

THE STATUS OF URBAN AGRICULTURE IN AND AROUND ADDIS ABABA, ETHIOPIA

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ABSTRACT

This study was undertaken to assess the overall situation, challenges and potentials of urban agriculture (UA) in and around Addis Ababa in view of its contribution to socioeconomic development. The research attempted to contribute to the limited, if not inexistent, researches in UA and brings to light the exigency of a well-built national UA policy. In so doing, the necessary data were gathered from both primary and secondary sources through key informant interview, document review and observations. Key experts in related government offices, researchers, selected small-scale urban producers, consumers and entrepreneurs were interviewed. Relevant policy documents, scholarly journal articles, reports and the experiences of some countries were reviewed. A few field observations were also carried out to observe the existing real situations of UA in and around Addis Ababa. The synthesis of this research shows that UA is playing key roles in poverty reduction, food security improvement, urban waste management and recycling, urban greening and job creation in the area. However, it is found that very low attention has been given to UA as a result of which the sector has been suffering from lack of proper awareness among stakeholders, and high scarcity of vital inputs such as water and power. Hence, owing to its unique characteristics, UA requires typical policy framework and by-laws; vigilant monitoring and evaluation systems; well-ordered marketing scheme; stringent pollution controlling mechanisms; and efficient utilization and management of resources.

Keywords: Urban agriculture, socioeconomic development, policy, Addis Ababa, Ethiopia

INTRODUCTION AND CONCEPTUAL FOUNDATION

UA (UA) is the growing of plants and the raising of animals for food and other socioeconomic purposes within and around cities/towns, including related activities such as the production and delivery of inputs, processing and the marketing of products. Unlike rural agriculture, UA is integrated into the urban socioeconomic and ecological systems, embedded in and interacting with the urban ecosystem, uses urban residents as laborers, uses typical urban resources (like organic wastes and wastewater for irrigation), links directly with urban consumers, has direct impacts on urban ecology, is competing for land with other vital urban functions, and is influenced by urban policies and plans. UA is not a relic of the past urban history that fades away with time; rather it increases when the city grows. It is also not brought to the city by rural immigrants that will lose their rural habits over time. It is an integral part of the urban system. UA is also unique in that it supplies of fresh foods that contribute to increase urban food security and helps to maintain additional green spaces in and around urban areas (UNESCAP, 2012; www.ruaf.org/urban-agriculture).

UA can be located within or on the outskirts of a city and includes a variety of production systems, ranging from subsistence production and processing at household level to fully commercialized agriculture. UA may take place in locations inside the cities (intra-urban) or in the peri-urban areas. The activities may take place on the homestead (on-plot) or on land away from the residence (off-plot), on private land (owned and/or leased) or on public land (parks, conservation areas, along roads, streams and railways), or public lands (schoolyards, grounds of schools and hospitals). It is generally characterized by closeness to consumers/markets, high competition for land, limited space, and use of urban organic solid wastes and wastewaters.

The products grown by UA includes, but not limited to, food crops (such as grains, root crops, vegetables, mushrooms and fruits), animals (poultry, rabbits, goats, sheep, cattle, pigs, guinea pigs and fish) and non-food products (like aromatic and medicinal herbs, ornamental plants, and tree products) or combinations of these. Often more perishable and relatively high-valued vegetables and animal products and by-products are favored by UA practitioners. Production units in UA in general tend to be more specialized than rural enterprises, and exchanges are taking place across production units (SWITCH, 2007). UA, unlike its counterparts, has to interact with the urban ecosystem including the production and delivery of inputs, and the processing and marketing of products. As a result, UA is most notable for its contribution in reducing the distance that food must be transported (Thomas, 2013).

The actors of UA are varied. Large part of the people involved in UA is the urban poor. Contrary to the general understandings, they are often not recent immigrants from rural areas since the urban farmer needs time to get access to urban land, water and other productive resources. In many cities, one will often also find lower and mid-level government officials and school teachers involved in agriculture, as well as richer people who are seeking a good investment for their capital. Women constitute an important part of urban farmers, since agriculture and related processing and selling activities, among others, can often be more easily combined with their other tasks in the household. This is because it is more difficult to combine it with urban jobs that require travelling to the town centre, industrial areas or to the houses of the rich (Thomas, 2013; UNESCAP, 2012; SWITCH, 2007).

A significant number of literature (SWITCH, 2007; Messay, 2010; UNESCAP, 2012; Thomas, 2013; Messay *et al.*, 2017;) indicate that the contribution of UA to food security and healthy nutrition for urban poor is vital as more people live in cities today than ever before. It has been enabling the urban population to access perishable fruits and vegetables which contain essential micronutrients by shortening the supply period and reducing the transportation cost (Eric, 2012). The problem of hunger in urban and peri-urban areas has more to do with shortage of food and the increase in agricultural outputs within urban areas making UA a vital solution for the predicament. Poor people largely spend a sizeable part of their income (50–80 %) for food. As a result, UA plays a great role in increasing healthy and nutritious food supply for the urban poor. Expensive food items such as fruit, vegetables and meat are the main products in the urban agricultural practice. So that production for self-consumption increases the food security of the urban poor who may have a problem to access or afford the price of imported foods. It increases the ability of the residents to control over the nutritional balance of their family diet (Smit, Nasr and Ratta, 2001).

Research reports of various kinds (Goldstein, *et al.* 2011; Thomas, 2013; UNESCAP, 2012; SWITCH, 2007) indicate that UA can reflect varying levels of economic and social development across the world. In the developed world, it often takes the form of a social movement for sustainable communities, where organic growers form social networks founded on a shared ethos of nature and community holism. These networks can evolve when receiving formal institutional support, becoming integrated into local urban planning scenarios as a ‘*transition town*’ movement for sustainable urban development. In developing countries like Ethiopia, food security, nutrition and income generation are key motivations for UA practices. In either case, more direct access to fresh vegetables, fruits and livestock products through UA can improve food security and safety

It is indicated in Brown, *et al.* (2002), Smit and Bailkey (2006) and Goldstein, *et al.* (2011) administrative bodies in America and Europe have promoted UA in times of economic hardship, scarcities of food, energy and raw materials for over a century. An estimated 40% of the vegetables consumed during World War II were grown in town and city gardens. As a result, acceleration of the UA in Europe has been witnessed since 19th century and World War II, respectively. Many cities in the developed world amended their public land-use policies to promote urban farming and most of the municipalities have explored UA as a means to job creation, community development, environmental management and improved food security many cities in USA (such as Baltimore) consider UA as a means to utilize under-used plots of land to improve food systems within their jurisdictions.

UA has been growing since the 1970s in the developing world as a result of rapid urbanization, uneven food distribution systems, increasing food prices, rising urban unemployment, declining purchasing power, limited urban land-use regulations, civil strife and natural disasters in urban areas. Thus, UA is becoming an alternative and/or permanent feature of cities/towns in the developing world enabling the urban resident access to cheaper and fresh food items (Brown, *et al.* (2002); Thomas, 2013). Hence, adopting UA as a strategy to address the increasing urban unemployment, poverty, hunger and nutritional requirement is becoming the primary targets for various cities in the developing world such as Harare, Bissau, Dakar, Kumasi, Lome and Nairobi. Even if the efficiency of UA differs across these cities UA, no doubt, is increasing the access,

availability and consumption of food in the cities (Thomas, 2013). About 800 million urban dwellers were found engaged in UA worldwide in 2008. It is also source of livelihood for 40% of Africans (Zezza and Tasciotti, 2008). UA provides almost 90% of vegetable and dairy requirement in cities like Dakar, Shanghai and Hanoi. The municipalities of these cities encourage the sector through tax exemptions, loan supply and promotion of less lease prices specific to the sector. This indicates that national and local authorities have come to understand the role of UA in various cities/towns across the developing world. The municipalities have come to understand that UA immensely contributes to employment and income generation, enterprise development, food security and nutrition, food safety, urban greening, ecological preservation, poverty alleviation, social inclusion of the disadvantaged groups, HIV-AIDS mitigation, recreation and education (Brown, *et al.*, 2002; Smit and Bailkey, 2006; Goldstein, *et al.*, 2011).

Agriculture in its broad sense in Addis Ababa and the environs has been practiced long before the establishment of the towns. It has also continued side by side with the development of the city, and has been playing key roles in various socioeconomic conditions such as supply of food and raw materials as well as employment and income generation for the urban poor. The sector has been dominantly contributing to the food security and employment opportunity of the urban families in the area. However, UA in Addis Ababa and the environs is highly constrained by various adverse factors such as competitive demands for land, lack of proper awareness among city administrators/planners, inappropriate market channel between producers and consumers, mismanagement of urban solid wastes and wastewaters, improper use of vacant spaces and parts of buildings, lack of capacity in enforcing the existing by-laws, and absence well-built and contextualized UA policy/strategy. It was with these states of affairs in mind that the researchers planned to look into the status of UA in and around Addis Ababa so as to have a say in the exigency of a well-built context-based policy development targeting to enhance the contribution of UA in socioeconomic development for the urban poor in the area.

STATEMENT OF THE PROBLEM

The world in general and Ethiopia in particular is undergoing the largest wave of urban growth at present than ever before. This has been driven by multiple factors such as better economic growth in the cities/towns, urban-biased spatial development and the accelerating rural-urban population migration. A case in point is the fact that the proportion of the world's urban population is expected to reach 60% by 2030 according to the estimation by the United Nations Department for Economic and Social Affairs (UNDESA). Sub-Saharan Africa, including Ethiopia, is among the fastest-urbanization areas in the world (ADB, 2014).

One of the foreseen challenges related to this wave of urbanization in developing countries, including Ethiopia, is the issue of supplying the urban poor with adequate amount and nutritionally acceptable food. This is a challenge because it is estimated at least one-third of the urban residents are/will be poor suffering from food gaps and other socioeconomic necessities. Similarly, unemployment, poor sanitation and population congestion could be key challenges emanating from the rapid urbanization in most cities in developing countries such as Ethiopia. In this regard, UA can be one of the most viable sources of income, jobs and fresh food supply for the rapidly growing urban poor. Particularly, for Sub-Saharan cities like Addis

Ababa and the surrounding towns, UA can be a good source of employment, household income, and food security for low-income urban households.

Besides its economic benefits, UA may function as an important strategy in proper urban waste management and micro-climatic regulation. UA may also positively impact upon urban greening and cleaning of cities/towns by turning the dilapidated and neglected open spaces into green and productive zones. However, UA has not yet achieved proper attention at various government structures ranging from federal offices to municipalities in Ethiopia. There is no specific office concerned with UA in most cities/towns in Ethiopia including most of the study towns (Bishoftu, Holota, Legatafo, Sebeta and Burayu) for this specific research. In the same way, there is no comprehensive legal framework and provisions targeting the development of UA, other than the pioneering policy/strategy that has been in place since May 2013 (AACA, 2013) by Addis Ababa City Administration. Therefore, it is with this understanding that the researchers planned to investigate the status of UA in and around Addis Ababa with the intention of drawing attention to the exigency of national UA policy to serve the development of UA in Ethiopia in general and the study areas in particular.

OBJECTIVE OF THE STUDY

The overriding objective of this study was to assess the overall situation, challenges and potentials of UA in and around Addis Ababa in view of its contribution to socioeconomic development. More specifically this study aimed at assessing the status of UA, reviewing the existing policy/strategy and indentifying major challenges, and recommending possible policy directives.

DESCRIPTION OF THE STUDY TOWNS AND THE RESEARCH METHODS

The study was carried out in Addis Ababa city and the small towns in close proximity to the city. The included smaller towns are Bishoftu, Holota, Legatafo, Sebeta and Sululta. These urban areas were selected purposively on account of their geographical proximity to Addis Ababa. The inclusion of small towns in close vicinity to Addis Ababa as geographical units of analysis was purposive, mainly for reason of comparison. Addis Ababa and the remaining sample towns contain 3,860,346 residents (CSA, 2015); of which Addis Ababa (the capital city of Ethiopia since 1886) alone contains 84.8% of the total study population.

Key informant interview, document review and observation were the three vital approaches of data collection techniques employed for the research. The research made use of purposive sampling design to select sample respondents (such as UA practicing households, small-scale urban-based agricultural entrepreneurs, experts, retailers and beneficiary households) in and around Addis Ababa. Most importantly, UA practicing households were interviewed and their activities were observed in order to obtain vital data such as land holdings, farming practices, input, household assets and income, productivity, access to services, marketing, challenges and the opportunities related to UA. All the interviews were done face-to-face with the respondents based on predesigned probing questions after their consent was obtained for reasons of the research ethics.

The key informant interview was backed by secondary data. In this regard, document review was carried out to capture the overall situation of UA in and around Addis Ababa in view of its contribution to socioeconomic development. The key documents reviewed for this research include, but not limited to, policy/strategy documents, scholarly journals, reports of governmental/non-governmental organizations and statistical database. The data analysis took the form of interpretative analysis focusing on providing explanations to the data obtained from key informant interviews, document review and observations.

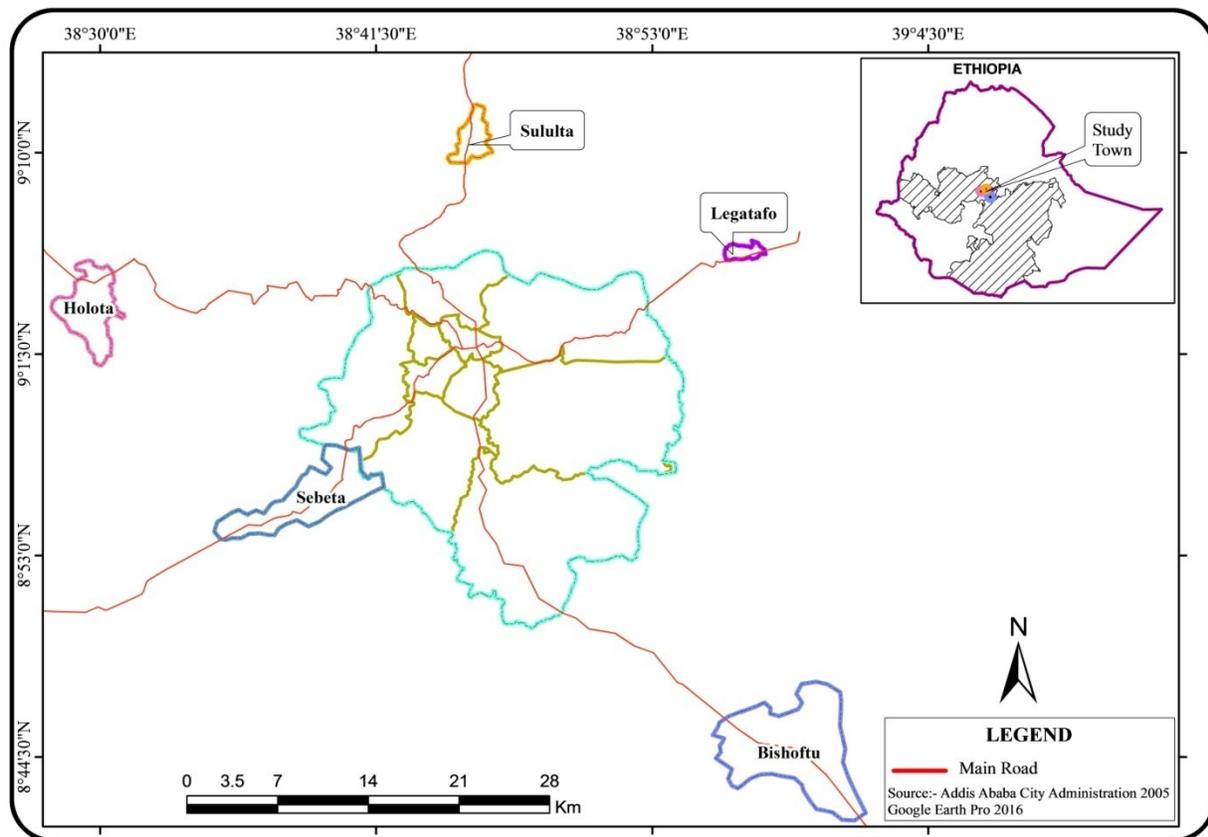


Figure 1: Addis Ababa and the other study towns in close proximity

THE STATUS OF UA IN AND AROUND ADDIS ABABA

Most UA practitioners in Addis Ababa and the small towns in close proximity are low-income earners who practice UA mainly for survival and achieve a combination of nutritional and socioeconomic benefits. UA in and around the city involves livestock keeping, predominantly dairy cows, sheep and chickens; egg production and the cultivation of rain-fed and irrigated crops, mainly vegetables but also cereals and pulses, on homesteads, river banks, school compounds and other open fields. The UA sector in Addis Ababa and the surrounding towns comprises individuals; farmers organized in micro-enterprises, cooperatives and a few commercial enterprises. The place for UA in this area can generally be divided into two categories: the first category is farming on backyard and open spaces around houses and riversides; while the second category is found in

peri-urban areas (outskirts) within the traveling distance from residence to farmlands. The UA consists mostly of dairy farms and vegetable production. Carrot, potato, tomato, different kinds of cabbages, cauliflower, beetroot, pepper, green beans, cucumber, lettuce and celery are widely produced. Moreover, mushroom, fruits, flower, seedlings and pig productions are newly emerging UA business areas.

The key informant interviews, document reviews and observations held for this research revealed that UA has been playing important roles in socioeconomic development, food security and livelihoods of the residents of Addis Ababa and the surrounding towns. The contribution of urban farm products to food supply is very significant. According to a CSA (2007) report, for instance, 30% of vegetables, 60 to 70% of milk and 40 to 60% of eggs consumed in Addis Ababa are supplied by UA. Approximately, 62 tone of honey is produced within Addis Ababa each year. Contrary to its immense contribution in various aspects, the contribution of UA to total employment is quite low (estimated to be only 3% in Addis Ababa). In relation to this Gebremichael, *et al.*, (2014) indicated more than 50% of the household heads in Addis Ababa are engaged in service sectors, and nearly 40% are in manufacturing, repairing and construction sectors while the place of UA in this regard is minimal.

During the fieldwork for this research, the research team observed that UA takes place in all the 10 sub-cities in Addis Ababa city and across the towns surrounding the city. According to estimates by Addis Ababa UA Core Process Office vegetables are produced on more than 300ha of Addis Ababa. And there are about 6,500 vegetable producers and about 5,800 livestock/dairy owners. There are about 470 micro- and small-enterprises farmers, particularly women, youth and elderly people engaged in livestock, vegetable and mushroom micro-enterprises in Addis Ababa. The existing few studies (Gebremichael *et al*, 2014) indicate that there are about 31,000 dairy cattle in Addis Ababa and the surrounding areas. Most dairy farms are operating in residential areas in a confined management practices with little or no access to grazing systems. In fact, it is uncovered through the key informant interview and the selected field observations held for this research that the benefit of UA extends beyond the producers themselves; and rather it includes other groups involving in the urban food chain who depend on marketing, transportation and processing of the UA products in Addis Ababa and the surrounding towns.

UA Core Process office is organized under Addis Ababa City Trade and Industry Development Bureau in Addis Ababa. This bureau is mandated to run everything related to UA in the city. This includes, but not limited to, awareness creation services to UA practitioners, waste management, safe production, extension services, market linkages, input supply and other technical support. The office also provides free artificial insemination and diagnostics to the livestock sub-sector. As regards to other small towns around the city, there is no office mandated to carry out issues related to UA indicating that this sector is one of the most neglected sectors in these towns. Be it in Addis Ababa or other study towns, there is no clear guideline as to where, how and when UA is to be carried out so as to contribute to the food security and overall socioeconomic development of the cities with little environmental and health impacts.

A case in point is the following translation of part of the interview records with a respondent:

'...I have a small-scale traditional dairy farm here at the outskirts of Addis Ababa City, Nifas Silk Lafto, Woreda 12. I have about five cows. Up until today, no body either from government office or from non-governmental organization has come to me and provided me with a guideline or nobody has tried to give me a piece of advice about urban-based dairy farm. I am operating the farm based on my personal experiences. I don't know whether I have committed some problems or not...'

This can be one of the policy implementation gaps in UA in Addis Ababa and the small town in close proximity.

All the respondents in the study towns including Addis Ababa agree that UA is better said than done as compared to other urban-based economic activities. For example, there are strong complaints from some residents living nearby UA farms in Addis Ababa about the unpleasant smells from waste products of UA. The research team observed that especially poultry and livestock farms give off distasteful smells. The study by Gerber, *et al.* (undated) confirms the adverse environmental impacts arising from intensive poultry production, if not properly managed. The neighboring respondents indicated that they don't like the unpleasant smell especially when it comes to manure. For producers and their community to be neighborly, it could have been necessary for the producers to have a basic knowledge of odor control, better ventilation design, management practices and feedlot management. In fact, the UA Core Process office is trying to provide advisory services so as to make UA compatible with the health living circumstances in the city. A case in point is an attempt to encourage households to establish biogas plants from the farm wastes. Indeed, a few observed urban farmers in the study towns, including Addis Ababa, owned biogas plants of their own.

In case of Addis Ababa, the city administration is trying to restructure and capacitate its office for UA ranging from city administration to *woreda* (district) level. This was mainly because the efficiency and effectiveness of UA in Addis Ababa is far from the goal targeted in urban and peri-UA policy/strategy of the city. There are intense challenges arising from lack of professionals in UA; poor technical knowledge of the officers; wide misunderstandings about UA among residents, urban planners, city administrators and the UA operators themselves; lack of funding; poor productivity per unit area; genetic improvement gaps; lack of proper quality and quantity of feed; and policy/strategy implementation gaps. This all set of circumstances call for comprehensive and integrated approaches in UA in and around Addis Ababa.

OPPORTUNITIES AND CHALLENGES OF UA IN AND AROUND ADDIS ABABA

The severest challenges that the urban/peri-urban farmers are facing in and around Addis Ababa is displacement. Access to farmland is identified by the respondents as a critical adverse factor in the development and sustainability of UA in Addis Ababa. Most of them are found worried about land insecurity thinking that the government may displace them in favor of the existing booming construction industry. They fear that they are at risk of losing the land they cultivate at any moment with short notice. They very well know that land is a public good, and it can be taken away by the municipality for business other than UA. Municipal and industrial land demand is and will be growing much faster than the case in UA, and is expected to adversely affecting the UA sector. The urban dairy producers, for example, have little or no access to traditional continuous

grazing systems, but rather follow confined management practices using purchased hay, crop residues and industrial by-products.

The problem of land is not only for small-holder urban farmers but it is challenging large commercial enterprises such as Genesis Farm in Bishoftu), Shola Dairy Farm (in Addis Ababa), Sebeta Agro-industry (in Sebeta) and Elemtu Dairy Farm (in Sululta). These UA enterprises/companies require reasonably large plots of land for production, packaging, sale and storage whether they are medium or large scale commercial enterprises/companies. But land is a scarce resource in and around Addis Ababa. This existing land insecurity has discouraged the producers to plan for a longer-term investment and also limited the extent to which services and other resources like finances can be provided. They are also challenged by the scarcity of other key resources (*i.e* water and electric power) which are in reality inadequate for consumption let alone for UA which demands huge amount of such resources. In fact, as indicated by David *et al* (2016), shortage of water supply is threatening the biodiversity and food production globally, let alone UA. It has been observed during the fieldwork that rainfall, shallow wells, municipal pipe line and river are sources of water for UA in Addis Ababa and the surrounding towns. Most small-scale dairy producers mainly use the infrequent/inadequate pipe water that is supplied by the municipality for domestic uses, not for UA.

Observation during fieldworks for this research indicates that most manufacturing industries in Addis Ababa and the surrounding towns have been established on riversides. Some key interviews put the figure to be over 80% of the medium and large scale factories. The manufacturing industries discharge hazardous biological and chemical substance into the rivers. This, in addition to the solid wastes being deposited in rivers, puts UA at a position of source of contamination for humans and animals using the UA products and the water. The words of one of the key informants have been translated as ‘...*Rivers in Addis Ababa are contaminated with various pollutants among which are heavy metals found at a very concentrated amount and being toxic to humans and the animals consuming the water from these rivers...*’. A study by Hamere and Eyasu (2017) have the same opinion with this that ‘...*As result of fast population growth, uncontrolled urbanization and industrialization and poor waste management practices Addis Ababa water resource are highly polluted threatening human health and the ecosystem function as whole...*’.

When observed from the consumers’ side, the availability of fresh UA products in a fair price and timely delivery are the major advantages of the sector. However, problems related to pollutions, use of wastewater, packaging, lack of proper storage and post management, safety and cleanliness, and poor transportation system are found to be major challenges. Crop and animal products of the UA that uses urban wastewater for irrigation and washing can be associated with risk of pathogenic diseases. Animal production farms in residential areas combined with the existing poor sanitation scenarios in and around Addis Ababa can have risks of contaminations. Diseases may easily transmit from animals and their byproducts to human being. Regarding to this, David *et al*. (2016) indicates that 90% of the infectious diseases in cities/towns of developing countries are transmitted from polluted water and close contact with animals.

Table 1: Summary of opportunities & challenges of UA in selected sub-cities of Addis Ababa & Sebeta town

Selected areas	Opportunity of UA	Challenges of UA
Yeka Sub-city Woreda 13	<ul style="list-style-type: none"> • There are about 197 households whose livelihood is depending on UA (42 of them on dairy production, 19 on beekeeping, 23 on animal fattening, 15 on vegetable production and 49 on crop production) • There are about 100 individuals who get the opportunity to cultivate on a spaces reserved for construction purposes, until the project starts. • UA has reduced transportation costs for some households as compared to products coming from rural-based agriculture • UA increased access to fresh vegetables through reducing transportation time and cost after harvesting 	<ul style="list-style-type: none"> • There is less awareness and underestimation of the contribution and the purpose of UA • Challenges in input and finance as well as lack of technical support • The service/supports from concerned offices are not research-based, and fail to address strategic problems of UA • Poor technical skill of the producers, contributing to depletion of resource • Unhealthy production scheme for both animals and vegetables farms
Bole Sub-city Woreda 10	<ul style="list-style-type: none"> • There are about 500 households, whose livelihood is depending on UA, such as animal production (fattening and dairy), poultry and vegetable production, including mushroom. • The sector has contributed about 70% of the informal jobs in the sub-city • UA is enabling the producers, especially those with the aim of home consumption, a chance to access fresh foods in their backyard. • UA is enabling the poor to access additional source of income, job opportunity and easy access to fresh foods 	<ul style="list-style-type: none"> • Labor shortage is mentioned as a critical problem in the sector as some young people don't want to engage in the activity • Lack of proper administrative body (independent bureau) accountable to UA management is mentioned as a critical problem • Supply of input, finance and absence of laboratory are mentioned to major problems to improve the productivity of UA.
Arada Sub-city Woreda 10	<ul style="list-style-type: none"> • There are about 143 (26 on animal production, 117 on fruits and vegetables production) • It creates jobs to about 71 individuals • Poultry, beekeeping and vegetable such as lettuces, root and carrot are the major products. • Most of producers are able to sell their products beyond own consumption. 	<ul style="list-style-type: none"> • Poor understanding among the society is mentioned as a key challenge • Space, water, finance and electric power are the major challenges for the urban farmers in the sub-city. • Adverse impacts of unpleasant smell from dairy farms is mentioned
Sebata town	<ul style="list-style-type: none"> • About 1,471 households earn their livelihoods from UA indicating UA a common feature of Sebata town • Small sale dairy production, beekeeping, and fattening farms are common across the town • Per-urban (farms at the outskirts) larger farmlands meant for production of crops such as teff. • UA is found to be one of the major livelihood sources in the town. 	<ul style="list-style-type: none"> • Poor understanding among the society and the municipality is mentioned as a key challenge • UA is practiced across the town extending from the center to the outskirts of the town. • Displacement is common as it is one of the expansion areas • Farmers tend to 'sell their plots of land' to those who want to build residential houses

Source: Summarized based data obtained from KII and document review

Other major challenges to UA include high feed costs, marketing problems, deterioration of vegetation (specially affecting apiculture), and the customer's declining interest to some UA products (such as honey) owing to fear of adulteration. Related to this, Gebremichael *et al.* (2014) indicated that this has adversely affected an estimated 1,000 urban beekeepers in Addis Ababa alone.

Regarding opportunities and challenges of UA specific to small towns nearby Addis Ababa, UA is increasingly seen as vital sector to provide with food to the increasing urban population in these towns. UA these towns has an immense potential to play in various urban development perspectives such as employment, income generation, enterprise development, food security and nutrition, food safety, urban greening, climate and biodiversity, ecological preservation, poverty alleviation, social inclusion of disadvantaged groups, HIV-AIDS mitigation, recreation and education.

In Sebeta, one of the towns in close proximity to Addis Ababa, about 1,471 households are dependent on UA for their livelihoods. Unlike Addis Ababa, the UA products in Sebeta include *teff*, wheat and barley in addition to potato, onion, lettuce, root crops and dairy farming. UA contributes to a great extent in the town creating a number of employment opportunities. Agro-processing industries are also vital sources of employment in this town. In addition, dairy product processing industries collect milk from farmers in a fair price on a daily basis. This has a great contribution to the producers in securing constant income and avoids wastage of the product. However, the challenges to UA are many and varied in this town. Financial problem was found to be among critical predicaments followed by scarcity of land, lack of know-how in waste management, lack of improved seeds/species, administrative and licensing problems and the neglect by the town administration.

The case in Bishoftu (a town located at 47km southeast of Addis Ababa) is a bit different as compared to other study towns including Addis Ababa. Its location in fertile Rift Valley escarpments and the biophysical conditions including availability of ample surface water (lakes) in addition to its proximity to the capital city makes Bishoftu extremely preferable for UA. As a result, a large amount individuals, private companies and cooperatives are found engaged in UA in Bishoftu town. Besides abundant vegetable farms and animal rearing practices, cultivation of ornamental trees and flowers for commercial purpose are very common in Bishoftu.

Water is a key problem for UA in Bishoftu. But pollution of the existing surface seems by UA seems attention seeking. The presence of various UA farms in the city which may have an adverse impacts since most of them are using and discharging agrochemical (chemical fertilizers, fungicides and pesticides) which are found to be hazardous chemicals for the environment, animals and residents They may be also threats to groundwater. According to Abayneh (2013), for instance, both pesticides and fertilizers have high solubility and leaching potentials and can easily be washed away from fields by rain or irrigation, eventually finding their way to water bodies and soil.

In Holota, Sululta and Legetafo, land was found to be a critical challenge for UA especially for farmers who want to produce in large-scale. The fact that these towns are among the most urban expansion areas in Ethiopia put the UA practices at risk of critical shortage of land and water. As a result, UA lacks attention by the municipalities as compared to other sectors like construction of residential houses, hotels, recreation center and restaurants. Most farmlands have been ceased to exist in expense of these sectors. The municipalities have been compensating the farmers (though not reasonable price) and chase them away. Generally, the emerging lucrative construction businesses in these towns have UA in danger

UA is one of the land-use categories in the Addis Ababa city plan, which categorizes it as either temporary or permanent. The temporary areas are located along river banks, at the perimeter of forest reserves and in open spaces within the city, while those considered as permanent are in peri-urban expansion areas. However, urban encroachment means that those lands categorized as permanent are increasingly taking on features of temporary UA. The existing expansion of urban areas is eliminating peoples not to access the raw materials from the natural environment such as agriculture, forestry and fisheries. The demand and price of land rises as buildings and infrastructure boost Addis Ababa and the surrounding towns. Land use for multiple purposes change the agricultural practice within and around them. Even jobs and services, becomes more complex economically as well as physically people desire proximity to jobs and services. In fact, it has been estimated that about one-quarter of the developing world's poor live in urban areas because of the migration from the rural areas (Nugent, 2001). This escalates poverty to become more urban (Zezza and Luca, 2008).

The UA case in Sululta seems a bit different from other nearby towns in that it produces firewood in addition to the common UA practices. Some dwellers of the town produce eucalyptus trees for commercial firewood. The nearness to Addis Ababa benefited the people to carry the firewood to Addis Ababa on daily basis. In addition to this, the data obtained from the municipality shows that there are over 6,000 households whose livelihood is dependent on different UA activity such as animal fattening, dairy production and crop production. UA has particular importance for the urban poor in that it has been greatly contributing to struggle against food insecurity among the poor households. However, similar to the case in other study towns including Addis Ababa, UA practice in Sululta town is not free from challenges. Among the critical challenges are shortage of agricultural input shortages, absence of training to UA practitioners, low productivity, poor market linkage, financial problem, lack of proper awareness among administrator, high municipal staff turnover, lack of priority to UA, absence responsible personnel in UA, urban expansion, rapid population increase, and dislocation of farmers in favor of construction industries. This findings of this research discovered that particularly under estimation of the contribution of UA by the municipality has weakened the potentials of UA in Sululta town.

POTENTIALS OF UA FOR URBAN FOOD SECURITY IN AND AROUND ADDIS ABABA

In several urban areas in developing countries, UA is taken as one of the strategies to address the increasing urban unemployment, poverty and hunger (Bellows, Brown, Smit, 2003). The same could have been true in Addis Ababa and the surrounding towns such as Bishoftu, Holota, Legetafo, Sebeta and Sululta. This is because UA enhances food and nutrition security, provides employment and generates income for the urban poor in general and the disadvantaged groups such as women, people with disability, the elderly and unemployed youth in particular. The frequent field-based observations aiming at obtaining firsthand data for this research indicates that the entire need for vegetable and dairy products of the residents of Addis Ababa the small towns nearby the city can be met by the UA within the boundaries of these urban areas. This can be achieved through producing once/twice a year on a small plot of land through efficient use of the scarce sources such as water and land.

According to the definition by World Food Summit 1996: '*Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life*' (FAO, 2006). However, there are various factors affecting households' physical and economic access to sufficient, safe and nutritious food to meet their dietary needs all times. Food security in urban areas is mostly affected by household income and market price, which together determine the purchasing power of the residents. This disproportionately affects the poor and has a significant impact on food security and nutritional well-being on the urban people. This indicates that small-scale UA has the capacity to provide the poor with somewhat continuous food items if properly managed.

In Ethiopia in general and in Addis Ababa and the surrounding towns in particular, there are at least two types of food insecurity problems. It can be divided based on its level of influence and the duration of occurrence which are namely known as chronic and transitory food insecurity. Chronic food insecurity is a continuous inadequate food intake; while transitory food insecurity implies a temporary decline in the required quantity and quality of food. UA in Addis Ababa and the surrounding areas towns in particular may be useful to alleviate both chronic and transitory food insecurity in that the UA practitioners can produce continuous, how large or quality the product is.

Urban malnutrition and food insecurity is a problem for all countries in the world in one or more than one standards (Battersby, 2013). Most of the time city dwellers in Addis Ababa and the surrounding areas towns have limited experiences and opportunities to grow food items, as a result of which they are forced to purchase almost the entire food items they require from market which most likely comes from rural areas. This contributes for the food to lose its nutritional value since it travels over greater distances. In addition, poor urban households, especially those in Addis Ababa, allocate higher proportion of their disposable income to food. Minor inflation can affect the purchasing power of the residents, particularly the poor, and reduce the dietary quality and diversity of food. This justifies that UA in Addis Ababa and the surrounding towns may be useful to alleviate the problem.

Urban poverty and food insecurity in Addis Ababa and the surrounding towns seem to have more impacts in the future than what it does today. This is because urbanization in Ethiopia has been increasing with a rate of 4.3% per annum and over 30 % of the urban population is expected to be concentrating in Addis Ababa and the surrounding towns (CSA, 2015). First hand data obtained from city administration of all the study city/towns strongly support this presumption in that the city/towns are experience very high influx of young population over years. This population growth rate is also escorted by increasing numbers of the urban poor and malnourished, due to primarily an expected high rate of youth unemployment in these urban areas. In association to this it is good to mention the fact that the food habits of the people are still predominantly traditional, with most households acquiring unprocessed and raw food items and processing and cooking their own which is often time-intensive. As with other African cities, Ethiopia's urban populations are highly dependent on purchased foods, and are thus quite vulnerable to food price swings. In the same way, inflation indices for food commodity are very high and the purchasing power of the population has been appreciably eroded (Gebremichael, *et al.*, 2014). Therefore, giving more

attention to UA will have, no doubt, a positive impact on poverty alleviation, food security enhancement and job creation in Addis Ababa and the surrounding towns.

The city administration in Addis Ababa and the surrounding towns are, therefore, required to give attention to the importance of UA in that UA can contribute significantly to food supply, employment creation, income generation and environmental management so that it lessens problems related with food insecurity in one or another way. They are required to know that not only in these towns in Ethiopia but also there is a thought that over 200 million urban residents produce food for the urban market worldwide as indicated in (Thomas, 2013). Data from the same source shows that this production represents 34% of total meat production and 7% of egg production worldwide (Thomas, 2013). This contributes around 15% of food consumed globally. The figure is likely to be double within the next twenty years. UA improves the food security of urban households through providing direct access to a larger number of nutritionally richer foods such as vegetables, fruit and meat; as well potentials to take diverse diet can increase. Zezza and Luca (2008) indicate that most importantly UA can assure stability of household food consumption based on seasonality or other temporary shortages.

Addis Ababa and the surrounding towns can also benefit from UA in many waste management and greening aspects rather than food security for the urban poor. UA improves the urban environment and ecosystem through greening the city. In addition it contributes for the urban cleaning through stimulating the productive reuse of urban organic wastes. UA stimulates the development of related enterprises such as production of necessary agricultural inputs and the processing, packaging and marketing of outputs as well as animal health services, bookkeeping and transportation. The services rendered by these enterprises may owe their existence in part or wholly to UA. Input production and delivery may include activities like the collection and composting of urban wastes, production of organic pesticides, manufacturing of tools, water delivery, purchase and distribution of chemical fertilizers.

In addition to its immense potential in food security enhancement, UA has also the potential to moderate the urban temperature in Addis Ababa and the surrounding towns. Studies (Collins, *et al.*, 2013; Gebremichael, *et al.* 2014) indicate that the mean monthly maximum temperature over Addis Ababa has been increasing by 0.19°C per decade since 1950s. With the low emission and good standard of UA scenario the maximum temperatures will increase within a range of around 1.0 to 1.7°C and with high emissions and poor UA performance scenario the maximum temperatures will increase within a range of around 2.0 to 2.5° C. UNhabitat (2010) also indicate that urban areas produce about 70% of greenhouse gas emissions worldwide. Developing countries are anticipated to contribute about 90% of the greenhouse gas emissions while they try to accomplish their development goals. This calls for enhanced attention for UA in urban conurbation in and around Addis Ababa.

Addis Ababa and the surrounding towns can also secure social benefits from UA. According to Golden (2013), one of the social benefits of UA is creating safe spaces to recreate and create more local pride and attachment to the environment. It may function as an important strategy for social integration, physical exercises and education. UA projects that involve

disadvantaged groups such as orphans, disabled people, women, recent immigrants and elderly people have the capacity to integrate them more strongly into the urban network and provide them with a decent livelihood.

UA has also the capacity to protect the health of the community. Urban gardening is a good physical exercise to protect non-communicable diseases such as high blood pressure and diabetes. Gardening enables the gardeners secure their health advantages throughout their life time. It is associated with satisfying labor, physical and mental relaxation, socializing and a means to produce food and beauty. According to Bellows *et al* (2003), when appropriately practiced, gardening can be a key element in successful health intervention programs because it addresses simultaneously the physical, mental, spiritual and social health of individuals and their communities.

THE ADDIS ABABA UA POLICY: A BRIEF ASSESSMENT

In general speaking, UA is one of the most neglected sectors in Ethiopia in general and Addis Ababa in particular. It has been practiced traditionally and haphazardly in the backyards, on plots and off plots across the cities/towns. The overall contribution of the sector is very less as compared to its potential role in various aspects. It has been viewed as less important activity. Absence of clear policies and legislations has put the UA in complications and challenges. In fact, the Urban and Peri-urban Agriculture Policy and Strategy for Addis Ababa was drafted and put in place by Addis Ababa City Trade and Industry Development Bureau in May 2013. This policy is targeting at assisting the Addis Ababa City Administration in promoting and supporting the development of viable urban and peri-urban agriculture, provision of guidelines in the implementation of UA programs, assisting the local authority in the integration of UA in its socioeconomic development systems, and addressing key issues and challenges in the development of UA in Addis Ababa. Other study towns (Bishoftu, Holota, Legetafo, Sululta and Sebeta) have no policy/strategy document for UA.

The Urban and Peri-urban Agriculture Policy and Strategy for Addis Ababa planned to address broad aspects of the sector. One of these is ensuring proper space for UA since space is vital for the proper operation of the activity. As per this goal, it is the duties and responsibility of the city government to facilitate the urban farmers to access available vacant spaces for agricultural activities though its implementation is found to be minimal. Ensuring the development of safe UA in the city is also the target of the policy. But still water pollution, more specifically river water, is posing a significant health risks for UA in Addis Ababa. The wide use of wastewater by UA practitioners still poses questions related to safety of the sector. It is also mention in the policy that provision of relevant, efficient and pluralistic delivery of UA support services to enhance the productivity and economic viability of UA in the city as a critical point. The support includes training of farmers; strengthening farmers' organizations and research services; and facilitating inputs, basic infrastructure development, credits and financial services. Ensuring health and environmental risk-free UA in the city; developing strategies and action plans to create healthy and environment-friendly UA; establishment of a sound legal framework to support all healthy UA activities in the city; ensuring gender and social dimension of UA; and adequate involvement of the disadvantaged groups are mentioned to be key issues in the policy. However, the reality on the ground shows minimal implementation of what have been targeted in the policy.

Amidst the presence of UA policy and other related regulations, the respondents for this specific research are still worried about the healthiness of UA products in Addis Ababa. The worries of the respondents particularly arise from the use of wastewater and polluted rivers for agricultural purposes calling for the city administration to test out the products all the time. The city administration has the obligations to make sure the safety of the products all along. It is also required to aware the UA stakeholders related to food safety, integrated waste management, preparation and consumption of organic fertilizer, and environmental protection.

THE UA NEGLECT IN ADDIS ABABA

UA takes various forms at different levels of development, the technology, the demand for fresh products and awareness of the society. In some cases, UA is considered to be the activity of a society at advanced stage while in other cases it is taken to be '*the business of the poor*' in a given set of topographical features, climate and tradition. In both cases, UA is vulnerable to neglect by municipalities and other stakeholders.

In case of Addis Ababa, the city UA office and the environmental protection authority have packages and procedure for eco-friendly UA management. Urban Job Creation and Food Security Agency/Office is also trying use UA as an outlet to create jobs and enhance the food security status of the urban dwellers. But still there is a huge gap between the desired goals and the actual practices on the ground in reality. Large amounts of food could have been produced on small plots of land in the city through efficient and eco-friendly use of resources and technologies. In this regard, the idea of Bellows *et al.* (2003) is worth mentioning that in UA many folds of yield per unit area can be produced than the case in rural farms through implementation of raised beds, soil amendments and hoop houses none of which is the case in Addis Ababa.

UA in Addis Ababa is a resource-poor sector; land, water and power being some of the major scarce resources. In fact, it is stated in the policy that UA can use municipal open spaces on temporary basis. But it seems practically difficult to transfer or to have a temporary license of cultivation on the vacant spaces in the city. Most interviewed and observed individual UA practitioners don't have the information how to access space as per the policy statement. Moreover, they argue that the '*available vacant*' spaces in the city are owned by organization or individuals in one way or another. They are not vacant in reality. There is also no guideline as to how to temporarily transfer such spaces to UA operators. These realities indicate the inattention of the municipality to UA which, in turn, discourages the producers who are earning their livelihoods from UA in one way or another.

One of the indicators of the neglect is the fact that most interviewed small-scale urban farmers are not legally registered and they have no legal receipt to retail their products. Most of them are also not paying tax. In fact, bigger companies do pay tax and have also legal receipt to do so though they are complaining that the taxes for UA are overestimated and should not be in comparable with other businesses. They criticize absence of taxation system that considers the seasonality and susceptibility of UA. As mentioned above, most small-scale UA producers are unable to sell their product for supermarkets as they have

no legal receipt. They do it without receipt which in fact challenges the legal transaction of UA products. They consider it as a ‘neglect’ calling for more works for intervention and legalization of UA marketing.

A case in point is the translation of words of one of the key informants operating UA business in the outskirts of Nifas Silk Lafto Sub-city describing the general situation of his UA business as follows:

‘...Agriculture is the only source of livelihood for my family though I have no legal license to operate agriculture. I have no formal training in agriculture. I got the skill of farming and the land from my father. We use the products for both household consumption and for sale sometimes. It allows us to eat food that we can’t afford to buy. The expansion of Addis Ababa city brought us the market near to our doors. There was nothing around some decades ago; but now we are engulfed by newcomer city dwellers. In fact, there is scarcity of land, water and power. Water pollution has become critical problem to our work. The water we are using is so smelly and unpleasant. The river is very polluted by solid and liquid wastes...’

This is considered to be one of the key indicators of ‘the neglect’ calling for more interventions by the city government.

CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

The socioeconomic development, urban greening, food security enhancement and job creation roles of UA is found to be imperative in Addis Ababa and the surrounding towns. However, the sector suffers from lack of proper attention by stakeholders, poor implementation, organizational problems, management and supervision. It is one of the most underprivileged sector and almost haphazardly practiced without proper registration and licensing in most areas in the towns. It is poorly benefited from research, extension services, technical skills, input supply and market linkage. The collaboration between different stakeholders working on UA is also found to be poor. Waste processing and recycling is not yet getting proper attention by the municipalities and the society at large in view of its immense contribution in UA.

Enormous vacant urban areas in the study towns are still wastelands meant for informal carwashes, dumping of solid wastes/garbage, junkyard and other unpleasantly organized ‘businesses’. The wastelands could have been turned into productive green spaces through proper implementation of UA which, in turn, could have been sources of fresh foods in addition to its contribution as refreshment/recreation for the residents. In fact UA could be operated on small vacant areas like homesteads (on-plot), parks, roundabouts, roadsides, riversides and schoolyards. Uniquely, it can also be operated in outdoors, balconies, containers and rooftops.

Of the study towns, only Addis Ababa has introduced a policy/strategy for UA. The Addis Ababa UA policy/strategy has contained fairly vital issues that can be adapted by other towns surrounding the city. These include, but not limited to, issues related to promoting and supporting the development of viable urban and peri-UA, provision of guidelines in the implementation of UA programs, assisting the local authority in the integration of UA in its socioeconomic development systems, and addressing key issues and challenges in the development of UA in Addis Ababa. The policy/strategy framework has provided a tangible measure for achieving greater visibility of UA within urban planning. The policy sets out a sound framework that promotes UA in an effort to improve food security, income and employment in an environmentally friendly,

socially inclusive and gender sensitive manner, while reducing environmental degradation and pollution through the sustainable utilization of natural resources and the environment. The policy framework comprises five major elements that can be adapted by other study towns. These are issues related to access to land and water, health and environment, UA services, gender and social issues, and institutional and operational frameworks.

Cognizant of the importance of UA for multiple socioeconomic and environmental factors and in view of the less attention given to it, a few practical policy recommendations can be pointed out to be implemented by municipalities of each town/city. These include formal acceptance of UA as a legitimate urban economic activity; encouraging co-operatives, micro-enterprises and companies to involve in UA by using various mechanism including tax free importation of inputs and special (lower) tariffs for water bills; utilization of open urban spaces for UA; integration of UA in sustainable urban development policies/strategies, food security/sovereignty improvement, public health enhancement, urban environmental protection and housing programs; review the existing policies and by-laws in order to identify and remove unsubstantiated legal restrictions; encourage the involvement of NGOs and Community-Based Organizations (CBOs) in UA development; train UA producers in areas of wastewater treatment, irrigation technologies, seed/breed selection, livestock waste disposal, input supply, marketing, recycling and park administration; support for vulnerable community groups (such as HIV/AIDS victims) through UA development; encourage vertical farming; and enforce the existing environmental proclamations and by-laws to alleviate UA-based pollutions in urban areas.

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