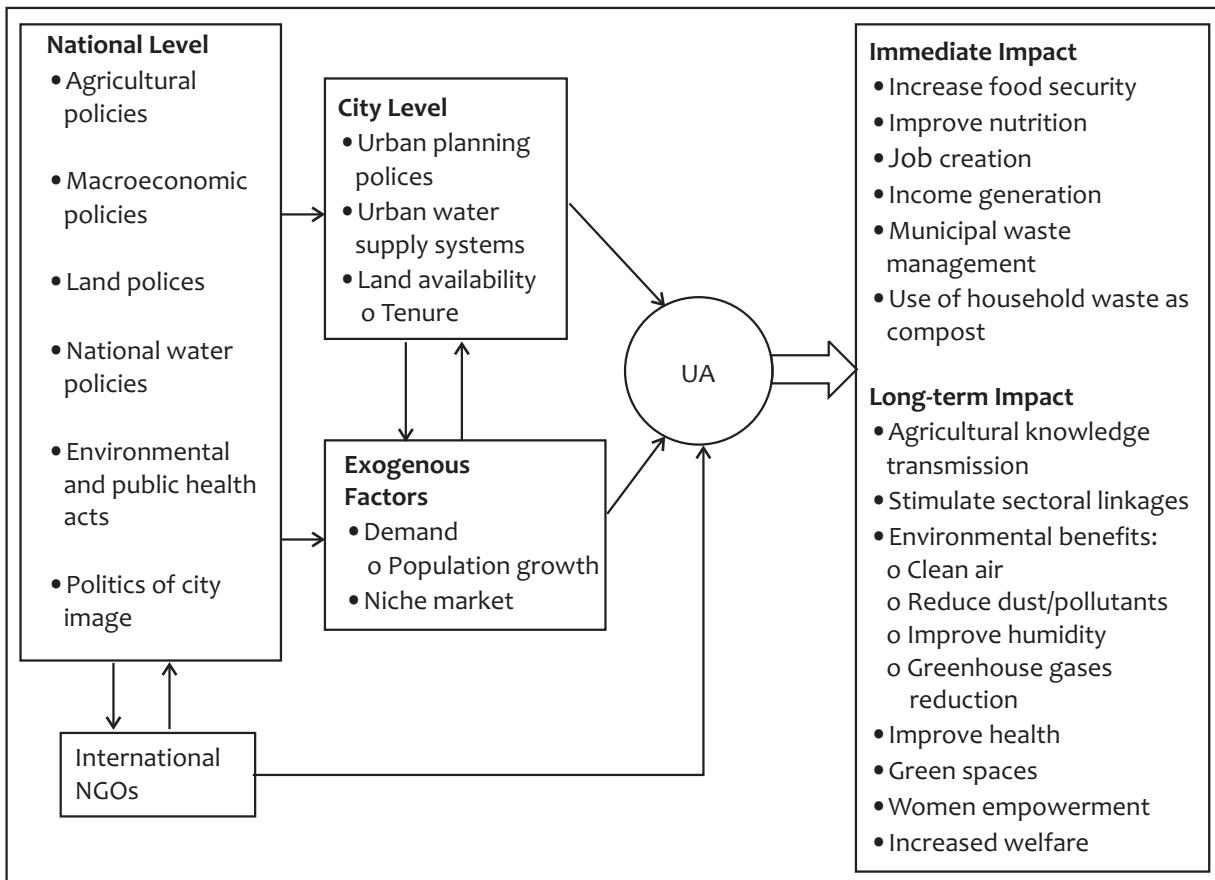
Source: modified from Moustier & Danso (2006)

¹Inputs per hectare on farm(ed) land.

III. CONCEPTUAL FRAMEWORK FOR MAPPING THE ROLE OF URBAN AGRICULTURE

The urban agriculture sector is shaped by international, regional-level, national and variables. However, once policy makers establish the right policy framework, urban agriculture can profoundly affect economies at various levels, in both the immediate and the long term. Figure 1, illustrates the various ways the broader policy environment can shape urban agriculture in African cities in general.

Figure 1. Conceptual framework for understanding the role of urban agriculture.



Source: Authors' Conceptualization

National-level policies

National policies can have both a direct impact on urban agriculture, such as through legislation that outlaws or supports the production of certain crops, and an indirect impact, such as through price incentives that shape demand for certain foods (Figure 1). National policies can also provide a broader framework that provides a context for municipal by-laws. Local and national transport policies and transport modalities also interact with land use patterns which can affect urban agriculture. For example, national or local government decision to construct a road in an area can lead to displacement of farms and destruction of crops. However, this decision can promote agriculture at a different level, as road construction ultimately leads to improved access to markets and other services. That said, the causal chain between national or local government policies and

urban agriculture is not necessarily unidirectional; the perceptions of government and city authorities regarding the nature, extent, and significance of urban agriculture can also influence national policy positions.

a) Agricultural policies—The government may take an official position to achieve national food sufficiency through domestic production, international markets, or some combination of the two. The position determines what importance the government places on agriculture and the types of policy strategies it will enact regarding agriculture (Harrigan, 2008). The political will to develop inputs and to produce market linkages for urban farmers will largely depend on these variables. For instance, the launch of the Operation Feed Yourself (OFY) program in 1972 was a critical factor in the change of official attitudes toward urban agriculture in Ghana (Obosu-Mensah, 2002).

b) Macroeconomic policies—Given that agriculture remains the mainstay of nearly all national economies in Africa, agricultural policies also serve as vital instruments for meeting desired economic goals. For example, state subsidies for agricultural inputs will affect the viability of urban agriculture and the kinds of crops that are produced. Subsidy allocation criteria can also be used to enhance participation by and competitiveness of certain targeted groups of poor people (Bello, 2008). More generally, urban poverty is expected to lead to increased participation in agriculture by poor urban residents seeking to supplement or diversify their livelihoods (Page, 2002).

c) Land policies—Land policies have considerable bearing on urban agriculture. The connection between land policies and urban agriculture can affect city farming in a variety of direct and indirect ways. For example, policies that seek to spare fertile urban landscapes from urban sprawl or industrial development or policies that permit farming on unused state land can promote urban farming (Salle and Holland, 2010). The economic ideology guiding a country's macroeconomic policies can also influence urban agriculture practices. Policies guided by a neoliberal philosophy tend to favour private individual's land rights because this property rights structure is presumed to lead to more efficient forms of land use, as well as provide the property owners the ability to use the land as collateral for credit (Payne et al. 2007). However, titling - usually preferred by advocates of neoliberal economic policies - can also undermine urban agriculture. Indeed, titling can dramatically increase land value making it more attractive for other uses.

d) National water policies—Like land, water is an important factor in agriculture. National water pricing policies will ultimately determine who has more access to water in urban areas. Neoliberal economic policies that advocate market-oriented water management regimes mean that the urban poor will have difficulty engaging in agriculture in the absence of rain-fed land and other natural aquifers (Molden, 2007). Similarly, government policies on water supply infrastructure development and irrigation can affect the physical and economic access to water for urban agriculture.

e) Environmental and public health acts—National and municipal by-laws on the environment affect the quantity of urban land devoted to agricultural use, the use of inorganic fertilizers, and the extent of waste recycling. Similarly, public health acts stipulate the use of urban space in ways that do not pose excessive public health threats, which can include the kind and number of livestock kept within homes and how and where farm produce is sold.

f) Politics of city image—Government and municipal policy makers' stance on the appearance of an ideal city can determine whether agriculture is seen as an urban or rural activity (Robinson, 2006; Lemanski, 2007). The perception of cities as nodes of global capital can lead to official antipathy for farming in urban areas. This position may be linked to local and national policies that consider foreign capital to be the engine of economic growth in an increasingly global world.

Civil Society/Impacts

Local and international non-governmental organizations (NGOs) may have a particular stake in urban agriculture based on core values or vision statements that guide their strategies (Fowler, 1997). Ideally, local NGO's may be particularly suited for the role of advocating and lobbying national governments on matters of land reforms and urban food security. They can work directly with people practicing urban agriculture by helping secure fertile land, providing inputs, and exploring local and international market avenues for farm produce. Regarding international NGOs, they can help leverage resources and provide experience from other settings around the globe that might greatly help to address urban agriculture issues. However, these organizations may sometimes reflect the ideological positions of those who fund them (Igloe and Kelsall, 2005).

City-level policies

A range of city-level policies affect urban agriculture, including the quantity of land, water, and extension service support available for agriculture; the manner in which land is made available for agricultural use within the city; and the particular terms (tenure rights) of such land. For example, overly restrictive land-use regulations, especially those governing unused brown spaces, can greatly stifle urban agriculture (Fekade, 2000). Although water provision in African cities is usually placed under the jurisdiction of parastatals which tend to work relatively autonomously from city authorities, cities are tasked to provide water to residents in certain circumstances. For instance, under the decentralization program water provision has now shifted from central to local government in urban and semi-urban areas in Tanzania (Cleaver and Toner 2008). However, waste management, including waste water, is usually a responsibility of the city, and city officials make waste recycling decisions based on the availability of funds.

Exogenous factors

A couple of factors not included in the above domains also shape urban agriculture. For example, population growth due to urbanization and natural growth can increase demand for food, and consumption habits of certain urban classes can lead to demand for certain foods. In some instances, various linkages, such as proximity to input or output markets, can affect urban agriculture (Figure 1).

Contributions of Urban Agriculture

As stressed throughout this paper, urban agriculture can have a significant impact on various levels of a nation's economy. The effect can be both immediate (e.g., food security, nutrition, dietary movement, employment creation, income generation) and long term (e.g., transmission of agricultural knowledge to subsequent generations, health and environment improvements) (see Figure 1). The contribution to food security is arguably the most important asset of urban agriculture, especially in Africa where increasing poverty levels and numbers of hungry people (e.g., Ethiopia and Somalia) continue to be a great concern (see Baro and Deubel, 2006; MDG Report, 2011).

IV. CONTRIBUTION OF URBAN AGRICULTURE TO FOOD SECURITY AND LIVELIHOODS IN AFRICAN COUNTRIES

As stated in the introduction, urban agriculture has great potential to enhance the wellbeing of urban residents, including meeting the food needs of a burgeoning Africa's urban population (Figure 1). Africa's urban population is projected to increase from 39% in 2005 to 53% in 2030 (Table 2). Even though the projected urban population growth rate seems to indicate a slight decline, this rate nonetheless will translate into a dramatically high increase in urban population when compared to developed regions. Such growth is expected to significantly increase household food demand in urban areas at the same time as rural-urban migration is contributing to a declining rural agricultural productivity due to loss of farm labour (Lee-Smith, 2010). It is within this context that urban agriculture stands to play a strategic role not only enhancing urban food and livelihood security, but also in meeting overall national food self-sufficiency.

Table 2: Total and Urban Population in Africa, 1950 – 2030

Year	Population (millions)					Average annual rate of change (per cent)	
	1950	1975	2000	2005	2030	1950-2005	2005-2030
Total Population	225	416	812	906	1463	2.54	1.92
Urban population	33	105	294	347	742	4.29	3.04

Source: Tibaijuka (2009)

a) Household food security and nutrition: Urban agriculture is already demonstrating enormous potential in enhancing the welfare of poor urban populations in some cities of certain African countries (Maxwell, 1995; Lourenco-Lindell, 1996; Mwalukasa, 2000; Nugent, 2000). For example, a significant number of people in cities such as Accra and Dar es Salaam increasingly depend on crops grown in public spaces for food and income (de Zeeuw, et al., 2010). Urban agriculture contributes to improved food availability and nutritional status. Resources freed by self-production of food can be used utilized to compliment household diets by purchasing other nutritious food items such as fish, fruits and vegetables (Bryld, 2003). This suggests that urban agriculture contributes to food diversification through increased availability of household disposable income (Zezza and Tasciotti, 2010). With more diverse foods available, households become more food secure (Swindale and Bilinsky, 2006). Thus self-grown food can reduce well-known challenges that the urban poor face, especially the dangers of meeting their household food and nutrition security entirely via the market.

The ability of urban agriculture to supply fresh perishable products such as vegetables is in line with Von Thunen's agricultural land use model (de Bon et al. 2010). Vegetable supplies from within 30km of urban areas in African countries attributes 70% of the source of these foods to urban agriculture. The figures for the supply of vegetables are significantly higher in Asia (de Bon et al. 2010), signifying the potential for growth and expansion of this sector in African cities as it has been noted that consumption of these vegetables is a significant source of food for the urban poor.

b) Urban food security and HIV/AIDS: Urban agriculture plays an important role in improving nutritional status of households affected by the HIV/AIDS who tend to be more food insecure. As urban areas in Africa continue to account for an expanding number of people living with HIV/AIDS, urban agriculture can be an important source of nutritional security (Gillepse, 2006). Enhanced food security in these households can also contribute to increased adherence to HIV/AIDS treatment. This means that urban agriculture can contribute to efforts towards reduction of the spread of HIV/AIDS. Relatively, the location of food producing areas within and around cities significantly cut the cost of transportation usually leading to reduced market prices of food. This makes it more affordable for such vulnerable households to access food sold in urban market centers. Indeed, in a good number of African cities studies have shown that urban agriculture provides a large proportion of food consumed in households (Table 3).

Table 3: Percentage of Household Food Consumption provided by Urban Agriculture

City	All food items	Vegetables	Milk/Poultry/Eggs
Brazzaville		80	
Dakar	-	70-80	65-70
Dar Es Salaam	-	90	60
Harare	60	-	-
Kampala	60	-	-
Kumasi	58	90	-
Lusaka	20-30	-	-
Nairobi	50	-	-
Yaounde	-	80	

Source: Moustier & and Danso (2006); Cofie et al. (2003), Nugent (2000)

c) Food price/supply stabilizer: By complimenting rural production, urban agriculture can also stabilize food prices on the market (Moustier and Danso, 2006). As African countries primarily depend on food produced in rural parts to feed national populations, including those living in urban areas, urban agriculture can play a strategic role in cushioning market prices and/or supplies especially during times when rural production is unexpectedly low due to poor rains. Other instances where urban agriculture can provide stability to market prices of food include occasions when rural supplies are limited or cut off by transport problems (e.g. heavy rains) or conflicts. In addition urban agriculture can reduce a country's dependence on food imports, further preventing excessive foreign exchange losses.

d) Employment/Income: In the absence of formal jobs in many African cities, urban agriculture is increasingly becoming an important source of employment for the urban poor (Table 4). The mismatch between the mounting urban populations and the availability of employment opportunities in Africa, especially in the wake of weak industrial and manufacturing sectors, renders urban agriculture a vital source of employment. Urban agriculture is particularly important source of employment for people who may not successfully compete for formal sector jobs due to their low skill levels. It is estimated that 40% of urban dwellers in Africa are involved in agricultural and related sectors (Zezza and Tasciatti, 2010). Reportedly, in some cities such as Libreville, Kumasi and Lusaka,

the proportion of urban dwellers far exceed the continental average (Cofie et al. 2003). Thus, just as agriculture provides the bulk of rural employment in Africa, urban families without formal employment can enhance their labour productivity by engaging in urban agriculture. Increasing productivity of labour is central to achieving Millennium Development Goals especially that of reducing poverty (Goal # 1). Reducing unemployment is vital for addressing other MDG goals. However, this does not mean that urban agriculture is exclusively an activity of the poor. There is evidence of participation by better-off groups who carry out farming in order to supplement or diversify their diets (see Box 1). Others also engage in urban agriculture to a larger scale with a primary goal of making profit. For example, Jacobi et al. (1999) found that while vegetable growing was common across all income groups in Dar es Salaam, Tanzania, the better-off had larger farms and tended to produce for the market. Similarly, in urban and peri-urban areas of Monrovia, Liberia, different groups of people including youth (amidst high unemployment) engage in various forms of farming, but the middle class tend to be particularly market-oriented in their farming activities (UNDP 2006).

Table 4: Percentage of households involved in UA and related monthly incomes

City	% of Household in UA	Monthly income per farm size (\$)	General Net Income per month (\$)
Accra	46	40-57	27
Bamako	-	10-300	24
Bangui	-	n.d. ¹ -320	22
Banjul	-	30-n.d.	26
Bissau	30	24	12
Brazzaville	25	80-270	53
Cotonou	-	50-110	36
Dakar	-	40-250	46
Dar Es Salaam	20	60	24
Douala	16	-	-
Freetown	-	10-50	13
Kampala	30	-	-
Kumasi	57	35-160	27
Lagos	-	53-120	27
Libreville	80	-	-
Lome	-	30-300	26
Lusaka	45	-	-
Maputo	37	-	-
Nairobi	30	10-163	33
Niamey	-	40	17
Ouagadougou	36	15-90	25
Takoradi	-	10-30	27
Tamale	26	-	-
Yaounde	35	34-67	53

Source: Moustier and Danso (2006); Dreschel et al. (2006) and Cofie et al. (2003)

¹ n.d: no data available. The proportion includes both part-time and full-time urban farmers.

Box 1: The Role of Urban Agriculture for Food Security

- Reduce urban food deficits in the face of Africa's rapid population growth and changing consumption patterns
- Household food security for urban poor unable to achieve food security from the market
- Nutritional diversification for urban residents
- Nutritional security for HIV/AIDS-affected families thereby contributing to ARV treatment compliance
- Generate foreign exchange savings and eases fiscal pressures, especially among food-import dependent countries
- Increase disposable income among urban employed and unemployed alike
- Contribute to employment
- Contribute to emergence of niche markets
- Stabilizer of market prices of food

V. URBAN PLANNING ISSUES IN URBAN AGRICULTURE IN AFRICA

Although the importance of urban agriculture in achieving urban food security is increasingly gaining recognition from local and international agencies, it is still somewhat considered oxymoronic and incompatible with existing urban land use policies (Castillo, 2003). As a result, urban land use planning and development policies have failed to tap adequately into urban agriculture as a viable strategy to increase urban food supply and ensure food security. This failure is compounded by the pattern of urbanization and urban growth, the scale of urban sprawl, and the conversion of agricultural lands to residential uses in peri-urban areas (see Arku, 2009). These factors constrain the development of urban agriculture and limit its contribution to the urban food supply and food security in Africa.

Understanding the institutional setting and policy environment in African cities is essential to discussing the contribution of urban agriculture to food security in Africa (see Figure 1). Urban land use in Africa is generally shaped by official responses to the challenges of unbridled urban growth, in terms of both the spatial extent of the city and the increasing urban population. Although urbanization in the developed countries has proceeded in tandem with a socio-economic transformation characterized by job creation, improved infrastructure, expanding services, greater housing supply, and transportation, it has recently taken on a very different nature in Africa. Urban populations in Africa are increasing without a proportionate expansion of infrastructure and services (Konadu-Agyemang, 2001; Rakodi, 2002; Qadeer, 2004). A large percentage of the population lives in poverty with very limited access to clean water, sanitation, employment, and adequate housing. In 2010, about 250 million people in Africa lived in slum conditions without basic amenities, such as sanitation, proper roads, drainage, water, and waste disposal systems (Tibaijuka, 2009). This number is projected to increase to 390 million in 2030.

Within this context, city officials give higher priority to the more visible aspects of urban life and lower priority to issues relating to food production, supply, and distribution. Overall, issues relating to health, poverty, housing, and infrastructure, all issues compounded by budgetary constraints,

dominate urban policy making, and, as a result, most African countries lack a clear policy framework for food production. Although the impact of urban food production on food supply, nutrition, and employment within cities has received increasing attention in recent years, food production has not gained prominence among urban policy makers and has not been formally integrated into urban development policies. The reasons for opposition to urban agriculture vary and they include public health concerns (e.g. exposure to diseases and pesticides), administrative concerns (e.g. lack of provision in zoning laws), and social concerns (e.g. crop fields can be used by criminals) (Mougeout, 2000; Obosu-Mensah, 2002; Graefe et al. 2008). The literature widely acknowledges that urban agriculture is marginalized in the planning and development strategies of African cities and that it is often regarded as unimportant, or peripheral, to urban policy making (Cisse et al. 2005; Simatele and Binns, 2008; Thornton, 2008). Consequently, it is largely ignored in the planning and development policies of cities.

In the absence of a clear policy framework, official attitudes towards the production of food in cities range from mainly tolerance with legislative backing in some instances, to illegality. For example, the practice has received legal backing in countries such as Uganda and Ghana (Obosu-Mensah, 2002; Bryld, 2003). Tanzania has also made concrete efforts to integrate agriculture in its urban land use systems, whereas it is excluded from the urban land use system in Kenya (Mireri et. al. n.d.).

Yet in other countries the practice is still largely neglected from official urban planning policies, and even prohibited by law. In Zimbabwe, the city planning system does not cater for agriculture as it is not classified as an urban activity. Urban agriculture is therefore viewed as illegal since it is not backed by any statutory instruments and there is no laid down policy for this activity. However, since 2002, local authorities support urban agriculture if it is carried out in some organized or systematic fashion (Kutiwa et. al. 2010). In Zambia, urban agriculture is officially considered as illegal and prohibited by law, although local authorities largely ignore this activity where it is practiced. Authorities become concerned only in cases the land on which it is practised is required for development or there is an outbreak of disease (Simatele and Binns, 2008). The reasons for this neglect of urban agriculture as an important component of urban development policies are many and varied, including colonial urban planning practices, the perception of food cultivation as a rural activity, lack of resources for urban planning, a lack of understanding on urban agriculture, and an appreciation of its benefits for urban residents (Asomani-Boateng, 2002; Mougeot, 2005).

One other significant constraint to urban agriculture in Africa is the rural focus of agriculture policies in most African countries, further reflecting the lack of an overall policy framework for this sector. Urban agriculture has, at best, not been fully integrated into agricultural development policies; state-sponsored agriculture development policies and support services tend to focus primarily on food production in rural areas, leaving urban food production without adequate institutional and infrastructural support. Most ministries of agriculture lack mandates or specific policies for the development of urban agriculture (de Zeeuw et al. 2000). Lydecker and Drechsel (2010) cited the example of the Ghana Irrigation Development Agency. This agency is responsible for developing irrigation in the country but focuses solely on public irrigation schemes in rural areas. Agency officials consider urban or peri-urban areas outside their jurisdiction. Under a new National Irrigation Policy, however, the country's Ministry of Food and Agriculture has given the sector more attention.

Additionally, socio-cultural biases against urban agriculture, often influenced by perceptions of urban modernity, are persistent and become institutionalized through the policy and regulatory regimes (Mireri et al. n.d.). The failure to formally integrate urban agriculture into urban development policies often translates into coercive measures detrimental to its promotion, particularly by city officials. These conditions lead to a lack of clarity about the legality of urban agriculture and some ambiguity about its legitimacy as a permissible activity in areas where it is practiced. As Bryld (2003) observed, this status has left a governance vacuum that needs to be filled by policy formulation and institutionalized management through stakeholder participation and consensus building.

Most urban activities are given legitimacy by various legislative instruments, such as by-laws and regulations, but the potential of urban agriculture is inhibited by an absence of legal provisions in most urban contexts. As Cisse et al. (2005) noted, urban agriculture is marginalised in the statutory and legal codes of most African countries. Even in cases where some provision exists for this activity, those provisions are inadequately implemented. For example, in Tanzania, where agriculture is categorized as an urban land use, little evidence suggests that the legislative provisions are being enforced (Mireri et al. n.d.). Bryld (2003) noted that where no laws directly prohibit urban agriculture, authorities use other laws, such as environmental and habitation laws, to criminalize urban farmers, citing the example of Harare.

Box 2: Urban Planning in Urban Agriculture in Africa

- Concentration of officials on infrastructural development to serve the needs of rapid urban sprawl rates
- Lack of clear policy framework for urban food production
- Rural focus of agriculture and the neglect of urban agriculture in Africa
- Absence of infrastructure for urban agriculture
- Lack of institutional support and the marginalisation of urban agriculture in state laws and legal codes of African countries
- Urban modernity notions and negative official attitude towards agriculture in cities

Thus, despite the enormous potential of urban agriculture, a range of urban planning regulation constraints limits the contribution urban agriculture could make to urban food supply and food security in Africa (Box 2). Integrating urban agriculture into the broad framework of urban planning will be crucial for its potential to be fully realized, which includes considering land rights and water access issues.

VI. LAND TENURE, WATER ACCESS, AND URBAN AGRICULTURE IN AFRICA

A fundamental issue in debates on urban agriculture is the physical carrying capacity of the urban space to support farming. Land and water, being the two most basic elements of agricultural production, have particular significance in this context. However, as indicated previously, these elements have unique relevance given the context of African cities already facing mounting pressure

from rapid urbanization (Arku, 2009; Shillington, 2009). Efforts to enhance the agricultural capacity of African cities require a clear understanding of how the physical stock of land and water, and the social relations governing access to these resources, can support urban agriculture.

Land Tenure

Current land tenure profile – Land tenure is often defined as the mode by which land is held or owned (Payne, 2000). Property rights are recognized interests in land or property vested in a person or group of people. According to Payne (2000), African cities exhibit a continuum of land tenure forms, but these can be grouped generally by the following types: customary (land held by traditional leaders and allocated based on need rather than an ability to pay), private tenure (land governed by individual rights), public tenure (land vested in the state), religious land (land outside of commercial use), non-formal tenure (land ownership with a range of categories of varying legality, including regularized and un-regularized, squatting, and unauthorized sub-divisions).

Other than backyard or patio farming provisions (considered ancillary farming as long as it does not present a public health threat), the formal acquisition of urban land for agriculture generally remains problematic throughout African cities, given the low profile of urban agriculture in planning policies and agendas. Most agricultural activities in African cities occur on informally occupied public land (Cofie and Drechsel, 2007; Ashebir et al. 2008), other than in a few cities, such as Mbabane in Swaziland and Mekelle in Ethiopia, where important policy shifts in support of urban agriculture have been made at both national and local levels. Some urban farmers cultivate publicly (government) and privately (commercial firms, individual lease holders) owned land. The farmers generally have explicit use rights extending over an agreed time period, during which tenants also act as 'caretakers'. In some cases, land owners may be reluctant to grant usufruct rights to third parties such as caretakers because of the risk associated with reclaiming the land from such kinds of borrowers (Woodhouse et al. 2000; Kombe, 2005; Nkurunziza, 2007). Cultivation on informally occupied land accounts for a large proportion of urban agriculture. However, farmers under this tenure arrangement face a constant threat of land repossession, crop destruction, and even violence from state officials (Mbiba, 1994). For example, cases of crop slashing have been reported in Zimbabwe's capital city, Harare (Mbiba, 1994).

Land ownership in the peri-urban areas tends to be more open to various agricultural uses. This is because most peri-urban land tends to be under customary rights and therefore less constrained by restrictions imposed by zoning codes which is otherwise the case in inner cities. However, land acquisition and access is more complex because land in these areas is owned by a number of actors, including the state and private holders, or under customary tenure. Customary land rights are recognized by many African governments, but because they cannot be easily transferred, they do not have the kind of economic significance that private land rights tend to have.

Role of national and local governments – First, the rapid urbanization in Africa is placing increasing pressure on the finite stock of land. To address this challenge, local and national governments should identify and set aside good quality, arable land in certain parts of cities for agricultural use. Building on a precedence of designating land for industrial development, recreation, game reserves, or national parks, national and city authorities should consider various ways to annex land and

designate it as agricultural land reserved for farming in the long term with a strategic aim of promoting agricultural economies. This measure would reduce the loss of fertile land to industrial and residential development and would also have the added advantage of controlling urban sprawl. In doing so, however, governments should be sensitive to the potentially negative side effects that such policies can generate, especially on the livelihoods of the poor.

Second, insecure and vague land tenure rights are seen as a key barrier to economic growth, including better management of urban agriculture (de Soto and Cheneval, 2006). This is especially relevant in the context of African cities, which are characterised by multiple and overlapping tenure. Apparent ambiguities associated with complex tenure patterns in such African cities as Accra continue to fuel the need for government intervention in land matters to provide clear, legally enforceable individual land titles. Secure land tenure among the urban poor can grant the much-needed legitimacy to urban farming. Efforts to achieve this type of land tenure structure can contribute to more productive and ecologically sustainable use of agricultural land and facilitate the use of land as property or collateral for transactions to increase farmers' access to credit (de Soto and Cheneval, 2006).

Some emerging research however also shows that local and national governments should also be aware that formal or individual legal land titles do not always provide the most effective solution to the question of land in general, and in the African context in particular (Moore, 1998; Payne, 2000). With the complexity of land tenure issues in Africa, the government's use of formal titles as is usually preferred by advocates of neoliberal economic policies can sometimes create more problems than solutions. In view of past land reform failures, a growing number of researchers argue against uncritical preference for the widely-cherished individual land tenure. They are urging local and national government authorities to carefully examine the relative merits of existing tenure arrangements and to make tenure choices based on particular social, historical, and geographic contexts (Payne, 2000; Chimhowu and Woodhouse, 2006).

State registration of formal individual titles for the poor can present serious problems for cash-strapped governments in Africa due to the tendency for contradictory ownership claims following implementation of titling programs and the legal battles that usually follow (Payne et al. 2007). In addition, creating clear and distinct social and physical boundaries to establish individual property rights prevents the nesting of rights (e.g., in customary tenure) at different levels. This can lead to boundary disputes between adjoining individuals and communities, as well as within levels of social and political organization. Furthermore, clear and individualised land tenure structures can overexpose vulnerable groups whose right to land is nested within wider kinship and social relations (Durand-Lasserve and Selod, 2007). National and local governments have a duty to protect such populations, which can easily lose their land rights in the face of land tenure changes.

A formal land title can also dramatically increase the land's market value, which can improve poor urban farmers' access to farm inputs, credit, and other resources. This dramatic appreciation of land values in cities can however lead to market displacement of the urban poor from land. Hence, if national and local governments choose to enact formal land titles to improve land tenure security, they should accompany this action with measures to reduce potential land losses by poor urban farmer to better-off individual (Lanjouw and Levy, 2002).

In fact, in some cases it would be more prudent for African governments to consider less formal land titling alternatives. Officially granting collective rights land to existing *de facto* tenants can make land less attractive to elites and protect the urban poor from market pressures. These pro-poor measures can be accomplished through carefully planned and implemented decentralized land management approaches that involve a wide range of stakeholders and that consider local social and political conditions (Kombe, 2005). Prior to implementation, officials should conduct a careful analysis of who will ultimately benefit most from tenure changes.

Regularization is essentially an ex-post approach. For example, it does not prevent past land tenure irregularities resulting from urban sprawl. National and local governments should embark on land banking by identifying best agriculture land and conserving it for long-term urban agriculture development (Payne et al. 2007). To identify fertile land parcels for future farming, national and local governments need the capacity to conduct soil analyses. In many cases, this capacity already exists, though it has barely been harnessed to promote urban agriculture. City authorities also need to enhance their capacity to monitor land use change and to understand the impacts of these changes with respect to the future of urban agriculture.

Government efforts to improve access to land among the urban poor through pro-poor regularization can also be more effective if accompanied by complementary services, such as improving access to agriculture extension, credit, and input and output markets. Unfortunately, a poor understanding of the role of urban agriculture has created policy biases and the tendency to ignore urban agriculture. For example, subsidized agricultural input programs in many African countries tend to neglect the needs of urban farmers in favour of the rural counterparts. Relatedly a decentralized land management by local governments will also establish the framework to ensure that women's rights to land remain protected. This demands a careful understanding of how land tenure changes and how regularization can further undermine the rights of women to land (Payne et al. 2007).

Water Access

Profile of existing water rights – Access to low-cost water remains an important factor in urban agriculture. Households within the cities mainly use piped water for gardening. Because the urban water supply infrastructure in Africa is already under pressure, watering crops grown in home patios is not only expensive but also ethically questionable in light of widespread domestic water shortages.

Open-space farming on state-owned undeveloped land and in the cities and peri-urban areas depends on irrigated water from springs, streams, and flood plains. With climate change increasingly contributing to variable rainfall and drainage flows, over-dependence on natural water sources tend to fuel tensions among farmers for control of access. In addition, urban agriculture also tends to be irrigated using polluted water sources. Although biological contamination from faecal matter and bacteria is by far the most common water pollutant, unacceptably high traces of such chemicals as N, P, and K and some heavy metals, such as lead, are also being increasingly found in water sources used for agriculture in such cities as Kinshasa in DRC and Kumasi in Ghana (Mayeko, 2009; Amoah, 2009). Generally, African cities have poor sewage facilities, and, consequently, refuse is commonly

deposited in rivers and streams. Agricultural use of such water presents public health challenges in many cities on the continent.

Role of national and local governments - Water scarcity varies across cities and regions. Cities located in arid and semi-arid regions face the most serious threats, necessitating national and local government strategies that address the regional conditions. As urban populations continue to grow, water shortages generally remain an important challenge in most cities in Africa. Local and national governments have a key role in easing both economic and physical scarcity of water in urban areas in ways that benefit urban agriculture. Small scale and manageable irrigation technologies can promote urban agriculture, and canals, treadle pumps, and other low-cost irrigation technologies, which can easily be adopted by the urban poor, should be promoted to supplement existing urban water sources.

In light of the above, national institutions should endeavour to put in place mechanisms that promote water treatment and recycling in cities. Changes in institutional attitudes towards urban agriculture will not only increase its legitimacy, but also promote the idea that urban agriculture is an integral part of the urban environment and deserving of fiscal attention, including water supply provisions. Such institutional changes will ensure that urban agriculture is given priority for water allocation relative to other uses, such as industrial production, or recreation.

VII. CHOICES OF CROPS IN URBAN AGRICULTURE

The choice of crops for production in urban areas is primarily determined by whether food is being produced for household consumption, or subsistence, or for the market sale. The decision to undertake urban agriculture is also influenced by location, resource availability, growth conditions, and market value (Cofie, 2009). Various studies indicate that a variety of vegetables are favoured by urban farmers, although fruits, herbs, and other food crops are also cultivated. In Lagos and Ibadan, for instance, many farmers cultivate lettuce, cabbage, and carrots, which have very high values because of the high demand by expatriates. Similar trends exist in Dakar and Banjul, where 60% and 80% of vegetables, respectively, are supplied through urban agriculture. In addition, vegetables and fruits from urban agriculture are important commodities of export in some cities, such as Lome (Cofie, 2009).

Developed countries are increasingly consuming fresh fruits and vegetables from Africa. Consumers in the UK alone spend an estimated £1 million daily on fresh fruits and vegetables from Africa (MacGregor and Vorley, 2006). With climate change concerns and concerns about the impact of food miles, consumers are increasingly being encouraged to depend on food produced in their immediate environments. With such increasing concerns exports of fruits and vegetables to distant locations would be discouraged. This means that teeming urban populations within Africa, could potentially step up to fill in for lost markets in developed countries. Besides, urban agriculture in Africa is appropriately positioned to supply the demands of urban populations with minimal concerns of high food miles.

As discussed earlier, the food needs of African cities will increase as the pace of urbanization and urban growth accelerates over the next several decades. In addition, the overall cost of supplying, distributing, and accessing food will rise as urban nutritional needs become more complex and diverse and as cities depend on food transported from distant areas, especially imported food (Argenti, 2000). These concerns raise critical questions about whether urban food systems in African cities will be able to provide adequate food supplies at affordable prices for all urban residents, especially the poor. They also raise questions about whether urban agriculture will be able to serve regional and global markets in the long term.

VIII. CASE STUDIES FROM ACCRA (GHANA) AND MZUZU CITY (NORTHERN MALAWI)

In this section, the issues presented thus far are explored through case studies of Accra (Ghana) and Mzuzu (Malawi). These urban regions represent two scenarios of divergent urban growth, different internal dynamics of cities in Africa, varied socio-economic characteristics, dissimilar institutional capacity, and relatively different geographical regions of the African continent (Western versus Southern Africa). Accra is a coastal city with a population of approximately 3 million and is connected to the international market. Muzuzu is a small urban center with a population of about 128,000 people and faces different development pressures. In both cities, urban population growth has been high over the years.

CASE STUDY 1: URBAN AGRICULTURE IN ACCRA, GHANA

Data: The information used in the Accra case study is drawn from the authors' survey of vegetable farmers in 2009 (n=127). The data are supplemented by the Resource Centres on the Urban Agriculture and Food Security (RUAF-Foundation) survey of vegetable growers (n=1000); Armah-Klemesu and Maxwell's (1998) survey of range Accra farmers (n=559); and Asomani-Boateng's (2002) survey of urban and peri-urban cultivators (n=87). These surveys sought the opinions of farmers on such issues as the types of crops being cultivated, contributions of urban agriculture, and challenges facing farmers. The results of these empirical studies are summarized below.

Introduction – Opportunities and challenges for urban agriculture in Accra: Like many developing cities, Accra has experienced unprecedented growth over the years. From the late 1970s to the present, Accra's growth has consistently been between 3% and 4% per annum. Presently, the city's population, together with its surrounding metropolitan areas, is around 3 million. It is expected to reach about 5 million by 2030. Between 1975 and 1997, the physical area of Accra expanded by 318% (Yeboah, 2000). This burgeoning population and physical growth is producing both opportunities and challenges for urban agriculture in the city. Accra's population expansion has increased the need for sufficient food, including fresh food stuffs. As a result, the opportunity to grow or acquire food within the city has become an important component of residents' livelihood strategies. However, the city's physical and population expansion is putting pressure on the land available for agricultural activities.

Agriculture in Accra: Vegetable farming in Accra has a long-standing history, dating to the British colonial era (Amar-Klemesu and Maxwell, 1998; Asomani-Boateng, 2002). Since then, urban farming has become widely practiced. As the population of Accra has increased, so has the number of people involved in urban farming, at least half of the city's households involved in the practice (Obosu-Mensah, 2002). Empirical studies show that two primary types of cultivation are practiced, enclosed cultivation (or backyard cultivation) and open cultivation.

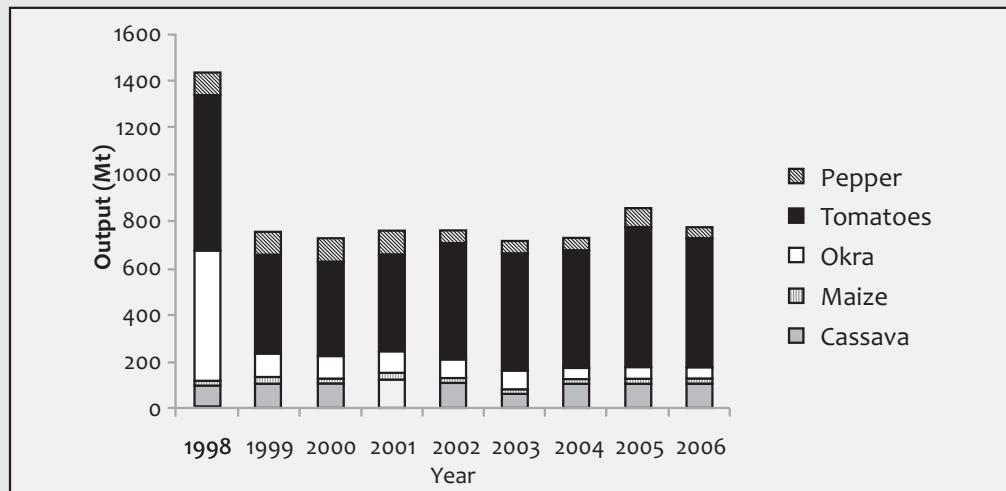
Enclosed cultivation is primarily for household consumption and is practiced on building lots that may or may not be walled. Because enclosed cultivation occurs on private land, those who engage in this type of farming are typically land owners or caretakers of such lands. Most enclosed cultivation occurs in the Accra suburbs due to inadequate space within the city center. In contrast, open-space farming occurs primarily on unused community and public lands. There are different tenure arrangements for the use of the urban open spaces, but in general, no farmer owns the land and very few of them pay a fee. Unlike enclosed cultivation, much of the open cultivation occurs around the city center by residents of lower socio-economic status, often indigenous people and rural migrants.

The most commonly cultivated crops are vegetables (e.g., cabbage, carrots, spring onions, green pepper, cucumber, lettuce, kontomire, spinach) and such crops as maize, fruits, cereal, root crops, and leguminous crops—depending on the location and availability of water. Due to the amount of water needed for vegetable farming, most farm plots are located close to streams and rivers (e.g., Rivers Onyasia and Odaw), wetlands (e.g., Korle Lagoon), and storm water drains. Open space farmers may also use pipe-borne water and water from hand-dug wells.

Other components of urban farming in Accra are poultry, small ruminants, dairy farming, aquaculture, and other short-cycle species, such as mushrooms and grasscutters (*Thryonomys swinderianus*), a leading source of protein in the Guinea savannah.

Extent of urban agriculture in Accra: Urban farming in Accra is largely informal in character and occurs outside the official city planning framework. As such, the full measure of the city's land used for agricultural cultivation is difficult to determine. However, estimates by Resource Centres on Urban Agriculture and Food Security (RUAF-Foundation) suggest that about 680 ha of urban land are under maize cultivation, 47 ha under vegetables and 251 ha under mixed cereal-vegetable systems. Irrigated vegetable production takes place on a 100 ha area in the dry season. Results from the same survey suggest that about 1,000 farmers were involved in rain-fed and irrigated urban agriculture to produce exotic vegetables (e.g., cauliflower) or more traditional vegetables, such as tomatoes, okra, eggplant, and hot peppers. Plot sizes range between 0.01–0.02 ha per farmer. Although urban agriculture has enormous potential, recent statistics on major local crops suggest that a boost in Accra's agricultural output is required because trends show irregular growth (Figure 2).

Figure . Trends in output of major agricultural produce in Accra, 1998–2006.



Source: Egyir & Beinpuo (2009).

Contributions of urban agriculture to food security: About 90% of all food consumed in Accra is purchased from the market (IFPRI, 2003). This implies that the practice of urban agriculture, if properly managed, could ensure ready access to food by households. Urban agriculture can also help address future food security issues in the city in light of the global climate change phenomenon (Appeaning-Addo, 2010). Presently, the demand for perishable products is high in Accra and is expected to increase due to persistent population expansion. Studies have shown that urban agriculture can have an enormous impact on the food security and nutrition of Accra's residents (see Armar-Klemesu and Maxwell, 1998; Zakariah, Lamptey, and Maxwell, 1998; Armar-Klemesu and Maxwell, 2000). Based on the surveys listed above, the key contributions and challenges of urban agriculture in Accra can be summarised as follows (Boxes 3 & 4).

Box 3: Key Contributions of Urban Agriculture in Accra

- Food for the urban poor
- Achievement of sustained livelihood
- Food security (niche market)
- Creation of economic activities
- Source of nutrition
- Poverty reduction
- Employment and household earnings
- Empowerment of women

Box 4: Key Challenges Facing Urban Agriculture in Accra

- Competition for land for residential and related uses
- Limited access to land and tenure insecurity
- Inadequate knowledge on pest, disease, feed, and water management techniques
- Inadequate access to credit
- Limited access to low-cost and reliable water resources
- Contamination of crops from poor quality water and improper use of pesticides
- Lack of institutional framework
- Lack of farmer organisations to facilitate advocacy and lobbying

Capacity issues facing urban agriculture in Accra: Urban agriculture (and related issues) in urban Ghana currently falls under the jurisdiction of different levels and types of authorities. Although there is no specific policy on urban agriculture, small-holder agriculture development is highlighted in almost all major policies, programmes, and projects, including the Ghana Poverty Reduction Strategy, Modernization of the Capital City, and Decentralisation Policy. Opportunities are available to integrate urban agriculture more effectively in the overall city development policies and programmes, and they are being explored. The various surveys among urban cultivators in Accra revealed the following critical issues that demand serious consideration if the potential of urban agriculture to food security is to be fully realized (Box 5).

Box 5: Critical Issues Requiring Attention for Urban Agriculture in Accra

- Formulation of farmer associations
- Integration of urban agriculture into city plans (i.e., urban planning and management strategies)
- Policy and legislative support for urban agriculture
- Land rights of farmers (including temporal access to land)
- Education and public awareness of urban agriculture and urban food safety
- Standards and quality assurance of products
- Promotion of urban agriculture (micro-)enterprises
- Development of collaborative projects and programmes among key actors in Accra
- Improvement in post-harvest handling and in marketing
- Inclusion of urban agriculture into the curriculum of Agriculture Colleges and related schools.

CASE STUDY 2: URBAN AGRICULTURE IN MZUZU CITY, NORTHERN MALAWI

Data: The information used in Mzuzu's case study is drawn from interviews with Mzuzu City assembly officials in 2011.

Mzuzu city is new and small in terms of the urban density and population size relative to other Malawian cities, such as Lilongwe. It emerged from a small tung (edible oil tree) plantation during the late period of colonialism. The current official population is 128,000 although unofficial estimates put the figure at twice as high due to widespread informal settlement on the fringes of the city's jurisdiction. Covering an estimated area of 76 km², Mzuzu is a regional economic and political hub. It has a specialist hospital, tobacco auction floors, a fledging industrial and financial sector, a beverage company, and a flea market. The city hosts several secondary schools, tourist and recreational facilities, vocational colleges, and a public university, which, while increasing the overall demand for food, accounts for changing consumption habits. The city's residents depend on food produced in neighbouring northern districts (e.g., maize, beans, cassava) and from far-off central region districts, such as Ntcheu (e.g., Irish potatoes). However, Mzuzu is also increasingly reliant on foods produced within the city or on its vicinity (e.g., chicken, milk, vegetables, and maize), which serves the food needs of its expanding population, small businesses, education institutions, hospitals, and dairy company. Much of this farming also takes place within the city in zoned spaces or in backyards. Key farming areas on the fringes on Mzuzu include Choma, Dunduzu, Kaboko, Chigwere, and Malivenji.

Institutional responses to urban agriculture: There is a glaring mismatch between the officially stated land zoning code and the responses of city assembly with respect to expanding agricultural activities in Mzuzu. Because the city's urban infrastructure plan has provisions for urban land uses, such as residential, industrial, commercial uses, but not agricultural uses, all farming in the city is technically illegal. Official policies prohibit any forms of land use other than those prescribed by zoning codes. Although authorities are aware of increased farming activities in the city, officials generally do not take action. Even when residents overtly violate by-laws that only allow for ancillary agriculture, such as livestock or backyard farming, city officials have been reluctant to invoke such policies. The extent to which the city assembly in Mzuzu is prepared to accommodate urban agriculture is exemplified by a farmer who openly feeds his large herd of cattle off the grass that grows on the sides of the city's small airstrip, despite the safety concerns this practice raises. Thus, the official policy prescriptions of the city have not been used to regulate urban agriculture in Mzuzu city (Box 6).

Officials however interpret recent land use changes, especially the growing presence of farming within the city space, as evidence of the need for urgent changes to the existing policy to better regulate farming. This is largely because authorities as residents of this city clearly understand the importance of farming in the lives of many people in the city. However, they also appreciate the challenges that poorly managed urban agriculture can present. The city is planning to designate a large area of land close to the Lunyangwa agriculture research station for farming. City officials also acknowledge the pitfalls of proceeding with an urban agriculture policy without consulting with various stakeholders. The absence of local counsellors (Malawi has not had local elections for over 10 years) has meant that city planning has generally proceeded without the input of the residents. In addition, budgetary constraints have prevented city officials from organizing alternative consultation channels with residents on key policy and planning issues. Financial problems have also undermined the ability of the city to conduct research into the exact nature, extent, actors, and overall importance of farming in this city (Box 6).

Box 6: Summary of Issues from Mzuzu City, Malawi

- Zoning codes that do not include a provision for urban agriculture
- Urban agriculture dependent on subjective judgements and practices of city authorities
- Lack of mechanisms for involving key stakeholders in the city's planning decisions
- Budget constraints that undermine even the best efforts to properly regulate and promote urban agriculture in the city
- Lack of proper official understanding of the true scale of urban agriculture and characteristics of actors involved

IX. CONCLUSION AND POLICY RECOMMENDATIONS

Introduction

This paper has reviewed the state of urban agriculture in Africa in an attempt to identify and establish the types and nature of contributions it could make to enhance food security on the continent. In doing so, various international, national, and city-level issues were identified that influence urban agriculture. The case studies were drawn from two countries, carefully selected to reflect different dynamics of pressures for urban development and the resultant impact on urban agriculture.

The overarching conclusion of this report is that urban agriculture, if properly promoted, can play a crucial role in Africa's quest for food security, including food availability, enhancement of nutrition for residents, and dietary diversity. Other major contributions to the economies of African countries include employment and income generation for millions of people, along with a host of environmental benefits. Indeed, given the enormity of food crisis facing Africa currently, alternative sources of the food supply need to be explored for the potential to supplement the existing sources. To use urban agriculture as an additional source of food supply, policy makers need to pay attention to the range of variables that impinge upon it, but too often such issues have been largely ignored. From the discussions in this paper, in general, and the two case studies, in particular, the following critical capacity and related issues have emerged. These issues demand serious considerations for the potential of urban agriculture as a contributor to Africa's food security to be fully realized.

Key Issues/Constraints Facing Urban Agriculture in Africa

Strategic planning for urban agriculture – Urban agriculture presently exists in a context where institutional responses to farming in the cities are generally based on subjective judgments of city assembly officials. This precarious policy environment, in which farming is prohibited, promoted on ad hoc basis, or considered a secondary issue, reveals the need for African city governments to develop a city-wide vision that supports urban agriculture. This vision should clearly demonstrate how urban agriculture contributes to broader goals of national agriculture, livelihood, and food security.

Countering institutional prejudice – As a prerequisite for long-term development of agricultural economies in African urban areas, systemic biases against urban agriculture need to be addressed. Policy makers need the capacity to research and establish the merits of urban agriculture, the impacts of land use change, the shifting mix of actors, and challenges of urban agriculture in the context of rapidly changing urban conditions. This institutional bias can also be addressed through sponsorship of awareness and education programs (e.g., radio or television shows, school curriculum) that advocate for urban agriculture. Such programs will provide more visibility and legitimacy to urban agriculture.

a) Community participation in municipal key decisions on urban agriculture – Policy and legal challenges facing urban agriculture development are intertwined with more general issues of urban governance and decision-making processes. Therefore, wider consultations and participation by city residents are needed on urban agriculture planning issues, including input on undesirable aspects of zoning codes, as noted above. Mechanisms to ensure adequate and fair representation by all

stakeholders should be fostered. This includes establishing municipal procedures to deal directly with issues related to urban agriculture.

b) Develop linkages with other sectors – The ability of urban farmers to access the technical and financial support available to rural farmers is vital to the sustainability of this sector. Policy makers need to consider the large population of poor urban farmers who are sidelined in the national subsidized agriculture input and extension programs implemented by many African governments. Local and national governments should also provide an appropriate structure of incentives to promote urban agriculture, including policies aimed at stimulating more effective market chains. This can only happen if urban agriculture is viewed as an integral part of a broad national food security policy.

c) Coordinating multiple levels of responsibility – By virtue of its nature, urban agriculture mobilises a wide range of stakeholders and interests. For example, in many African cities, two of the most vital elements of agriculture, land and water, are coordinated by disparate institutional settings. Meaningful, long-term urban agriculture planning requires coordination between various government ministries and departments, including those that oversee lands, public health, inter and intra-regional transport and the environment.

d) Water for food – Integration of urban agriculture into the African cities' planning vision should be accompanied by policies that seek to expand the water supply infrastructure to accommodate urban agriculture. Given that the use of tap water for urban farming in Africa raises vital ethical questions, efforts should focus on developing technologies that promote safe water recycling for urban agriculture use. Small-scale and low technologies, such as treadle pumps, can be important for smallholder urban farmers, who usually do not have sufficient resources to acquire more sophisticated irrigation systems. Even then, water technology choices need to be matched with urban agriculture water needs of specific African cities, given marked regional variations in rainfall.

e) Appropriate land tenure choices – National and local government should support either affordable urban land tenure reforms or long-term leases for poor urban farmers. Unfortunately, the choices may not be straightforward, and policies that advance one-size-fits-all solutions will suffocate urban agricultural development. A continuum of land tenures exist in African cities, each with relative strengths with respect to the long-term success of urban agriculture. Thus, national and local governments should carefully examine the merits of alternative tenures in consideration of their appropriate social and spatial contexts and should promote models on the basis of prevailing circumstances, which may vary across urban areas both within and between countries. Officials should also pay attention to potential negative side-effects of proposed land tenure changes among vulnerable urban populations.

f) More inclusive land zoning codes – Before making efforts to integrate urban agriculture into broader city planning and development policies, policy makers need to identify and reformulate aspects of municipal statutes that are detrimental to city farming. For example, zoning codes should be revised to support urban food production. The current official position of urban farming, where it is largely dependent on the subjective judgments of city authorities, means that the future of urban agriculture rests on a highly shaky policy ground.

g) Mobilization for urban agriculture – To meet the dual challenge of raising the profile of urban agriculture and generating the political will to put it permanently on the national development agenda, a broad-based coalition of stakeholders is needed to lobby policy makers. Although the involvement of various state-level actors are vital for enhancing the profile of urban agriculture, non-state and other informal actors should also be actively engaged in this process. Both local and international NGOs can play a pivotal role in this cause, especially given their ability to solicit the views of hard-to-reach populations and to articulate these views in ways that could be used to galvanize a broad-based coalition that will serve as a platform for advocate for pro-urban agriculture policy change at both local and national levels.

h) Measures to protect the economic interest of farmers - The growing demand for fresh fruits and vegetables creates a strategic opportunity that urban farmers can exploit. These emerging market niches can provide important income sources for the urban poor. However, appropriate policy measures are needed to protect the economic interests of these farmers against powerful markets in a globalized world. In addition, policies are needed to ensure that these markets are not pursued at the expense of domestic food needs, as has usually occurred with export-driven agriculture.

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