Exploring the Practice of Urban Based Small Holder Farmers Agricultural Cooperative in the Improvement of the Lives and Livelihoods of Residents: The Case of Fanta Cooperative, Akaki - Kality Sub - City, Addis Ababa City Administration

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This is to certify that the thesis prepared by Yehualashet Tadesse entitled: **Exploring the Practice of Urban Based Small Holder Farmers Agricultural Cooperative in the Improvement of the Lives and Livelihoods of Residents:** The Case of Fanta Cooperative, Akaki - Kality Sub - City, Addis Ababa City Administration and submitted in partial fulfillment of the requirements for the Degree of Master of Social Work complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

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Abstract

The study has centered on Fanta Vegetable Producer Cooperatives that is situated in Woreda 4 of Akaki - Kaliti Sub - City, Addis Ababa. The study explored the practice of urban based small holder farmer's agricultural cooperative in the improvement of the lives and livelihoods of residents. The study is hoped to improve our knowledge about the role that the sector plays in cooperative livelihoods, and adds information to the limited researches done so far on the area. The objectives of the study were to explore the experience of urban based small holder farmer's agricultural cooperatives in the improvement of the lives and livelihoods of residents. A few studies were conducted on the effect of using vulnerable river water but research conducted about the contribution of urban based agriculture to the lives and livelihoods of the cooperative in the study area are scarce. The necessary data were generated both from primary and secondary sources. The study was based on a qualitative research method, to investigate the practice and contribution of urban based agriculture. The study employed case study approach to find out the possible alternative opportunities to challenges faced by them through diversifying different types of urban based agricultural products. The study conducted exploratory research because it is related and applicable to explore new concepts since a research conducted in this area is scarce.

The study has found that vegetable production along Akaki River constitutes the livelihood of Fanta agricultural cooperative. Besides, the cooperative has huge potentials of assets that can significantly impact future development of the area. These assets can be categorized at natural, social, financial, human and physical capitals. The findings of the study show that the major constraints of the cooperative are access to land; pollution of Akaki River; flood; absence of urban based agricultural policy; shortage of market outlet chain; and illegal trade. All these challenges need the combined effort of all stakeholders. Hence, awareness building and good local environmental governance systems that target all stakeholders should be created to prevent the current constraints and sustain the livelihood of the cooperative. As a short-term strategy, it is also advisable for the cooperative to use water from the deep well in collaboration with local development stakeholders in their vegetable schemes. Moreover, farming in urban environment has been found to benefit poor households through diversifying different types of urban based agricultural products.

List of Acronym

AAU	Addis Ababa University
ABCD	Asset Based Community Development
CSOs	Civil Society Organizations
CSA	Central Statistical Authority
DFID	Department for International Development,
EDA	Emmanuel Development Association
EPA	Environmental Protection Authority,
FAO	Food and Agricultural Organization
GIS	Geographic Information System- maps
MSED	Micro and Small Enterprise Development
NGO	Non-Governmental Organization
ORAAMP	Office for the Revision of the Addis Ababa Master Plan
SSW	School of Social Work
UA	Urban agriculture
UNDP	United Nation Development Program

Table of Content

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Urban garden, practiced by more than 800 million people globally, has contributed significantly to food security and food safety (UNDP, 1996). The practice has sustained the livelihoods of the urban and peri-urban low income dwellers in developing countries for many years. Deeltstra and Girardet (1999) have argued that it is also prominently being practiced in the developed world to supplement food imports. For instance, 40 present of agricultural production was obtained from urban farming in US in 1990, and there were 80,000 urban community gardeners in Berlin in 1999.

Despite its significance and long history, urban agriculture receives significantly less recognition by authorities in the developing countries than the developed world (FAO, 2007). In Ethiopia, like in other African countries, although urban agriculture is significantly contributing in fulfilling the basic demands of the low income population groups yet, this activity still lacks proper consideration and the rightful place from policy makers, urban planners and authorities (Axumite, 1994).

Urban agriculture's ability to do so in general and its contribution to improvement of the livelihood of urban based small holder farmer in particular, however, is being threatened by population increase due to natural and rural-urban migration, coupled with urban expansion of town and infrastructure developments that are competing with urban farming for available space and scarce resources such as water for irrigation (Gittleman, 2009). On the other hand, lack of proper attention from the concerned body stemmed from the shortage of information that substantiate urban agriculture's importance in the city sustainability, is also causing problem for urban farming in the city.

Nevertheless, the ability of urban based small holder farmer's agriculture to continuously supply food for the urban poor depends on better planning and improved livelihood through diversifying environmental friendly products (Addo, 2010). Urban agriculture includes agricultural productions such as crop and livestock productions mainly in public open spaces within cities and fringe of cities (Mougeot, 2000; and Deelstra and Girardet, 2004).

Most recently, however, there is increasing needs to improve and manage urban farming in developing nations (FAO, 2007). In recent years, urban agriculture is getting new momentum and advocacy by national and international bodies for its importance in the improvement of livelihoods and in the sustainability of cities and urban societies, and the role it plays on social, economic and environmental management of a City both in the developing and developed nations (Bryceson and Petts, 2005). Thus, understanding the role that urban agriculture plays in poor urban based farmer households is important for any following action to reduce urban food insecurity and improve incomes of the urban poor. Accordingly, the motive behind carrying out this research is to improve the understanding that urban agriculture contributes to the food demands and livelihoods of urban society.

The researcher was interested to conduct the study on the practice of urban based small holder farmer agricultural cooperatives in the improvement of the lives and livelihoods of food security status of residents, because the researcher had worked in the integrated rural development project for the last many years. Moreover, when the researcher was first year student, the group work assignment on community asset assessment was conducted on the study area - Fanta Vegetable Producer Cooperative along Akaki River, in Akaki- Kaliti Sub-City *Woreda* 4. Hence, the researcher has some information about their activity.

1.2 STATEMENT OF THE PROBLEM

Urban agriculture is widely practiced as an informal economic sector across many African cities (Bryceson and Petts 2005). Even though urban agriculture is a viable activity to complement food supplies from rural areas to towns and is a means of generating cash for many urban poor, its contribution has been underestimated (Maxwell 1999, Mougeut 2000). Urban agricultural producer cooperative are also often discouraged and ignored by the society and in policy reforms (Mougeut 2000). Research on the role that urban agriculture plays in livelihoods of urban poor people is, therefore, it is hoped to be helpful for better understanding of the urban poor livelihood strategies and realizing its contribution in urban 'poverty alleviation'.

Previous studies, of urban agriculture in the study area provide background information about vulnerability of Akaki River water in Addis Ababa (Fisseha, 1998 and Mohammed, 2002). For instance, a study by Mohammed (2002) shows that the vegetables produced by small holders farmers cooperative using Akaki River water is not recommendable for human and animal consumption and it is significantly affect the product marketing and consumption. Mohammed also stated about the use of obsolete production systems, which forced the community to live under poverty situations. Despite such challenges, there is generally improving trends in the living situations of the cooperative.

Besides, a study conducted by Fisseha (1998) also explains about vulnerability of Akaki River water and its significant effect on the vegetable products. Recent studies on the soils (Fisseha, 1998a) and vegetables (Fisseha, 1998b) treated with this Akaki River in Addis Ababa and its surroundings have revealed a gradual build-up of toxic substances. These toxic substances can seriously affect human and animal health (by affecting the food chain). Generally, the study of Fisseha, 1998 was to analyse the metal and metalloid concentration of some leafy vegetables

(cabbage, swiss chard and lettuce) in Addis Ababa, Akaki with emphasis on their toxicological implications however, they are not focusing on the livelihood alternatives of the vegetable producer cooperative.

A study conducted by Henok in (2007), indicates that the Akaki River serves as receiver of untreated industrial, municipal, domestic, medical, and other types of liquid waters and a dumping site of solid wastes from different residential areas. People also use the river for open air urination and defecation. Likewise, a study conducted by the Environmental Protection Authority (EPA) cited by Henok (2007) indicated that, out of 39 industries surveyed in Addis Ababa, only two have treatment plants. The rest industries discharge untreated wastes into the Akaki River (the tributaries). Thus, the studies were aimed at investigating people's perception of the social and health risks of river pollution as a centre of attention; but, they are not concentrating on the livelihood option of cooperative.

It is true that, the poorest groups of urban dwellers who are living in the river banks are seriously affected by those pollution risks. They are using the river water for irrigation production of vegetables. These activities are highly practiced by urban farmer's residence around Addis Ababa. The Fanta Vegetable Producer Cooperative lives under this condition and they are exposed to effects of the river Akaki. This river pollution is likely to have a number of negative social and health impact on these people

Therefore, in line with this growing concern, a few studies were conducted that focuses on 'the pollution status of the Akaki River' of the study area. As we have seen in the above, these researches do emphasize on and have offered us wide, deep and detail information about the effect of using vulnerable river water on vegetable products and its impact on human and

animal health. Thus, its importance is unquestionable, but, no one has thought about the alternative possible solutions of the small holder vegetable grower's (farmers) life situations side by side with their activity and about diversification of different urban based agricultural activities.

Moreover, researches conducted about the contribution of urban agriculture to the livelihoods of the cooperative in the study area are scarce (no studies have been conducted). Hence, the significance and contribution of urban agriculture lacks consideration and attention by researchers', government and non- government organizations and urban development studies.

Even though the establishment of the Department of Urban Agriculture at both city and sub-city level is encouraging, however, there is less consideration to improve livelihood through diversifying urban agricultural products. The majority are mainly focusing on vegetable production using traditional production systems. It was, therefore, the need to explore its contribution towards income generation, food security and poverty alleviation through diversifying different types of urban based agricultural products that encouraged this particular study. Therefore, this thesis aims to fill the gap by exploring the experience of urban agriculture in livelihood improvement, realizing major types of urban agricultural products practiced in the urban area and examining the benefits and constraints faced by urban farmers in the life of study area. To address the main research problem the following research questions was raised:-

1. What are the general features of urban based small holder farmer agricultural activities in Fanta Cooperative?
2. What are the challenges and negative impacts of urban based agriculture to the cooperative?

3. What are the contributions and possible alternative livelihood opportunities of urban based agriculture in Fanta Vegetable Producer Cooperative?

1.3 OBJECTIVE OF THE STUDY

The general objective of the study is to explore the experience of urban based small holder farmer's agricultural cooperative in the improvement of the lives and livelihoods of Food security status of "Fanta Vegetable Producer Cooperative", at Akaki- Kality Sub-City, Addis Ababa.

The specific objectives are:

- To find out the major types of agricultural products produced by organized poor small holder farmers cooperative in the urban 'neighbourhood'.
- To explore the benefits of urban based agriculture in the cooperative.
- To examine the constraints faced by the urban based poor small holder farmers in the cooperative area.

1.4 SIGNIFICANCE OF THE STUDY

The findings of this study is hoped to contribute to the urban based small holder farmers agricultural cooperative and will add information to the limited researches done so far on the role of urban agriculture in the area. In line with the problems mentioned above, studying the contributions of urban agriculture to Fanta Vegetable Producer Cooperative members' livelihoods in particular of urban based small holder poor farmers' at large should be applauded.

Besides, the result of the research will provide additional inputs and guidance to different urban agriculture stakeholders; to the Farmers Associations, Agricultural Extension, Cooperatives, Federal Government, the Environmental Protection Authority, and the Addis

Ababa Urban Planning Institute. The study also helps to raise the understanding on the role of urban farming, especially for effective urban development policy reforms in the region.

1.5 OPERATIONAL DEFINITION OF TERMS

- **Urban agriculture:** any agricultural activity that is practiced within in urban area.
- **Livelihoods:** are said to comprise the capabilities, assets and activities by which people satisfy their needs or gain a living. A livelihood is thus said to be sustainable when it can maintain and/or enhance these capabilities and promote the accumulating of assets. Livelihood includes: natural, physical, human, social and financial assets (capitals).
- **Community:** is a collection of people who interact and share common characteristics such as culture, activities, interest, identification and special location.

1.6 SCOPE OF THE STUDY

It is well known that there are many vegetable producer cooperatives in Akaki - Kality Sub- City of Addis Ababa City Administration. There are 18 organized vegetable producers' cooperatives. The present research was conducted on the Fanta Vegetable Producer Cooperative of *Woreda* 4, in Akaki - Kality Sub – City, because of its accessibility and my choice owns to the vegetable production.

1.7 LIMITATIONS OF THE STUDY

Fanta Vegetable Producer Cooperative is relatively small compared to the larger producer cooperative in the area. There is no as such clear documentation and reliable data specific to Fanta Cooperative at local level. So, the researcher was used secondary data from other sources such as Coordinators of Agricultural Cooperatives, Agricultural Bureau of Addis Ababa City and Experts of Akaki - Kality Sub-City Urban Agriculture Extension Service Office.

Organization of the thesis: The thesis is organized in to five chapters. The first chapter presents an introductory part of the study area, the second chapter reviews the related literature, the third chapter deals with the research methods used in the study, and the fourth chapter provides findings of the study and discussion of the research. Finally, the fifth chapter focuses on conclusion, recommendation and social work implication.

CHAPTER TWO: LITERATURE REVIEW

2.1 'URBAN AGRICULTURE' DEFINITION

This part intends to describe urban agriculture in a general context. Urban agriculture is not a recent phenomenon nor it is localized (Webb, 1994). Throughout most of mankind history and different civilizations, urban populations have to variable extents engaged in producing some of their food close to their own residence within or outside the city (Mougeot, 1994; Sawio, 1998). 'Food production' in urban settlements of ancient civilizations has always been part and parcel of the urban economy. Urban agriculture can be defined in a number of ways. Among others, Sawio (1994', 1998) defines urban agriculture as a socioeconomic activity that involves crop growing and livestock keeping in intra-urban open spaces and peri-urban areas. For the purposes of this study, urban agriculture is defined as the practice of agricultural activities within urban area.

The 'spread of poverty' and 'unemployment' encouraged the 'informal sector' of the economy to tend to food production as an alternative to money for 'poor' urban dwellers to survive and to make a living by doing. It is a common practice to attend to basic immediate needs such as food under 'crisis situation'. The capacity of urban agriculture to produce under unfavourable conditions such as limited access to resource is often sustained by the efficient production processes which utilize the optimum combination of family labour, minimum capital and the most appropriate form of locally learned technology (Sanyal, 1984, quoted in Mbiba, 2003).

2.2 THE MAJOR TYPES OF URBAN AGRICULTURAL P RODUCTION

Urban agriculture can be practiced for a variety of reasons. A study by Maxwell (1994) indicated that there are at least two major categories of household logic to be engaged in urban agriculture, which include livelihood improvement and household food self-sufficiency. Urban agriculture is, therefore, contributing a lot in improving livelihood of the cooperative by diversifying different types of urban agriculture and also improving access to fresh and low priced food and raises the nutritional status of the residents.

Deelstra and Girardet (2004) put urban agriculture broadly as any agricultural production such as horticulture, floriculture, forestry, fishery, poultry production, and livestock rearing mainly in public open spaces within or fringe of cities. UNDP (1996) considered urban agriculture as one kind of city industry where its produces are supplied to market to meet daily demands of urban consumers.

2.3 'URBAN FARMERS' WHO ARE THEY?

Generally, the urban farmers are men and women coming from all income groups. However, the majority of them are 'low to medium income earners', who grow food for self-consumption or supplementary income (Bakker et al., 2000). 'Low-income farmers' practice 'urban agriculture' mainly to survive and achieve a combination of nutritional and socio-economic benefits. 'Middle-income' home 'gardeners' practice 'urban agriculture' mainly to provide supplementary food and /or income and 'Agribusiness farmers' practice urban agriculture to obtain income. In the second and third categories are found people who have their 'garden's maintained by their servants and watchmen (Thomas, 2013:51).

'Diversity of urban farmers': Urban farmers can be classified in various categories depending on the region of the world, 'city' zone, site location, time allocation, producer's socio-economic status, production system and scale, and product destination (Mougeot, 1999).

In most 'developing countries', the 'urban farmers' belong to low income groups are relatively long term City residents, 'moderately poor', and frequently 'females'. They exist in all regions of the world, but face vastly different conditions and opportunities. 'Urban farmers' are marginally better off than the absolute poor. They have dwelt in 'the city' long enough to have acquired access to some land and other resources (Smit, 1996, Nugent, 1997 and Mougeot, et al., 1998).

2.4 BENEFITS OF URBAN AGRICULTURE

Since 'urban agriculture' is practiced mainly within boundaries of cities, it has unique features with distinct potentials. Long-term benefits of cities from urban agriculture imply the contributions of the sector to sustainability of cities (Nugent, 1999). Bryld (2003:81), stated that, "Urban agriculture brings with it great potentials for enhancing the situation of the urban citizens, especially, those with the lowest incomes who are dependent on the access to locally grown food".

2.4.1 Food Security and Health Benefits

Most of urban farming is practiced by the 'urban poor' who consume most of the production and supply the surplus to market (Bryld 2003, Mireri et al., 2006). The major expense for most of the 'urban poor' is purchasing of food; thus, they will be left with nothing for health, education and other necessities. They also hardly consume 'varieties of food'. Thus, it is not surprising that urban farming contributes to improving livelihoods for the 'urban poor'. It

improves not only quantity of food intake but also the nutritional value if the poor self-grow vegetables, fruits, chickens and so on (Smith 1996: UNDP 1996, Bryld 2003: 81,).

In addition, Ruaf (2007:2) emphasized the 'role of urban agriculture' as: the contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. The health benefits that are associated with urban agriculture are related to those obtained from consuming the urban agricultural products. 'Urban agricultural' products, such as vegetables and meat from small animals and poultry contribute to the nutritional wellbeing of urban residents. These crops and animals are important sources of proteins, vitamins, minerals and other food nutrients that are essential for the proper growth and development of the body.

2.4.2 Economic Potential

Urban farming can also be a good source of income for the urban poor, if it is especially practiced as a formal sector. Bryld, (2003) stated that urban farming has an economic relevance, because it is helping urban farmers, especially the poor, to use their non-farm income for other purposes instead of purchasing food, i.e., it improves the welfare of urban farmer households.

2.4.3 Social Benefits

In addition to the above economic benefits, urban agriculture in the urban area is bringing about significant social contributions. It involved 'some vulnerable groups' such as women and the elderly, thereby helping to reduce their dependency on other people. As the UNDP (1996:165) report reveals, "Urban farming improves social equity by improving the health and productivity of poorer populations and by providing them an opportunity to earn additional income."

2.4.4 Environmental Advantages

In most cases, urban agriculture is practiced in marginal spaces in cities and outskirts where lands are not suitable for other use. It, therefore, creates beautiful scenarios and landscapes, and improved microclimate, and nutrient recycling (Deelstra and Girardet 1999, and Bryld 2003). In addition to this, using the by-products of urban agriculture such as animal manure, agricultural residues, household wastes of vegetable and fruits and human wastes used as 'alternative energy' resource (bio-gas) and by-products of bio-gas plant is also used as organic fertilizer.

2.5 CONSTRAINTS OF URBAN AGRICULTURE

Despite the advantages of urban agriculture mentioned above, it has some limitations worth noting. In many cities, it is being practiced as an informal sector and has little support from local councils (Deelstra and Girardet 1999, Bryld 2003, and Bryceson 2005).

2.5.1 Environmental Pollution

There are numerous environmental disorders that have arisen from environmental pollution within urban area. The urban farmers are using highly contaminated river water for producing vegetables and watering their animals. A study by Mohammed (2002) indicated that the vegetables produced using Akaki river water is not recommendable for human and animal consumption and its significant effect on the product marketing and consumption.

Fisseha, (1998b) conducted study on metal concentrations of some vegetables grown with industrial liquid water at Akaki Fanta Cooperative shows that the leafy vegetables namely swiss chard and lettuce accumulated highest concentration of metals and metalloids, while on the contrary cabbage was generally the least at accumulators of metals and metalloids

(Fisseha1998b:298). So that, eating vegetables having heavy metals are known to pose a variety of health risks such as cancer, mutations, or miscarriages (Fisseha, 1998b: 296).

Chemical fertilizer is generally known to increase yield and quality of crops. However, excess quantity of nitrogen and phosphorus from fertilizer may cause water quality (CAST, 1992, cited by Fisseha, 2002).

2.5.2 Land for Cultivation

Agriculture requires land; however, there is lack of space for growing crops in cities.As Bryld (2003:82) said,

> "Besides feeding the poor in the cities, there is an urgent need for providing shelter for the homeless". Knowing that growing food in cities requires land, it may not be prioritized in urban land uses since the demand for urban spaces to build houses is by far higher than using spaces for agricultural activities. Argenti (2000:1) further emphasized that "...agricultural productive lands are likely to be lost in this competition."

2.5.3 POLICY AND INSTITUTIONAL CONSTRAINTS

There are factors limiting the sustained growth and development of urban agriculture. According to Mougeot (2001), lack of positive government policy on and recognition of urban agriculture as a viable sector are prevalent in most 'developing' countries. Most policies on agriculture, food, health, nutrition and environmental policies are silent on urban agriculture. Lack of official recognition of urban agriculture often leads to a feeling of insecurity among urban farmers, thereby limiting their commitment to investment in this sector. Similarly, some credit agencies, researchers, development agencies and market agents generally do not view urban agriculture as a significant industry (UNDP, 1996). As a consequence, the sector's benefits are not being fully realized by those urban populations who require nourishment.

2.5.4 LACK OF EDUCATION/TRAINING

Thomas has revealed one of the critical challenges facing most urban farmers was their 'limited skills' in agriculture. This was attributed to lack of training and/or technical support to help them improve their skills and knowledge, and increase their productivity. (2013:56).

2.6 NEGATIVE IMPACTS OF URBAN AGRICULTURE

Urban agriculture can be a health hazard. It uses resources of cities waste water for production. Uses of waste water /polluted rivers may contaminate crops / livestock and become health hazards to human beings. There are a number of cases when urban farming brought health problems (UNDP, 1996).

Besides these, the major constraints of urban farming include less consideration of policy issues about urban agriculture which resulted in less attention to the sector, limited working capital for farming and over-use of resources (ORAAMP, 2000). Moreover, according to Eyasu (2000), other challenges of urban agriculture are shortage of farmland, shortage of skilled man power, pollution of rivers, inadequate credit- saving institution and limited access to market.

2.7 THEORETICAL CONSIDERATION

Two main and contrasting theoretical positions on urban agriculture are argued. The first position views agriculture in the urban environment as a rural linked activity, with little or no relevance to an urban environment. Urban agriculture is therefore rejected as irrelevant in modern urban development. The second position regards agriculture as a rational economic and socially useful activity within urban development. That is, scope should be provided for urban agriculture to grow in the modern urban environment.

2.7.1 Rejecting Urban Agriculture

The view that urban agriculture has no relevance to modern environments can be explained by the 'Modernization' and 'Dependency' Theories (Sanyal, 1984, quoted in Mbiba, 2003). According to these theories, urban agriculture is a backward, subsistence, and rural habit practiced by rural migrants who are new in the urban area until they have familiarized with the urban way of life. Mbiba (2003:13) states that the Modernist Theory finds urban agriculture to be damaging the environment and recommend its destruction or elimination without compromise. The theory suggests that urban agriculture is a temporary activity. However, this contradicts reality as literature indicates that urban agriculture has always been part of the urban economy.

This view is misleading the goals of poverty alleviation and food security. Studies by Maxwell and Zziwa (1992) in Kampala, have found that the practice is not limited to poor people living in informal settlements or recent migrants to cities. All social classes, including those employed and working in the formal sector engage in the activity. What varies is the extent and purpose of participation in the activity.

2.7.2 Accepting Urban Agriculture

To view agriculture as a backwards and exploitive activity only when it is practiced in urban environments is restricting development strategies and options. Urban agriculture is not always subsistence focused or an exclusive activity for new and poor migrants from rural areas. Many who drive benefits are involved. With urban agriculture, households rationally allocate labour to allow household food security and income generation through production close to urban consumer points. Large numbers of urban households have survived the negative impacts of economic crisis and formal unemployment through engagement in 'informal sector', with

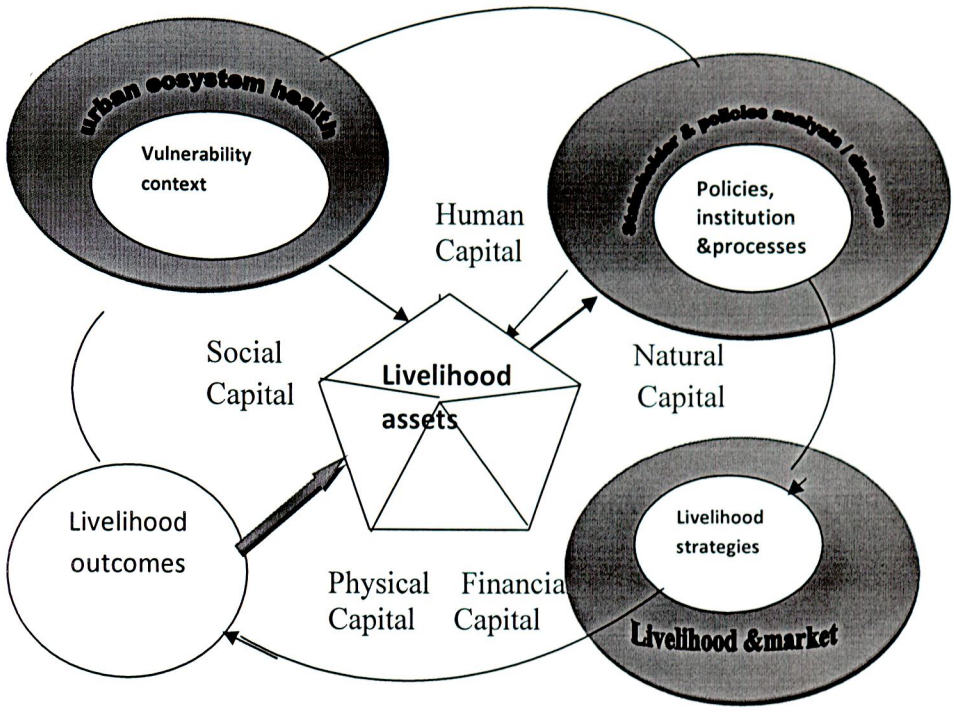
urban agriculture providing many with the opportunity to survive and improve livelihood (Mbiba, 1998). Based on these, Mbiba (1998) argues that the rejection of urban agriculture is unrealistic.

2.8 CONCEPTUAL FRAMEWORK

Urban Agriculture and Livelihoods- 'Livelihood' is defined as 'livelihood assets', income 'generating activities' and the access to both mediated by institutional and social relations that together determine an individual's or a community's quality of life (Carney, 1998; Ellis, 2000). To carry out, livelihood activities, 'farmers' have to have basic agricultural resources like land, water, livestock, money, labour and so forth. In particular, urban farmers need land and water which is often scarce in urban areas because of high demands for other opportunistic purposes.

In this study, the 'asset holdings' are classified into five categories: natural, physical, financial, human and social capitals (Ellis, 2000:28). The 'framework' also includes the influence of 'vulnerability' like shocks, trends, and seasons that could influence livelihoods, as well as the policy, institution and processes that determine who gets access to markets, shelters or decision making arenas (Ellis, 2000).

Fig .2.1 Urban Harvest Livelihoods Framework, Adapted from DFID, 1999



Livelihood processes **urban harvest interventions**

Ecosystem feedback

2.8.1 CONCEPTUAL APPROACH

As shown in Fig.2.1, five types of capitals or assets are distinguished, from which households develop their livelihood strategies:

Natural capital: - mainly involves the amount and quality of accessible land, water, and biodiversity. Households access these in a variety of ways ranging from formal land titles or membership in irrigation associations to casual cultivation of public spaces and illegal or informal use of waste water and solid organic wastes (DfID, 1999).

Physical capital: - includes basic infrastructure: transport - access to road, buildings, equipment, domestic animals, seeds, fertilisers, pesticides and other inputs. Livestock-raising depends on the physical capital of the animals themselves and the housing which affects their health and

productivity. Crop production needs equipment and sometimes structures like screen houses. Means of transport can dramatically change access to inputs and the marketing possibilities of crops and animals (Lee-Smith and Prain, 2006:16).

Human capital: - includes manual labour, different types of practical skill, different types and sources of knowledge, and good health or wellness. The human capital of a household includes the different knowledge and skills of women and men, the indigenous knowledge of the older generation, and the modern education of the young (DfID, 1999).

Financial capital: - is made up of available income and savings, and also formal and informal credit access. Because this type of capital depends on relations of trust, it is closely related to the fifth type of asset, social capital (DfID, 1999).

Social capital: - includes support acquired through formal or informal membership in networks and groups, often involving different kinds of reciprocal services, including the exchange of psycho-social welfare. Trust is the currency needed to enter these arrangements and it is strengthened or weakened through participation in them (Lee-Smith and Prain, 2006:16).

2.8.2 RELATIONSHIP AMONG THE CONCEPTUAL LIVELIHOOD FRAMEWORK AND LIVELIHOOD ASSETS

The livelihoods support system and urban agriculture involves the interaction of livelihood assets (human, financial, physical, natural and social capital), policy (institution and processes), livelihood strategies (livelihoods and market), livelihood outcomes (more income, increased well–being, reduced vulnerability, improved food security, more sustainable use of natural resource base) together with the effects of, risks and vulnerability context (shocks, trends and seasonality). The assumption by DfID (Department for International Development)

is that all individuals in society are endowed with some level of human, financial, physical, natural and social capital resources which describe their livelihood assets (DfID, 1999).

2.8.2.1 VULNERABILITY CONTEXT

The livelihoods framework (Fig. 2.1) links the urban ecosystem health theme to the vulnerability context (such as shocks, trends and seasonality) and livelihoods assets. Although external economic and political stresses and shocks such as price rises, drastic policy changes, or political upheavals often characterize households' vulnerability context, stresses and shocks are also related to the health of the ecosystem. Poor sanitation and the accumulation of wastes increase the vulnerability of households, weaken their ability to accumulate and deploy household assets and so make moving out of poverty more difficult and moving into poverty more likely (DfID, 1999).

According to the livelihoods framework, the urban agriculture impinges on urban ecosystem health, especially its potential to increase or decrease ecosystem health risks and thus vulnerability. For example, the role of urban agriculture in ecosystem health, although crop and livestock can introduce vital micronutrients into local food systems, they also can be the source of disease affecting humans (if they are produced using contaminated water). Because urban agriculture is connected to so many different natural, physical, and human designed systems, a very broad approach is needed to understand its relationship to health, including the health of humans and the environment as well as health of crop and livestock (Cole et al. 2008: 34).

2.8.2.2 POLICY AND INSTITUTIONAL DIALOGUE AND CHANGE

The government examines the power relations between the various actors, and can usefully be applied to urban agriculture (Lee- Smith & Cole 2008; Gore 2008). Dialogue includes the notion of social capital, meaning the degree of association, trust, mutual confidence, and social interaction characterizing relationships (Bebbington 1999; DfID

1999). Dialogue not only helps build social capital but is more fruitful and creative when partners to negotiation enjoy greater levels of social capital. Policy and institutional change through dialogue is a key outcome for ensuring the sustainability of livelihoods and ecosystem health benefits (DfID, 1999).

Policies, Institutions and Processes: Livelihoods are shaped by policies, institutions and processes at all levels from the household to the international. These determine not only access to the various types of capital (natural, physical, human, social and financial), but also the substitutability of capitals. They determine options for livelihood strategies, as well as access to decision-making bodies and external sources of influence (stakeholders). Organizations, in both the public and private sectors, decide and implement policies, legislation and regulations, and undertake activities, that affect livelihoods. Processes determine the way in which institutions, and individuals, operate and interact (Majale 2002:16).

The presence of urban agricultural policies enable: to build human resources include capacity building of the various actors and stakeholders in the agricultural development, enable to proper land use, to improve the finance system, to encourage urban farmers, to expand their business, and to strengthen urban agricultural development. In general, the Policy supports and deals with the utilization of human labour, proper use and management of land, water and other natural resources, targeted interventions for drought–prone and food insecure areas; enhancing the benefits of the working people; and enhanced use of agricultural technical and vocational training (DfID, 1999).

2.8.2.3 LIVELIHOOD STRATEGY

Livelihood and Markets: Developing market-demanded products and improving agricultural marketing systems are the two principal strategies under market and agricultural development policy.

The main activities include development of labelling standards, market information, strengthening cooperatives and urban farmers in marketing. Emphasis is also given to value addition through processing agricultural products that can be marketed by promoting the post–harvest technologies, reducing the length of the marketing chain, promoting standards, expanding the agricultural product (DfID, 1999).

Besides, the strategies in improving the finance system include: the financial institution contributes significantly to urban agricultural development. The effort of the government to promote farm input delivery system can be achieved through strengthening and expansion of urban Micro Finance Institutions in addition to service cooperatives and farm input retailers. The expansion of micro finance institutions is expected to support the urban agricultural activity in urban areas, because the institution plays a significant role in the agricultural development and also for the development of other sectors. The strategies in capacity building include: improving the capacity of professionals, maintenance of farmers' health who can contribute to the generation, promotion, multiplication and utilization of agricultural technologies (DfID, 1999).

2.8.2.4 LIVELIHOOD OUTCOMES

The market strategy plays an important role in the development of livelihood outcomes. This means, it enhances incomes of urban residents, increases well - being, reduces vulnerability, improves food security, and in general, it improves and enhances the health and quality of life of people and promotes sustainable social and economic development through the sound management and use of physical, social, financial, natural, human-made and cultural resources, and the environment as a whole to meet the needs of the present and the future generations (DfID, 1999).

Moustier (2001) has noted that urban vegetable production is one way of obtaining stable source of income for less qualified workers with limited initial capital for investment.

The importance of urban agriculture in the development of livelihood outcomes of many city dwellers can thus not be over emphasized. Its contribution to household food security through direct supplementation of household food is well known.

As it has shown in the above the literature part includes definition of urban agriculture, the major types of urban agricultural production, constraints, negative impact and benefits of urban agriculture, besides, the theoretical consideration contains accepting urban agriculture as a rational economic and socially useful activity within urban development and rejecting urban agriculture as irrelevant in modern urban development as well asrelationship among the conceptual livelihood framework and livelihood assets. The next chapter will comprises research methods for presentation; description of the study area, research design, sampling techniques, method of data collection, method of data analysis and ethical considerations.

CHAPTER THREE

RESEARCH METHODS FOR PRESENTATION

The methodology part includes description of the study area, study site selection, research design, sampling method, method of data collection (source of data collection -primary and secondary data collection and data collection instrument - systematic observation, individual in-depth interview and key informant interview), method of data analysis and ethical consideration.

3.1 DESCRIPTION OF THE STUDY AREA: Fanta Vegetable Producing Cooperative

Addis Ababa city has 10 sub - city and 116 local city administrations (*Woredas*). Akaki - Kality Sub - City is one of the ten sub - cities in Addis Ababa, which has a total number of 195,273 population (95,558 male and 99,715 female) (Akaki - kality Sub – City Administration Document 2013). *Woreda* 4 has an estimated 27,500 people (*Woreda* 4 Administration Report, 2013). The total population of Fanta Cooperative is 258, out of which female accounts for 53.5%, 122 are male and 136 are female (Fanta Vegetable Producer Association, 2013). Therefore, the study is carried out in one of the sub city called Akaki - Kality in *Woreda* 4 Fanta Vegetable Producer Cooperative.

The cooperative got its name after the stream named "Fanta" which is a tributary of Akaki River. The study cooperative was mainly bounded by KK Textile Factory in the north, Elderly Vegetable Producer in the South, Ethiopian Steel Melting Factory in the east and Fibre Factory in the west (Interview informant and Expert of Urban Agriculture Office of Akaki-Kality Sub-City, 2013).

Though reliable data specific to Fanta Cooperative is unavailable, the individual interviews conducted with the members indicate that the settlement of this cooperative dates back to some fifty to sixty years. The interviewed elders have explained about their settlement in the present resident area far back to the time of Italian invasion of Ethiopia, while interviewed young man and widowed women related it with the industrial expansion around Akaki (for instance, Akaki Metal Production, Akaki Textile…). The later argue that those people came to sell their labour following the establishment of Akaki Steel Melting and Textile Industries, where skilled and unskilled labours were demanded. The majority of the cooperative members are not sure when their forefathers come and settled in the area. But all tell for sure, that they are from the Guragie ethnic background. (N.B: All of the residents are migrants from south regions of Ethiopia especially, from Guragie ethnic groups).

Geographically, the study site is situated at the coordinates of $38^{0}48'36''$east longitude and $8^{0}52'38''$north latitude (Google Earth, 2013). It is located along the main road to the right side from Addis to Debrezeit. According to Akaki - Kality Sub - City Urban Agriculture Office (2013), Akaki - Kality has a mild climate and is found at 2000 – 2300 meters above sea level. Its average daily temperature is about 22- 27 degree centigrade, means annual precipitation is about mms 300 - 600 rainfall. Mostly, urban dwellers engage in urban farming during dry seasons from October to June.

Out of 18 Vegetable Producer Cooperative in Akaki - Kality Sub- City, Fanta Vegetable Producer Cooperative is one of vegetable producer cooperatives. The study area has 8 hectares, and out of which 6 hectares are used for vegetable production, while the rest are used for grass growing and selling (Akaki - Kality Sub- City Urban Agriculture Office, 2013). Urban farming in Addis Ababa can generally be divided into two categories: the first is in the city and the

second is within border of the city area. Fanta Vegetable Producer Cooperative categorised under the first category.

Study Site Selection:

The site was selected for the following reasons; first, the researcher first class assignment on community asset assessment was conducted there, next, even though a few researches have been done so far on the 'issue of vulnerability of river water', no study was conducted about the 'livelihood (living situation) of the cooperative. Therefore, the study's findings is hoped to fill the knowledge gap and contribute to the existing knowledge about the role that 'urban agriculture' plays in the study area and may also be used as a reference for other urban farming.

3.2 RESEARCH DESIGN

The study used an exploratory type of qualitative research design. The study intended to investigate the contributions of 'urban agriculture' to the income of members of vegetable producing cooperative and to realize /describe/ the major types of urban agricultural production as well as to examine the opportunities and challenges faced by 'urban farmer' in the study area. Qualitative research gives rich data and a chance for in-depth, open, detail understanding of a social phenomenon (Creswell, 2003). On the other hand, Linda, Amy and Thomas (2008:80) noted that, 'one of the major uses of qualitative methods is to explore phenomena and experiences from the perspectives individuals experiencing them'.

The researcher preferred to conduct exploratory research because to the best of her knowledge and there 'was no research undertaken in relation to the contribution of urban agriculture' to the livelihood improvement in the study area. Krueger and Neuman (2003) stated that, if the issue that you are researching is new or other researchers had written a little on it, you

have to start from exploration. Exploratory qualitative research is related and applicable to explore new concepts; it is also used to research about people's life experience and feelings (Krueger and Neuman, 2006).

The research questions led to the use of qualitative research method. Methods are flexible allowing one to explore new thought and dynamism from the research participants. It also enables one to explore an in- depth understanding of individual life experience (Eisenhardt, 1989; Yin, 1994). Therefore, qualitative methods are used to answer the research questions raised in this study.

The study employed case study as a research approach to explore a contemporary phenomenon within its real life context especially when the boundaries between phenomenon and context are not clearly evident (Creswell, 2007). This is because case study is the form of qualitative approach that focuses on an in- depth research having prolonged engagement with the case important to explore contemporary events (Yin, 1994).

Hence, the case study approach was used to explore the opinion, perception and attitudes of 'urban farmers'. The goal was to find out the possible alternative opportunities to challenges faced by the cooperative through diversifying different types of urban agricultural activities.

3.3 SAMPLING TECHNIQUE

The researcher employed 'purposive sampling' technique due to the fact that she had a prior knowledge about the background of the interviewed informants and key informants and that the experts are at a decisive position within the community. Purposive samplings are used if description rather than generalization is the goal. In this type of sample, it is not possible to

specify the possibility of one person being included in the sampling. For qualitative researchers, however, the ability to generalize their work to the whole research population is not the goal. Instead, they might seek to describe or explain what is happening with a smaller group of people (Dawson, 2002:54).

Through this sampling method, a total of eight participants, six members of the vegetable producer cooperative (two women, and four men), and two experts (key informants) of Addis Ababa City and Akaki – Kality Sub - City Urban Agriculture Office were selected and made to participate in the research.

The selection criteria for the research participants were age, sex, knowledge (experience on urban agricultural practice) and length of time living in the cooperative. Age was used to represent youth, adult and elderly. Sex was used to explore the participation and experience of men and women in the cooperative. Knowledge refers to experience and ability to explain the role of urban agriculture to the livelihood of the cooperative.

Lastly, length of time living in the cooperative was used as a selection criteria aimed to explain the general features of the practice, benefits and challenges of urban agriculture. Purposive sampling technique enabled the collection of rich information in order to answer the research question on the contributions and negative impacts as well as opportunities of urban agriculture to the urban environment, human nutrition and health in Fanta Vegetable Producer Cooperative.

3.4 METHODS OF DATA COLLECTION

Method of data collection includes source of data collection and data collection instrument. The study considers the practice of urban agriculture in the livelihood improvement of the cooperative, how to practice varieties of 'urban agriculture production' and the 'urban farming system' (vegetable production).

3.4.1 Source of Data Collection

To address the research questions the study uses both primary and secondary data.The primary sources were: Fanta Vegetable Producer Cooperative members, Urban Agriculture Experts of Extension Office of Addis Ababa City and Akaki - Kality Sub - City. The secondary sources were: books, documents and internet. Qualitative data were collected to find out agricultural production system in the study area, and understand 'farmers' opinions' about urban farming. Individual urban farmers were interviewed to collect qualitative information. Interviews with key informants were also held using a prepared check list (see Annex III).

3.4.1.1 Primary Data Source

Individual farmers were interviewed using an interview guide. The checklists were organized based on the research objectives and questions. The interview guides covered different topics to capture relevant information about: the characteristics of urban farming; types of agricultural practices; establishment and practice of urban agriculture; contribution of urban agriculture; source of income from both annual farm and nonfarm based activities; institutional and policy issue; and challenges and opportunities of urban agriculture. These data were important to understand the overall situation of their activity and their livelihood strategy.

The interview guide was made as simple as possible taking informants various backgrounds of the informants into consideration. Later, it was translated in Amharic, the commonly spoken and official language of the city. Interviews were held from 40 minutes to one hour depending on types of urban farmers. Individual interview was carried out during the month of May, 2013 which is a time when urban vegetable producer cultivating and harvesting vegetables.

Interview guides were open-ended, so that the researcher was able to collect rich information. During data collection, informants were directed /guided/ in advance to raise every idea and concern they had on the issues, and the researcher tried to probe participant to explore relevant data that could enable the answering of the research questions. Accordingly, checklist for Vegetable Producer members and experts (key informants) were prepared to collect relevant information.

3.4.1.2 Secondary Data Source

Secondary source were collected from books, internet and other published and unpublished documents. Some of the documents related to this study include: documents from Addis Ababa City and Akaki - Kality Sub- City Urban Agriculture Office, the *Woreda* GIS map, this map shows the existing location of the study area (*Woreda* 4 administration office and Internet) (see Annex IV).

3.4.2 DATA COLLECTION INSTRUMENT

There are different types of data collection instrument, among which the researcher has utilized systematic observation, individual in-depth interview and key informant interview to gather necessary data and information.

3.4.2.1 Systematic Observation

The researcher made systematic observation and focusing on the physical structures and boundaries, settlement/ residential area, vegetable farms, buildings offices, roads, river/ stream and market place of the area. Using this technique, the researcher was able to get the general understanding of the study area in relation to: geographic, socioeconomic and social service characteristics.

3.4.2.2 Individual In-depth Interview

In order to capture wide range of the vegetable producer cooperative perspectives, resources and gaps the researcher has conducted individual in-depth interview with different segments of the community: youth, adult, elders, men, and women. Since data gathered in this method has a more detailed nature. According to Krueger and Neuman, the other value of in-depth interview of different segments, is that data can be triangulated with other data collection tool (1982).

In-depth interviews are the most common type of interview used in qualitative social research and are taken with an opportunity sample of purposely selected informants to obtain representative information (Krueger and Neuman, 2006). Therefore, six urban farmers and two experts participated in the interview. Interviewing a number of different people on the same topic

will result different opinions, attitudes and strategies. To capture these differences different segments of population participated in the interview process. The researcher has conducted the individual in-depth interview till the researcher reaches the point of redundancy i.*e.* no new data comes up any more (data saturated).

3.4.2.3 Key Informant Interview

This method was used to collect data from the most resourceful, prominent and knowledgeable experts of urban agriculture recognizing the importance of the information obtained from such individuals in enriching the study. Accordingly, two key informant interviews which include one from Addis Ababa City Urban Agriculture Office expert and the other is from Akaki - Kality Sub - City Urban Agriculture Office expert were conducted.

Useful discussions were held with experts and the discussion includes issues like extent of urban agricultural system; location of urban farming; features of urban farmers, and potentials, challenges and possible alternative opportunities of the urban farmers in the area. Urban Agriculture experts as key informants were also interviewed about the extent of urban farming and characteristics, types of common production systems and the general situation of urban farmers in the study area.

3.5 METHODS OF DATA ANALYSIS

Qualitative data are more difficult to deal with than data in the form of number (quantitative). Qualitative data were collected to find out urban agricultural production practice in the study area, and understand farmers' opinion about urban farming. Data analysis was started while collecting data by forming concepts. Soon after data was collected, it was wrote down in Amharic and translated into English for analysis. During data collection, notes were taken and themes were then identified to support data collection in in-depth interview and key

informant interviews. Qualitative analysis more often uses general ideas, themes, or concepts or similar features and non-variable concepts as analytic tools for making generalization (Krueger and Neuman, 1982:436). Data obtained using different methods mainly of qualitative types have been triangulated to descriptively analyse the data under different themes of the study which includes the practice, contribution, challenge, impacts and possible alternative opportunities of vegetable producer.

According to Krueger and Neuman, in qualitative data analysis, the researcher formulate conceptual definitions and examines the relationships among concepts, and finally link concepts to each other in terms of a sequence as sets of similar categories (1982). Likewise, the framework for livelihoods analysis was utilized for organizing data and detailed investigation of urban farmer's livelihood (see Fig 2.1). Information on livelihoods was categorized according to the research objectives. The themes were analysed and categorized using the asset profile i.e. natural, human, social, financial and physical capital.

Thus, data from interviews was analysed and categorized according to themes emerging on the existing relationship between vulnerability context, livelihood assets, livelihood strategies, and policies, institutions and processes. By analysing a situation, the researcher organized data and applied ideas simultaneously to create or specify a case, and case study brings the data and theory together in the research process.

3.6 ETHICAL CONSIDERATIONS:

This research was conducted by taking all ethical issues of a research into consideration. Informants were informed from the beginning of the interview that the views of the individuals are kept confidential and used for the intended academic purpose only. Since data gathered in

this method has a more detailed nature. The informed consent was prepared in the informants own language, Amharic. The consent was containing personal information of the research objectives of the study, content of the study, time allocation to gather information and issues of confidentiality. Their name, Identity and other information kept private and were not disclosed to any person.

So far, this section explained the research design, description of the study area, study site selection, sampling method, method of data collection, method of data analysis and ethical consideration. The next part encompasses the presentation of findings and discussion of the study like socio-demographic characteristics of informants, practice of urban agriculture, the major types of urban agricultural product, challenge of urban agriculture, negative impact of urban agriculture, contribution of urban agriculture, alternative opportunities of Fanta Cooperative.

CHAPTER FOUR

PRESENTATION OF FINDINGS AND DISCUSSION

The findings and discussion of the study relate to the practice of urban based small holder farmer agricultural cooperative in the improvement of the lives and livelihoods of Food security status of "Fanta Vegetable Producer Cooperative" in general, and also it covers socio-demographic characteristics of interview informants, practice of urban agriculture, the major types of urban agricultural product, contribution of urban agriculture, challenge of urban agriculture, negative impact of urban agriculture, alternative opportunities of Fanta Cooperative in particular. Moreover, the discussion part is designed to present the similarities and difference of the findings of the study with the literature part in line with the objectives of urban agriculture in the livelihood improvement of cooperative.

4.1 Socio-Demographic Characteristics of Interview Informants

The study has centered on Fanta Vegetable Producer Cooperative situated in the southeastern part of Addis Ababa on the major trade route of the country, more specifically around Akaki Bridge. For the purpose of this study basic feature of informant's like age, educational level and gender were examined.

4.1.1 Age of Informants: -

The informants were from different category: young, adult, older men and women and their ages are between 25 and 70 years. The numbers of young farmers are few compared to others. The findings of the study reveals that although the number of young informants are few their contribution is very high in the urban farming activities. This indicates that urban agriculture has been practiced for a long years in the cooperative as a source of livelihood and food.

they occupy the larger plots. Moreover, the informants repeated that, all of the informants were engaged only in 'farming' based activities.

The findings of the study indicated, previously little attention has been paid to the women who tend to predominate in urban agriculture which relates well with their care-taking and house-holding roles in most countries (Mougeot, 1999, Hovorka, 2006). The finding of this study shows that the situation in urban areas (Fanta Vegetables Producer Cooperative) is better for women, which gives them a chance to demand a more equitable share of urban resources.

However, recently related to the literature, according to Mougeot, women play a vital role in urban agricultural activity. This means, women perform numerous vital roles directly related to urban agriculture, and actively participate especially in 'urban gardening' for home production, but also in food processing and marketing. In 'small-scale urban agriculture', women can perform the gender roles for which they are primarily responsible, namely provision of food, general household well-being and child-care duties. On a larger urban agricultural scale, the men take over food production and management of the plots (Mougeot, 1999).

4.2 PRACTICE OF URBAN AGRICULTURE

As the observation and in-depth interview made with the older person aged 70 indicated, vegetable production is the mainstay of all cooperative members. The major vegetables produced include: cabbage, beetroot, kale ('Ye'abeshagomen') carrot, green pepper, potatoes, head cabbage, swiss chard, cucumber, lettuce, and zikuni. Moreover, the community members are engaged in growing grasses for their livelihoods. Vegetables are selected based on the surrounding climatic situation and demand in the market. This means, especially onion is not produced in the area because it is attacked by rust / '**ዋግ**' and sometimes potato also attacked by

fog / 'ውርጭ'. Furthermore, their farm is open space for this reason; they do not grow tomato because it is easily stolen by thieves. It was observed that the farmers employ traditional tools such as hand tools and 'extensive labour' to cultivate their fields. Use of irrigation was found to be a common activity like some other farm area for vegetable production.

In the normal condition the farmers who have water throughout the year can produce three times per a year. However, Fanta Vegetable Producers benefited from the availability of irrigation water from rivers during the nine month dry season, they are produced two times annually because of flood. The reason is that, the cooperative's farm is located in the lowland area of Addis Ababa and when the rainy season comes Akaki River overflows its banks and totally covers the adjacent areas. So that, in the rainy season it is difficult to grow vegetables and this passes a great challenges to follow farmer's regular activities at the same time they lose what they can earn income from the products.

The findings of the study show that, there is a strong link between the socio-economic status of the cooperative livelihood and urban agriculture such as vegetable production. This means, the same as the literature, most of urban farmers obtained larger portions of their household incomes from vegetable production, where principally vegetable strategy provided for the majority.

The study found that, vegetable production is the base of all cooperative. According to Mougeot, urban agriculture is not only vegetable production but it includes the productions such as vegetables, horticulture, floriculture, forestry mushroom production, and raising livestock (dairy, small ruminants, poultry, apiculture, sericulture and fishery) mainly in public open spaces within cities and fringe of cities (2000). The cooperative is practicing only vegetable production among other varieties of urban agriculture.

The study found that, the cooperative producing vegetables for the family's consumption and sell the surplus to improve their income; increase the availability of fresh and affordable food for consumers; improve the nutritional status of the participants; and create job opportunities mainly for those who are low income especially women, orphan, elders, youth, etc.

It is true that the urban farmers are men and women coming from all income groups and the study cooperative are also sharing this situation. The study found that they are low-income farmers practicing urban agriculture mainly to survive and achieve a combination of nutritional and socio-economic benefits (Bakker et al., 2000). Urban agriculture is a source of everything for urban farmers. It is a source of food, access of employment, social gathering and networking and a means to access to other social services.

However, the role and the function of urban agriculture in the cooperative are underutilized as compared to its potential. Urban agriculture is the important income generating activity for people who engaged on it. Vegetable is produced in the centre of the town that are not transported long distance. Accordingly, they provide fresh food to the urban community.

4.2.1 THE MAJOR TYPES OF URBAN AGRICULTURAL PRODUCT

According to the interview made with informants, for these farmers types of urban agriculture is only vegetable products and the researcher has asked one of the widowed informant and she said that,

> *We are growing varieties of vegetables in our farm both for home consumption and for sale. These varieties of vegetables are carrot, cabbage, beetroot, potato, kale ("ye'abeshagomen"), "yeguragegomen", swiss chard, cauliflower, zikuni, lettuce and green pepper. And other older informant aged 60 said, however, because of climatic condition we are not produce onion in the area and also our farm is open space for this reason, we do not grow tomato because it is easily stolen by thieves. Sometimes even the guards participate in this theft.*

The findings of the study show, the cooperative has been producing mainly vegetable products. This means, vegetable farming is the only form of urban agriculture practiced by the peoples living in Fanta Cooperative. According to Mougeot, urban agriculture includes agricultural productions such as vegetables, horticulture, floriculture, forestry, mushroom production, and livestock rearing, cattle fattening, small ruminant, poultry, apiculture, sericulture and fishery mainly in public open spaces within cities and fringe of cities (2000).

Moreover, according to Deelstra and Girardet (2004), the agricultural activities practiced in urban area can be categorized into three main groups: crop production, livestock rearing and mixed farming. In the present context, mixed farming means practicing both crop cultivation and livestock production together.

4.2.2 'URBAN FARMERS'

According to the interview made with 60 years informant, urban farmers are all members of the 'cooperative' and mainly belong to low-income groups. They practice vegetable production mainly to survive and socio-economic benefits. Both men and women are engaged in farming vegetable products in Fanta Vegetable Producer Cooperative.

As Mougeot stated, urban farmers can be classified in various categories depending on the region of the world, city zone, site location, tenure modality, time allocation, producer's socio-economic status, production system and scale, and product destination (Mougeot, 1999).

Generally, the urban farmers are men and women coming from all income groups. However, the majority of them are low to medium income earners, who grow food for self-consumption or supplementary income (Bakker et al., 2000). The findings of the study show in accordance with the literature, the study area's farmers are urban farmers who grow vegetables for consumption and income. These urban farmers mainly belong to low-income group. They are

relatively long-term city residents and moderately poor. This means, urban farmers are marginally better off than the absolute poor. They have dwelt in the city long enough to have acquired access to some land and other resources. The other categories are people who have their gardens maintained by their servants and watchmen (Thomas, 2013:51).

4.3 CONTRIBUTION OF URBAN AGRICULTURE

When the researcher has interviewed the leader of the cooperative aged 38 about the benefits of urban agriculture he said that, "I have started to live here since two decades and I have seven families, so far the household income is only this vegetables even I have no any other job and I have spent it for everything.

Besides, the in-depth interview held with widowed woman aged 55; older person aged 70 and observation reveal that, Fanta Cooperative livelihood is primarily based on Akaki River for traditional vegetable production. They have irrigated water throughout the year, and can also grow vegetables nine months. Irrigation requirements make up an important part of the urban water supply demand in dry season. Urban farmers in Fanta Vegetable Producer Cooperative make their livelihood strategies from different vegetable based activities.

The finding of the study show, Akaki River is the basis of the livelihood of Fanta Cooperative regardless of its quality. Availability of water is very often the crucial element for people to become engaged in urban agriculture, and also the availability of irrigation water from rivers during the nine month dry season is used for vegetable producing areas (Pescod, 1992).

A study by Fisseha (1998) and Mohammed (2002) shows that the vegetables produced using polluted Akaki River water is not recommendable for human and animal consumption and its significant effect on the product marketing and consumption.

According to Nugent, the significance and benefits of urban agriculture are: increasing community food security, improving freshness and variety of produce providing, local jobs, greening and beautifying cities, recycling nutrients, treating waste, empowering urban people, localizing food production, bringing the products closer to the market, involving city residents in the cultivation of their own foodstuffs (1997:19). Similar to the literature, Fanta Vegetable Producer Cooperative are benefiting from the vegetable production. The vegetable produces are the major contributors to farm income and foodstuffs in the study area.

4.3.1 INCOME

The researcher has asked one of the elder person living in the cooperative for 38 years about the major sources of income in the study area: he said:

> *Our major sources of income are vegetable products and these vegetable productions are the major contributors to our farm income in the community. Especially, at the time when the cost of vegetables rise, our farm income also increase and increase in farm income contributes to an increase in our household income and vise-versa.*

Thus, we can realize that vegetable productions are the major contributors to farm income in Fanta Vegetable Producer Cooperative. We can easily observe that increase in farm income contributes to an increase in household income. The findings of the study indicate that, urban farming can also be a good source of income for the urban poor. Bryld, (2003) stated that, urban farming has an economic relevance because it is helping urban farmers, especially the poor, to use their non-farm income for other purposes instead of purchasing food. In other words, it improves the welfare of urban farmer households.

On the other hand, according to Mougeot, (1994) self-produced food in cities provides nutritious food otherwise unaffordable (all varieties of vegetables in low-income households of the community), replaces purchased food staples these with more nutritious foodstuff, affords

savings which can be spent on non-produced foodstuff or other needs (school fees, transportation), and/or generates supplemental income which can be reinvested in other urban businesses.

As was estimated during the in- depth interview, annual average household income is about 12,000.00ETB. When per capita income is calculated using the average family size of 9.2 persons, as the data obtained from Fanta Vegetable Producers' Cooperatives office, it is about 1304.35 ETB (70.39 USD). This is much lower than the national average per capita income of 779.00 USD (UNDP, 2009).

Basically, having only vegetable production is not sufficient income source to the family. As the researcher has mentioned, Fanta Cooperatives is the one of those that has been victimized to runoff each year. Not a single plant remains on the garden and farmland each time rainy season comes as Akaki River overflows its bank and totally covers the adjacent areas and this runoff is hazardous to the lives and wealth of the community in general. Hence, there should be diversifying varieties of environmental friendly urban agriculture products like horticulture, mushroom production, livestock rearing, cattle fattening, and small ruminant, poultry, apiculture, sericulture and fishery productions.

4.3.2 HEALTH BENEFITS

The health benefits that are associated with urban agriculture are related to those obtained from consuming the urban agricultural products, such as varieties of vegetables. In line with this, I have interviewed the secretary of the community, aged 25, regarding the health benefits of vegetables grown in their farm. He stated:

> *Our vegetable gardens have significantly increased the quantity of food available to our households and even for our neighbourhood and we consume varieties of vegetable products and supply the remaining*

to market. He has also added that self-growing improves not only quantity of food intake but also the nutritional value of foodstuff.

As in the literature, the findings of the study show that, different types of vegetables contribute to the nutritional wellbeing of the cooperative as well as urban residents. This has been emphasized by Ruaf (2007:2) who stated that urban agriculture as the contributors of food security and healthy nutrition is probably its most important asset.

Most of urban farming is practiced by the urban poor who consume larger part of the production and supply the surplus to market (Bryld 2003, Mireri et al. 2006). The major expense for most of the urban poor is purchasing of food thus, they will be left with nothing for health, education and other necessities. They also hardly consume varieties of food. Therefore, it is not surprising that urban farming contributes to improving the livelihoods of the urban poor. It improves not only quantity of food intake but also the nutritional value if the poor self-grow vegetables, fruits, chickens and so on (Smith 1996: UNDP 1996, Bryld 2003: 81).

4.3.3 SOCIAL CONTRIBUTION

Besides the above economic benefits, food security and nutritional value, urban agriculture in Fanta Vegetable Producer Cooperative is bringing about significant social contributions. The cooperative has strong social bond among them. In line with this, in-depth interview made with the widowed woman aged 55 reveals that,

Our community has idir named Fanta Wondimamachoch Meredaja idir. It was established with the objective of mutual support in cases of mourning. It also enhances our social resources like relationships of trust, membership of groups, networks, and access to wider institutions. For example, Fanta Vegetable Producers' Association is one of the major and oldest business associations established in 1974 with the objective of enhancing members' production capacity and creating synergy to overcome common problems, improving the

Idir- it is an association accepted and respected by the community and established with the objective of socialization and mutual support in cases of mourning and to coordinate burial ceremonies.

living condition and promoting self -help culture among members. She also added, we are always meet together monthly and pay some amount of money to the associations and used when needed. Furthermore, the other older informant aged 60 similarly said that our idir is not only used for burial cases but also we utilize it to overcome common problems like flood risk and the case of deflation.

Concerning community's relationship with outsiders the chairman of the cooperative mentions that even though, "we have a good relationship among ourselves, we are weak in the linkage we have created with outsiders". As they have stated, the cooperative members have not established marriage relations, which is the major indicator of cooperative relation with outsiders.

The findings of the study indicate that urban agriculture in Fanta Cooperative is bringing about significant social contributions. Accordingly, as UNDP report (1996:165) revealed "urban farming improves social equity by improving the health and productivity of poorer populations and by providing them an opportunity to earn additional income". Urban agriculture involves some vulnerable groups such as women and the elderly, thereby helping to reduce their dependency on other People.

4.3.4 ENVIRONMENTAL ADVANTAGES

Urban agriculture contributes to healthy and greening cities. In line with this, the secretary of cooperative stated that, although the farm places are not suitable for buildings and/or human settlements; it certainly is a good habitat for urban agricultural activities. Thus, the vegetable gardening creates beautiful situations, greening, landscapes, improved microclimate, and nutrient recycling (they are also uses byproduct of vegetables as a fertilizer along with chemical fertilizer). The findings of the study show that, in most cases; urban agriculture is

practiced in marginal spaces in cities and outskirts where lands are not suitable for other use (Deelstra and Girardet 1999, and Bryld 2003).

According to Deelstra and Girardet, (1999) using the byproducts of urban agriculture such as animal manure, agricultural residues, household wastes of vegetable and fruits and human wastes can be used as alternative energy resource (bio-gas) and byproducts of bio-gas plant is also used as organic fertilizer. The cooperative has been only recycling byproduct of vegetables used as a fertilizer as well as they have uses the chemical fertilizer although it has benefits to increase the product, but it is very expensive when we compared it with the compost (natural) organic fertilizer. On the other hand, the cooperative does not recycle wastes such as poultry manure, cow dung, household, market waste (spoiled fruits and vegetables) as well as human waste. This is mentioned in the literature for soil fertility purposes. However, the cooperative has not prepared and utilized the natural resources like compost.

4.4 CONSTRAINTS

As the observation and in-depth interview made with 60 ages of older person as well as expert of Akaki - Kality Sub - City Urban Agriculture Office revealed Fanta Cooperative has so many concerns which are common not only to them but also to all other communities living along river. The most pressing issues cited include access to land; environmental pollution; flood; skills-related challenges; absence of urban agriculture policy and lack of institutional support have been identified as major constraints of the cooperative.

4.4.1 ENVIRONMENTAL POLLUTION

When conducting this study, the researcher has observed numerous environmental problems that have arisen from what is generally termed as 'environmental pollution'. The

cooperative is using highly contaminated river water for producing vegetables, watering their animals and even showering and bathing. Regarding this, the expert of Akaki - Kality Sub-City Urban Agriculture Office said that,

> *As to my knowledge the level of water and air pollution that exists in the sub-city is exceedingly terrible. The chemical remnants and byproducts released from factories as solid, liquid and gaseous wastes could not be controlled yet. The repeated effort of the Environmental Protection Authority to raise the awareness level of residents, business communities, factory owners and managers has generated little results. The private sector is running to maximize its profit regardless of what it is doing to the environment.*

In addition to this, the leader of the cooperative added that:

> *There are many factories around our farm area and the factories are modern and have their own treatment plant installed together with the machine. However it is not functioning for the reason of cost factor. One important point to be noted here is that we are using this waste water which has different colors and odors released from the factory.*

The findings of the study show that, a study conducted by the Environmental Protection Authority (EPA) in 1997 cited by Henok, 2007, indicated that, out of 39 industries surveyed in Addis Ababa, only two have treatment plants. The remaining industries discharge untreated wastes into the Akaki River or the tributaries. According to a similar survey made by the EPA in 1997, 92% of the industries in Addis Ababa were discharging their effluents into the receiving environment without any form of treatment.

The major industries discharging their effluents into the river includes textiles, food and beverages, tanneries, chemicals, metal works. The volume of waste produced every day from these industries ranges from 1 – 1000 cubic meters per day (EPA, as cited by Mohammed, 2002). Therefore, the consequence of these hazardous chemicals harshly affects the livelihood options of Fanta Vegetable Producing Cooperative.

In relation to the Akaki River water the researcher has interviewed one of the older person aged 60 explain that,

> *"During the rainy season the ("koshkoshe lastic") synthetic polymer or the plastic bags, and broken glasses transported by the flood from all over Addis Ababa are damped on our farms. This has terrible effects on our production in various ways."*

From my observation of the situation, for the cooperative the consequence of the hazard is even extended to severely affect livelihoods options. As they have mentioned, the plastics and glasses do not decompose in the soil; any seed or seedling whose root meets with such materials automatically dries out or remains shrunken and unproductive. Hence, the collection and transportation of the plastic from farmland occupies their time and labor which they could have been using to other productive jobs. Moreover, the plastics become obstacles to every effort made for digging, weeding and harvesting of the agricultural products. During weeding they stick to and cover the blades of plows, hoes, and other farm tools used for the purpose, and even cut human and animal body while working on farm; generally they are dangerous to health.

4.4.2 FLOOD

With regard to the flood, the experts of Addis Ababa City Urban Agriculture Office said that:

> *Ethiopia is one of the countries characterized by high rainfall. The highlands particularly receive heavy rainfall which is accompanied by runoff. Apart from transporting topsoil, which is important for agricultural production, the runoff is hazardous to the lives and wealth of the population in general; Fanta Coo*perative *is one of those that have been victimized to this runoff each year. Sometimes a single plant is not remains on the farm.*

The young man aged 25 strengthens this idea,

> *The worst scenario comes when the Water Supply and Sanitation Authority of Addis Ababa releases the Laga Dadhi Dam water as the water accumulated in the Dam is in excess of its capacity to hold it together. Six years ago, I remember these two occasions overlap to heavily affect the downstream population at that time our vegetables were totally damaged.*

It is rather a general fact that the release from the dam is primarily facilitated because of the high runoff entering into the Dam. Therefore, the areas around the river have been victims of flood risk. As the findings of the study indicate, the effect of such risk is not limited to the loss of wealth only. It also leaves sustained environmental impacts behind, which results in long-lasting human suffering. Fanta Cooperative is the one that is shouldering all the problems mentioned and even more. This makes the flood one of the burning issues of the cooperative. To strengthen the situation the study found that Fanta *Wondimamachoch Meredaja idir* was established with the objective of mutual support in cases of mourning as well as the association has provided compensation to members several times to make them recover from the effect of flood. .

As the Addis Ababa City Urban Agriculture Office stated climate change and in particular rainfall variability and higher temperature brings flooding and drought, and affects agricultural production. Flooding is a big problem for vegetable production during the small and main rainy seasons for farmers along river banks and in the lower catchment areas of the city.

4.4.3 LIMITED SKILLS IN URBAN AGRICULTURE

Concerning the limited skills, the researcher has interviewed the widowed woman aged 43; point out that, "As we have told you the young and adult cooperative member have had some form of formal education. The remaining elders have not had any formal education and consider farming as major occupation. Moreover, the other interviewed secretary of the cooperative added that, "although we have an indigenous knowledge of producing vegetables with traditional practice, we have no entrepreneurial skills in using diversified urban agricultural activities and this situation hindered our involvement to expand and engage on other businesses."It is true that limited knowledge and skills in the area of urban agriculture heavily restricted agricultural production and development.

As the findings of the study indicate the staffs of the extension service provide technical information and advice to the member of the cooperative, however, due to lack of coordination among the public agencies, lack of institutional support in urban agriculture and limited number of experts in the Sub-City, the farmers in the study area have not acquire ample knowledge and are not involved in other types of urban agriculture practically.

The findings of the study revealed that, regarding skills-related challenges, Thomas has shown one of the critical challenges facing most urban farmers was their limited skills in agriculture. This was attributed to lack of training and/or technical support to help them improve their skills and knowledge, and increase their productivity. On its part, the Addis-Ababa Urban Agriculture Department admitted that it did not have enough experts to provide the requisite and continuous support to the farmers (2013:56).

4.4.4 A) POLICIES OF URBAN AGRICULTURE

According to the interview made with experts of Addis Ababa City Urban Agriculture Office coordinator said that, "So far there is no policy on urban agriculture in Addis Ababa; as a result there is lack of uniformity and coordination in the practice and management of urban agriculture in the city.

Besides the interviewed older person also said, "Urbanization has significantly affected our settlement. For instance, our vegetable garden was taken for various construction purposes without any replacement, for the reason that, we have not legalized land certificate." This is an indicator to the absence of policy that harms the livelihood of the cooperative. So, this is one of the major challenges for urban farmers and other concerned people in the area. Due to lack of public policy in urban agriculture, it is difficult to manage problems in the area of water pollution, irrigation system, farmer's capacity building, access to credit and saving.

On the other hand, interview made with the experts of Akaki - Kality Sub - City Urban Agriculture Office show that they also share the views of the farmer and there was no urban agriculture policy in Ethiopia. Thus, Fanta Vegetable Producing Cooperative farmers did not feel secure, which affects the contribution of urban agriculture to cooperative livelihood improvement.

Thomas, (2013: 53) stated that the main institutional challenge was lack of land tenure rights. This was regarded by many urban farmers as most restrictive to the development of urban agriculture in Ethiopia in general and in Addis Ababa in particular. In same way as in the literature, the study found that the absence of urban agricultural policy that affects the livelihood of the cooperative, for instance, as the older person mention above their vegetable garden was taken without any replacement. This is one of the major challenges for urban farmers and other concerned people in the area. Because of this, they feel insecure to invest and expand in mixed farming or in varieties of urban agricultural activity in their farm area.

However, the expert of Addis Ababa City Urban Agriculture Office Coordinator has explained that, currently, the government due to such difficulties, with the aim of income generation, employment creation, food security, poverty alleviation and environmental protection has formulated the policies and strategies of urban agriculture at both national and regional levels but not yet made official or proclaimed to the public. These should specifically address issues related to land tenure, access to credit, as well as training and extension services to improve the capacity and productivity of urban farmers. In general, the government plays a key role in the success of urban agriculture and really, this is good news to urban farmers.

b) INSTITUTIONAL SUPPORT

According to the interview made with the leader of cooperative indicated, Emmanuel Development Association (EDA) is one of the NGO currently operating in the study area. EDA has supported the cooperative with agricultural materials (tools), generator for water pump; it costs around 20,000.00 Eth Birr for producing vegetables.

Furthermore, the interview held with one of the oldest informant aged 70 indicate that Vegetable Producer Cooperative in Fanta Cooperative that started production in 1974 and legally registered in 1976 as a cooperative showed that the livelihood of 258 members depend on this cooperative. Currently, the cooperative is cultivating 8 hectare of land. However, for the last thirty eight years the cooperative have not land certificate. Because of this, lack of official recognition of urban agriculture often leads to a feeling of insecurity among urban farmers, thereby limiting their commitment to investment in this sector and even expanding to other business. As a consequence, the sector's benefits are not being fully realized by those urban populations who require nourishment. Thus, lack of government recognition was the biggest institutional challenge facing their cooperative.

The finding of the study show, (Thomas 2013) revealed that, while some farmers were benefiting from urban agriculture, the sector suffered from weakness in the institutional, financial and human capacities of the City. These included lack of a facilitating policy, unavailability of collateral, high cost of the requisite inputs, and the lack of extension services.

As it is obviously known, one of the opportunities for urban farming as a cooperative livelihood improvement and expansion of urban agriculture could be institutional support from government and non-governmental organizations. Based on this, the findings of the study indicate that the cooperative has good relation with Urban Agriculture Department. However, the

Environmental Protection Authority and the Micro and Small Scale Enterprises have poor coordination with the study cooperative.

UNDP report (1996) stated the reason includes: the perception of urban framing as not-modern, the use of recycled waste-water seen as unsanitary, constraints on access to land and water where farming is illegal, the fact that inputs: seeds, tools, fertilizer, are designed for rural use, the lack of official recognition leads to a lack of access to credit, information and technology, and lack of access to postproduction processes like marketing and distribution. These constraints affect low-income farmers more often and more severely than high-income and institutional farmers.

4.5 NEGATIVE IMPACT OF URBAN AGRICULTURE

According to the interviewed woman, vegetables have significantly improved nutritional status of households, increased the quantity of food available to the producers' households and their neighbourhood and used for consumption as well as improved the financial welfare of the households. However, when the researcher has raised a question about the quality of vegetables which is grown in the contaminated river water, the interviewed informants confirmed that vegetables which is being started to eating since four decades, but no one has shown any effects on the community's health as well as on the surrounding consumer.

However, some studies revealed that, although rivers were previously clean from pollution, because of the increasing urban population and industrialization, rivers now are contaminated with various pollutants, especially, Akaki River is the most polluted river, and the vegetables grown using Akaki river water is not recommendable for human and animal consumption. Specially, the leafy vegetables namely swiss chard and lettuce accumulated highest concentration of metals and metalloids, while on the contrary cabbage was generally the least

accumulators of metals and metalloids. This means, specific ions pose toxicity effect on the plant by accumulating in leaf tips and edges. So eating vegetables having heavy metals are known to pose a variety of health risks such as cancer, mutations, or miscarriages (Fisseha, 1998b: 296).

Therefore, urban agriculture can be a health hazard if it uses resources of cities such as waste water for production. Uses of waste water /polluted rivers may contaminate crops / livestock and become health hazards to human beings (UNDP, 1996).

Hence, consumers in the area prefer vegetables from out of Addis for fear of the discharges from metal industries that they feel is dangerous to human health. Among the vegetables especially lettuce, that are consumed raw are particularly dangerous in this regard. Consequently, this condition will harshly affect the livelihood of the cooperative

In general, urban vegetable gardens have significantly increased the quality and quantity of food available to the producers' cooperative and their surrounding area, improved the livelihood of the cooperative and enhanced the environmental quality of the cooperative. Thus, using deep water well through drip irrigation in order to get pure water, save time, labour as well as installing treatment plant for industries will be advisable and will bring sound development in the area of urban agriculture producer cooperative.

4.6 ALTERNATIVE OPPORTUNITIES OF THE COOPERATIVE

The study has found that vegetable production along Akaki River constitutes the livelihood of Fanta Cooperative. Besides, the cooperative has huge potentials of assets like land, deep water well and labor that can significantly impact future development of the area. According to the observation and the interview made with the chairman of the cooperative, there are assets and can be categorized at communal, organizational and physical levels. To mention

the major assets and capacities found in the cooperative: access to transport and proximity to central market; strong cooperative tie through saving association, producer cooperative and *idir*; available farm land; the river; ground water and many public and private institutions in the neighborhood.

Identifying the assets utilized by the farmers, especially for farming based activities are important to understand which of the assets contributed to increase in resilience and security of the farmers' livelihoods. In line with this, five types of capital or assets explained as follows:

4.6.1 Natural (Environmental) Capital: - (eight hectares of land, Akaki River water, deep water well, biodiversity, environmental resources).

a) Land: Availability of land is very often the crucial element for people to become engaged in urban agriculture, as the leader of the cooperative stated and the researcher observed the total areas of 8 hectares of land belonging to the cooperative and currently used for vegetable production. However, 'lack of public policy in urban agriculture' and 'urbanization' has significantly affected their settlement.

As the findings of the study indicate, Thomas (2013:53), the first urban farmers challenge is lack of land tenure rights. This was regarded by many urban farmers as most restrictive to the growth and development of urban agriculture in the city. The existing 'unclear' and 'undecided legal' set up caused a sense of insecurity among most farmers, thus negatively affecting their commitment to invest in the development of the land whose ownership was uncertain. As a result, farmers lived in constant fear of being evicted from "their" land due to lack of tenure security.

b) Akaki River: As indicated in the study, the river is the basis of the livelihood of the cooperative. As the young man explained, two rivers come from different direction and join the river which carries a lot of waste materials from the upland and disturbed the natural ingredients, the color and odor of water in the river.

The study concluded by Henok, (2007) which indicates that Addis Ababa is endowed with numerous seasonal and perennial small streams that flow to the Akaki River. The Akaki River serves as receiver of untreated industrial, municipal, domestic, medical, and other types of liquid waters. The river serves as a dumping site of solid wastes from different residential areas. People also use the river for open air urination and defecation. Since, the city has inadequate solid and liquid waste management facilities, most of the solid wastes on an open environment are washed by runoff and easily enter into the river.

Thus, this situation indicates the poorest groups of urban dwellers who are living in the river banks are seriously affected by those problems. Hence, Fanta Vegetable Producer Cooperative lives under this condition and they are exposed to the river pollution of the Akaki River. This river pollution is likely to have a number of negative social and health impact on these people and also it affects socio-economic aspects and livelihood of vegetable producer cooperative.

c) Deep water well: As it has been stated earlier Vegetable Producer Cooperative own deep water well found in the vegetable farm site of the cooperative, it has the potentials to irrigate the cooperative farm. This well has been dug by the Akaki Textile Factory and used for textile production. However, the well is closed after the factory was sold to KK Textile Factory.

Therefore, this study recommends that the available water source and open spaces around the Rivers are 'good resource' for the 'supply of fresh vegetables' to the market. Accordingly, the cooperative along with the concerned body should use their full capacities and utilize it instead of the polluted river water as alternative opportunity to produce quality vegetables in order to be competitive in the market area and improve their livelihood.

4.6.2. Physical Capital: - Basic infrastructure (transport - access to road, housing and equipment of production as well as seeds, fertilisers and pesticides).

a) Transportation: There is easy access to transport services. The main highway joining Addis to neighboring towns Debrezeit, pass through the residential and working areas of the cooperative under study.

b) Housing Building Condition: as the researcher observed and elders explained, the houses of the residents are of poor quality, they are built of wood and mud walls with corrugated iron sheet roofs. Some of the cooperative members have their own houses while the remaining are living in rented private and public owned (*Kebele)* houses.

c) Farm tools: The cooperative has office, guard house, and farm tools including diesel power water pump, plough oxen, wheelbarrow, plow, hoe, digging fork, spade, sickle etc., however, their farming tools are more of traditional. As the 'secretary' of the cooperative stated, the cooperative has access to farm inputs such as seeds, fertilizer, as well as pesticides, and implements, though it is very expensive.

The study found that there was no problem of transportation for Fanta Vegetable Producer Cooperative. Houses in the study area are of poor quality, this is an indication of low income group. Diversifying urban agriculture helps urban farmers to have different physical

properties including private house. Regarding to the inputs and technologies for vegetable production it was generally found that 'urban farming activities' in the study area is 'traditional'.

d) Seeds, Fertilisers and Pesticides:

The increased costs of inputs like a chemical fertilisers, pesticides and seeds were also negatively affecting income. With regard to seed, they know the type and quality of the seed through practice and they are purchasing directly from piazza / 'ፒያሳ' seed shop market for higher price. Whereas the use of chemical fertilizer is common in the farm than manure and the major source of chemical fertilizer is the Office of Urban Agriculture.

On the other hand, the study found that the compost produced from the organic waste was quite insignificant compared to the amount of inorganic waste generated in, i.e. preparing and using manure is relatively less common, rather they prefer to use inorganic fertilizer Urea and Dap, and it is very expensive. The study also found that there were a number of usages emanating from urban agriculture. Among which, the study classified these into the farmer produce compost and utilize and by processing and packaging supply the surplus to market in order to generate income for the cooperative.

The study found that lack of access to inputs such as improved seeds and improved agricultural equipment. These are not supplied by any government institution, the urban agriculture office. As a consequence, the urban farmers were forced to buy from private suppliers at a much higher price. In general, the most important factors for production are: land, water for irrigation, labour, capital, material, seeds, pesticides, fertiliser, and technologies to carry out their farming activities. The crucial elements for low-income city dwellers to become involved in urban agriculture are access to land followed by the availability of irrigation water.

e) ILLEGAL TRADE (LOCAL BROKERS)

Although there is a legal ground on how the business community should behave, there are people who are informally and illegally engaged into the business market as 'brokers' and benefit unfairly. As it was disclosed during the in-depth interview, these illegal brokers are found as threats and burdens to 'farmers' in general and to the Fanta Cooperative in particular. The farmers have no the right access to sell their products directly to consumer in the market place at the price that their products could value. The 'brokers have the power' to decide on and farmers are obliged to accept whatever price set by these illegal brokers. Due to this, farmers have stressed that; they sometimes cannot cover the costs of production they incurred. The actions of these brokers remained the cooperative concern for years and yet it is one of the burning issues of the time.

4.6.3 Human Capital: - (Health, Indigenous Knowledge, Information, and Ability to Labour)

As the young man (aged 25) explained, Fanta Vegetable Producing Cooperative members are participating in vegetable farming activities. The members of the cooperative are from all segments of the cooperative such as young, adult, elderly, men, and women. The study looked at labour as human physical effort and the cooperative member's labour is the most common input in almost all of the farm activities. Use of wage labour is sometimes practiced in the study area, especially; during rainy season the flood brings plastic tube and the farmer hire labour in order to clear the field.

The findings of the study indicated the activities of urban farmers are being performed mainly by cooperative members and both men and women are engaged in farming vegetable products in Fanta Vegetable Producing Cooperative. Though, the numbers of women heads of household are few as compared to men in the study area they are participating in vegetable

production just as both men and women are access to the resource equally. However, according to Mougeot, and Hovork a little attention has been paid to the women who tend to predominate in urban agriculture which relates well with their care-taking and house-holding roles in most countries (1999: 2006).

There are some knowledge gaps in diversifying integrated urban agriculture that is why the study cooperative are only producing vegetable products among other varieties of urban agriculture. This includes the extent of low awareness about the significance of urban agriculture around the urban farmers and at the government level. In accordance with this, the critical element for human capital is investing in education and education is found to be the key strategy for urban farmers to escape from poverty (Sharp et. al., 2003: FAO, 2008).

4.6.4 Social Capital: - Social resources (relationships of trust, membership of groups, networks, access to wider institutions).

The interviewed widowed woman aged 43 specified that the Fanta Vegetable Producers' Cooperative is one of the major and oldest business associations established with the objective of enhancing members' production capacity and creating synergy to overcome common problems, improving the living condition and promoting self-help culture among members.

Moreover, the cooperative has legal entity. Fanta *Wondimamachoch Meredaja idir* was established with the objective to promote mutual support in cases of mourning, members earn annual dividend of about Ethiopian Birr 1,350.00 per head. Each member contributes Birr 170.00 annually. The cooperative has provided compensation to members several times to make them recover from the effect of flood.

As Viljoen stated that, urban agriculture serves as a source of enjoyment and social networking. Urban agriculture connects people to people, people to environment and people

within them (2005). It is also a basic tool that brings urban poor men and women into contact with the other social group. The urban farmers communicate with other people during vegetable harvesting and marketing.

The study found that during the interview the Secretary of the cooperative group explained that they have strong social bond among themselves. This is evident that they have vegetable producers association and Credit and Saving Association that have been functioning since 1974/5 and 1994/5 respectively. Members attribute this fact to the strength of the social bond/ network existing among them.

According to UNDP, urban agriculture is also seen to have the power to locally mitigate the effects of social disturbance (1996:35). Thus, urban agriculture is served to strengthen social integration of the farmers by organizing them into cooperatives. However, the linkage they establish with outsiders is weak. This is because as the study found that, they think that their association will miss its goal when outsiders join them.

4.6.5 Financial Capital: - Financial Resources available (savings and supplies of credit)

As the leader of the cooperative stated, Fanta Saving and Credit Association was established in 1994 with the purpose of strengthening members entrepreneur through creating financial access and to cope up with the common disaster of flood caused during rainy seasons. The major financial institutions providing financial services in the study area are the Sub-City's and *Woreda's* Addis Credit and Savings Microfinance Institution.

The Secretary of the group identified, in 2006/07 G.C the cooperatives borrowed 30,000 Birr from *Woreda's* Addis Credit and Savings Microfinance Institution for the purpose of cattle fattening. However, due to the high amount of the interest rate, they couldn't continue their expansion of the agricultural activity. The older person also added that, the cooperative's

main income source is vegetable production, and their annual income is highly variable due to price fluctuations, production and market related factors. The existing unclear legal set up caused a sense of insecurity among most farmers, thus negatively affecting their commitment to invest in the development of the land whose ownership was uncertain.

The findings of the study concluded among the most critical challenges or constraints that were identified by the cooperative and confirmed by 'experts' was high interest rate. Even other members also stated that they experienced difficulties whenever they needed to expand and modernize their farm operations. Although the Addis Credit and Savings Microfinance Institution had expanded its services to ten sub-cities in Addis Ababa, the high interest rates remained an obstacle for urban farmers cooperative to benefit farmers.

The study also explored access to financial assets of the cooperative and found that there are adequate institutions that provide credit and saving services for the cooperative. However, as the researcher has mentioned above due to high rate of interest the cooperative did not receive credit from credit and saving institutions. This implies that there is a need to work on creating awareness on the benefit and risks of saving and credit more access to saving and credit institution. As one of the challenges besides the high rate of interest that urban farmers did not borrow money, due to land insecure. Therefore, it is important to enhance land use security for urban producers and working on livelihood diversification found to be advisable.

Up to now we have seen the findings and discussion of the study relate to the practice of urban agriculture to the livelihood improvement of Fanta Vegetable Producing Cooperative. Moreover, the discussion part is designed to present the similarities and differences of the findings of the study with other studies on urban agriculture concluded elsewhere. The final chapter will cover conclusion, recommendation and social work implication.

CHAPTER FIVE

CONCLUSION, RECOMMENDATION AND SOCIAL WORK IMPLICATION

5.1 CONCLUSION:

The in-depth interviews, field observation and key informant interviews, with various cooperative members, officials and review of documents have revealed that Fanta Cooperative livelihood is based on Akaki River for production of vegetable. The study revealed that urban agriculture (vegetable production) in Fanta Cooperative group was benefitting them and generate household income and had enhanced the food security, daily food intake and nutrition of the cooperative in particular and the 'urban dwellers' in general, by supplying fresh vegetables.

Thus, vegetable production along the Akaki River, should couple with other business activities such as horticulture, floriculture, mushroom production and livestock rearing, poultry, fishery, apiculture (beekeeping), sericulture (silk production) to improve the livelihood of Fanta Cooperative members.

The cooperative has the following livelihood assets which might have the possibility to enhance cooperative members' livelihood. These assets and capacities found in the cooperative and that can be transformed into opportunities and there by helps to meet the development needs of the cooperative. The assets identified during the study include the social assets (social bond), producer cooperative, *Idir* and *Saving and Credit Association* available in the area. The 'social bond' existing among the members of the cooperative that could enhance cooperative development and the cooperative found that they are strongly networked based on urban agriculture.

Others material resources or assets are – 8 ha farmland, Akaki River, potential of ground water well, 'traditional' skills or 'indigenous knowledge' in agriculture, access to transportation services, proximity and easy access to central market, potential to establish 'eco-tourism' sites, 'recreational centers' and 'parks', rich biodiversity in flora and fauna including varieties of birds besides, many public and private institutions in the neighborhood are available in the area.

There are different types of vegetables being produced in Fanta Cooperative. However, the activity of the 'urban agriculture' of the cooperative communities was not supported by 'suitable' agricultural extension services and hence did not contribute to cooperative livelihood, because of limitations of weak capacity of the government Urban Agriculture Unit in terms of capacities (human, physical and financial resources). At present, Urban Agriculture Departments recognized under the Bureau of Trade and Industry of Addis Ababa as one of the core processes. But, the department should have its own line office just like others from the city to the local administrative level.

Fanta Cooperative has so many issues which are common not only to them but also to all other cooperative communities living along the Akaki River. The most pressing issues talked about and address by cooperative members include; access to land, issue of environment pollution and the flooding of the farms along the river, lack of farming skills-related challenges (like low educational level, inadequate training on effective use of financial resources, proper production and management of vegetables, and 'lack of skills' on alternative use of pure water and diversifying urban agriculture), 'traditional farming' practice, shortage of appropriate place for selling their products, 'illegal trade' (abuse by local brokers), inadequate urban agriculture support services and absence of urban agriculture policy.

Other constraints faced by the cooperative includes lack of access to agricultural inputs including improved seeds, lack of machinery and irrigation systems like drip irrigation to produce vegetables in adequate amounts, low access of farmers to Credit services and the high amount of the interest rates, long marketing chain, and lack of institution with mandate to conduct basic and adaptive research for urban agriculture. All this seems to underline the less priority given to urban agriculture during urban planning.

These constraints of the vegetable producer cooperative are more aggravated due to lack of proper consideration from policy makers, 'urban planners and authorities to develop comprehensive urban agriculture policy and strategies. Hence, a comprehensive urban agriculture policy and strategy that can address these major constraints has to be developed and implemented for the urban farmers. There is a need to work on creating awareness on the benefit and risks of saving and credit more access to saving and credit institution in order to enhance their involvement in the expansion of agricultural activity. It is also important for the city administration to enhance land use security for urban producers.

'Urban agriculture' is closely linked with recycling use of urban organic wastes and huge amounts of organic wastes are produced in urban centers obtained from markets, household or selected industrial waste, such as breweries. However, the cooperative is heavily depending on inorganic farming. Therefore, it is advisable using organic fertilizers by producing compost, that is, by turning urban wastes into productive resources. This can be a potential resource for improved soil fertility and the surplus can be sold.

The researcher has concluded that unless the river water is treated 'vegetables' are bringing health hazard. In general urban agriculture like all other economic activities needs to be supported with services like extension, inputs, credit, market information, land availability and waste water treatment to enhance urban agriculture contribution to the cooperative food security and livelihood.

Generally, effort needs to be made to create public awareness about the benefits of urban agriculture in increasing household food security, income, employment and the greening of the surrounding and secure good support for its development from policy makers, the business sector, stakeholders and the public at large.

5.2 RECOMMENDATION:

- On the basis of the above findings and conclusions, the study recommends that the 'Addis-Ababa City Urban Agriculture Office' and the concerned body (stakeholders) should change their attitudes with regards to urban agriculture outlook and see urban agriculture as an important and viable sector that could contribute to 'food security', nutrition, livelihood and environments of the Addis-Ababa City.
- The current Addis Ababa Urban Agriculture Office is organized under Addis Ababa City Administrative Trade and Industry Development Bureau, as one of the core processes entitled Urban Agricultural Extension Service Core Process (sub section). But, the Urban Agricultural Office should practically have its own autonomous offices in sub cities and local Administration (*Kebele*) like Health Bureau, Environmental Protection Bureau, Micro and Small Enterprise Offices and other bureaus to promote urban agriculture sector.
- Improve Cooperation between urban agriculture stakeholders including potential urban farmers (create network and coalition among stakeholders).
- Coordinated effort among institutions of Addis Ababa city including Land Administration, Urban Agriculture, Health bureau, Water and Sanitation, Environmental Protection and Micro and Small Enterprise offices will be important to create synergetic support for the sector.
- In a developing country such as Ethiopia, urban agriculture should, therefore, be encouraged, strengthened and given recognition in urban planning and development.
- The cooperative has unique strengths and assets, provided that these assets are cross-fertilized / interacted with the efforts of 'development actors', the cooperative can bring about meaningful changes. This can specifically be considered in terms of utilizing the 'traditional skills' and 'social cohesion' existing among the cooperative members. Using their social bond they can lobby government and other organizations to make the ground

water drilled within their farmland operational. For the benefits of the cooperative members and consumers health better to introduce about drip irrigation system by using ground water.

- Industries, factories, hotels, recreation centres, individuals, households, groups, communities and other business firms are all responsible for the pollution affecting human lives in the study area. It is therefore important to focus on human aspect such as awareness raising and behavioural changes activities to reduce the level of pollution on Akaki River and its surrounding. In order to minimize the undesirable effects of industries on urban agriculture mainly through their pollution effects on water bodies, it is important to put in place industrial pollution control mechanisms such as environmental pollution control auditing, discharge permit and enforce limits to the disposal of effluents into the environment.
- The 'traditional' production system has to be transformed and it can be integrated with other livelihoods options and diversify cooperative members income sources.
- In order to support Vegetable Producer Cooperative, access to farm land for agriculture use, supply of improved seeds, clean water, storage facilities, market, etc. should be facilitated.
- Establishment of 'recreational centre' just in integration with 'the garden and grasses' can be other sources of income.
- There is currently a lack of clear and supportive policies for urban agriculture. Urban agriculture like all other economic activities needs to be supported with services like research and extension, inputs, access to credit, market information, development of value chains, land availability and waste water treatment to enhance urban agriculture contribution to household food security. Creating improved market linkages help farmers to maximize their profits.

- Policy makers: government units need to 'officially recognize' urban agriculture as a legitimate economic activity and implement urban agriculture policy as soon as possible.
- Provide training on diversifying urban agricultural activities. (Introducing varieties of urban agricultural production) and on financial management system in order to practice saving and credit. If training is provided, 'urban agriculture diversity' and drip irrigation of ground water could significantly assist farmers and become more resilient to the impacts of urban agriculture (like contaminated irrigation water and depending on a single business) and environmental changes.
- Research needs: there is a need to enhance the generation, dissemination and adoption of improved farm technologies in urban agriculture in order to increase food production in limited spaces as well as improve livelihood of the cooperative and urban farmers. The production of high value crops (vegetables, fruits and mushrooms), poultry production, livestock production, fattening of large and small ruminant animals, fishery, apiculture (bee keeping), sericulture (silk production) and swine (pigs) production should be encouraged.
- Improved technologies and processes such as, food preparation, packaging, and preservation need to be promoted, and the promotion of environmental-friendly agriculture production needs to be encouraged especially in recycling and using city solid and liquid wastes. Thus, promoting studies and research in the area and collect and disseminate research findings and evidences is required.

5.3 SOCIAL WORK IMPLICATION:

As the findings of the study revealed, most of the studies in the study area focus on the vulnerability to polluted water use and its effect on human and animal consumption. However, there is no study conducted on the practice of urban agriculture in the livelihood improvements of the cooperative. 'Urban agriculture' like all other activities needs to be supported with services like research. The study area is organized as a community and their livelihood is depending on urban agriculture (only on vegetable production).

It is known that urban agriculture draws community members together. Community is the one in which Asset Based Community Development is used as a strategy. So, community development is one of the thematic areas of social workers. Asset based community development (ABCD) is the strategy that has to be implemented in the area of community developments for today's urban poor. Urban poverty is increasing in Ethiopia, Africa and throughout the world; to address these problems, asset based community development is found to be the best option.

In conclusion the social worker assumes that every community has resources (strengths, gifts, talents and assets of individuals and communities), what is important is recognizing these resources so that they can be utilized for the development of the community. It was, therefore, the need to explore its contribution towards income generation, food security and poverty alleviation through diversifying different types of urban agricultural products, issues regarding the city's waste disposal and sewage systems and environmentally safe industrial production and recycling organic wastes.

In the vein of this, the role of social worker is to conduct a research and identify the major gaps in the research. Moreover, there is a need to engage in advocacy of environmental pollution and urban agriculture policy formulation and implementation. So, the community's livelihood is secured and the health of the community members as well as the whole

consumers improved. It therefore contributes to, benefits from, and strengthened the community.

As the findings of the study indicated, the contribution of urban agriculture was not given proper attention; because of the rapid expansion of the city, agricultural land is also lost for other uses, without due regard to urban agriculture which is critical for livelihoods of the community in particular and urban poor in general. Hence, limited awareness on the potential role and practice of urban agriculture, insufficient consideration with research and extension services for urban agriculture, neglecting smallholder urban producers as economic unit, failure to designate and allocate land for urban agriculture, pollution of water for irrigated agriculture and land use issues are main reasons for not having a strong urban agriculture development.

This is due to lack of appropriate institutional support as a result the cooperative in particular as well as the urban farmers in general affected by several problems. Thus, social workers should be advocate on behalf of them because; social workers are concerned with social justice and social well-being. In this regard, urban agriculture guidelines will be important to create synergetic support for the cooperative and also the urban farmers. Therefore, the community development brings improvement in any or all areas of a community; the dimension of the improvements could be physical (for example having market place), social, economic, ecological, cultural etc.

SOCIAL WORK PRACTICE:

The social worker also helps the community recognize their capacities, assets, abilities, potentials, and achievements by looking for strengths. So, the community in the study area also has strong social ties and the social bond, indigenous knowledge in agriculture as well as potential of natural resource such as farmland, river, ground water, and

traditional skills existing among the members of the community that could enhance community development and the community found that they are strongly networked based on urban agriculture. So, social workers are also important for creating or strengthening solidarity.

In community development work, the social worker seeks to act as a catalyst (as a bridge, promoter or facilitator) in helping community groups to address problems and organize and utilize their resources appropriately. Information is resource and so social workers share information, opinion, and advice with community. Sharing information therefore establishes a common understanding, provides community with alternative views to look at their situation, and suggests possible actions the community may agree to undertake. The study community has potentials of ground water so that it is an alternative source instead of using contaminated water for mutual benefit of the community as well as the consumer.

Active participation and empowerment are the basis of social work practice. Social work practitioners could play a major role in the process of community empowerment, mainly the cooperative association. Social workers need to develop the ability to work within organizations by: contributing to the wider organizational processes, such as the evaluation of the impact and appropriateness of policies and practices within the agency.

Social workers play the role of a broker by linking community with available community resources to help them achieve their goals specified in the study by promoting studies and research in the area, collect and disseminate research findings and evidences, providing information to stakeholders and building awareness , create network and coalition among stakeholders. In playing the role of facilitator, social workers help community be able to identify and use their coping strengths and resources within themselves so that they will be able to pursue the desired change.

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Annex I.Informant's Socio-Demographic Characteristics

ew	Age	Sex	Marital Status	Place of Birth	Educational level	Religion	Ethnic group	Family size	Length of living in the community
	25	Male	Married	Akaki	12	Protestant	Guragie	4	17
	38	Male	Married	Akaki	9	Muslim	Guragie	7	20
	43	Female	Widowed	Gumer	3	Orthodox	Guragie	6	1
	55	Female	Widowed	Chaha	0	Muslim	Guragie	9	5
	60	Male	Married	Enemor	0	Muslim	Guragie	8	38
	70	Male	Married	Menze	0	Orthodox	Amhara	9	38

Annex II Personal information of Fanta Vegetable Producer Cooperative

1. Interview code ----------,
2. Sex ----------,
3. Age----------,
4. Place of birth----------
5. Educational status----------,
6. Marital status----------,
7. Family size----------,
8. Religion----------,
9. Ethnic group----------,
10. Position / occupation---------,
11. Length of living in Fanta Cooperative ----------.

Annex III Interview guide check list for Fanta vegetable producer Cooperative

A. **The general situation of the study cooperative**

1. When did this cooperative settle in this area?
2. How the cooperative could get its name?
3. Why did this cooperative choose to settle near the Akaki River?
4. Have there been significant changes in the cooperative? (Size, ethnicity, race)
5. Are all segments of the cooperative involved in the life of the cooperative?

B. Vegetable production & its process

1. When did you start growing vegetables in Fanta Cooperative?
2. What was the reason to engage in vegetables growing?
3. Which types of vegetables are you producing?
4. How many times per year you are producing?
5. How do you select the seed? Where did you get the seed?
6. How much did you grow per year? What was your annual income of this year compared to last year?
7. How much of what you produced consumed in home?
8. How much used for the market?
9. Do you think that the quality of vegetables that you grow is good for consumption & selling?
10. How do you manage the quality of vegetables?
11. Do you engage in other economic activities besides vegetable farming? What are there?
12. How much income you earn annually?

C. Vegetable Product storage, transportation &marketing situation

1. Where do you store & preserve vegetables?
2. Do you have physical layout or transportation routes?
3. How do you transport the product from farm or store to the market place?
4. How do you decide the price of the product?
5. Where do you sell your product?
6. Do you sell the product by yourself or are there any brokers to facilitate the market? If through broker why?
7. Does the market satisfied with your supplies of product both in quality & quantity?
8. What is the contribution made by the cooperative to local and national development activities?

D. Institutional or organizational support & policy issues

1. Are there any local, Institutional, governmental or non- governmental organization that support vegetable producer farmer?

2. What are their major supports?
3. Is there any policy or guideline of urban agriculture?
4. Would you please explain the policy that support or prohibit urban agriculture?

E. Challenges

E.1. Shocks

1. Which of the following environmental **shocks** have been experienced in the past 2 years in the farming area? Droughts, Floods, Mudslides, Pests, Diseases, others (please specify)?
2. How did you manage these shocks?
3. What are the challenges you face while you grow, harvest, transport, marketing products?

E.2. Health problem

4. Do you know about the vulnerability of Akaki river water?
5. What is the effect of vegetables grown in this river water on cooperative health?
6. What should be done to address the problem?

F. Alternative possible opportunities

1. Do you know about the major types of urban agriculture?
2. Have you been diversifying urban agriculture? If not why?
3. Do you involve in different non-farm/off-farm activities?
4. What do you think about the possible solutions to address the challenge you are facing?

G. Assets-access activities framework for Livelihood analysis

G.1 Natural capital

a) Do you have adequate land for farming? (How do you get land?)
b) Do you use natural or artificial fertilizer for vegetable production? Why? How do you access it?
c) Where do you get water for vegetable production? Do you have adequate water throughout the year?
d) Is the water pure & safe for farming? Why? If not, what do you think about its consequences?

G.2 Physical capital

a) Do you own a house? (Do you live in private house or rented house?
b) What are your household physical properties?

G.3 Human capital

a) How many members of your family participate in farming?

b) Who is doing what i.e. like land preparation, selecting the seed, marketing, production transportation etc.?

G.4 Financial capital

a). Are there any credit & saving institutions in your area? Do you receive credit if you need to expand your farm? How?

b). Do you face problems with any kind of credit services? If yes, how?

c). Do you practice saving? If yes, how much you save? What did you do with your savings?

G.5 Social capital

a) Are you a member in the social groups of the cooperative? If yes, mentioned the role of the respondent/member of the group in the household

b) Who do you contact while you grow, harvest or market of vegetables? Why do you contact them?

c) What is the contribution of contacting other people for your vegetable production?

d) Why do you join the cooperatives?

e) What is the benefit of the cooperatives? (Advantages as being a member)

f) What are the challenges in the cooperatives? (Disadvantages as being a member)

H. Environmental Sustainability

a) What is the contribution of vegetable production to the environmental Sustainability?

I. Other Income Sources

a) Do you/member of your family involve in different non-farm/off-farm activities? If yes, how much do they earn from the activities on average per month?
Why others not participating?

b) Own trading (By involving in non-farm activities (trading, carpentry, tailoring, etc)

c) Casual work (By involving in off farm activities (working on other people's farms / Employed)

d) Remittance Cash Kind (Getting remittances from family members living outside area)

e) Income from natural resources (income from firewood, charcoal, and other environmental sources)

Finally

- What are the strengths and weaknesses of the cooperative?
- Is the local economy growing or declining?
- Does only producing vegetables will improve the life chances of your target population? Why or why not?

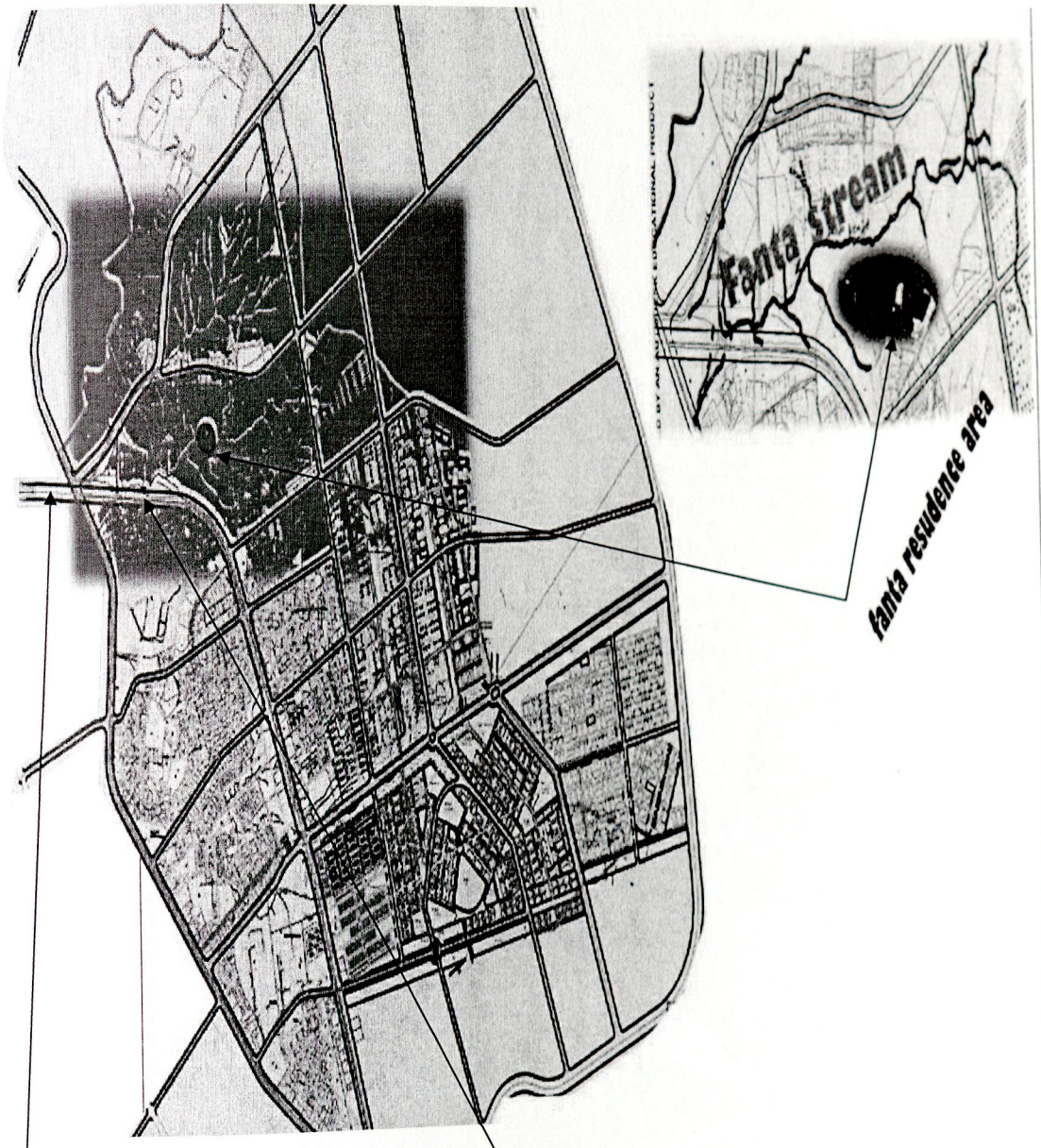
Annex IV. Interview guide check list for city and sub city Urban Agriculture Expert

Data of interview ----------, Place of interview ----------, interview code ----------, Sex ----------, Age----------, Educational status---------- ----------, Position / occupation----------

1. What are the general features of urban agriculture practice in the city of Addis Ababa?
2. Where is urban agriculture located in Addis Ababa?
3. How is the extent of urban farming in the city?
4. Which sub-city /*Kebeles*/ is urban farming most common?
5. When do you think urban agriculture begun in the city of Addis Ababa?
6. Which crops and livestock are commonly produced in this sub-city? Start with the most important.
7. What problems do the urban farmers face in crop and livestock production?
8. What proportions of the people in the city are engaged in urban farming?
9. Would you please explain about the development of urban agriculture at a local, regional & national level?
10. How do you realize the significance of urban agriculture as compared to alternative income generating opportunity?
11. How many household whose livelihoods are associated with farming in Addis Ababa? (How many percentage of urban population depend on urban farming?)
12. What are the challenges (constraints) that hinder the urban agriculture practice in the study area?
13. Is there a policy issue regarding to urban agriculture? If yes what is the presence or absence effect on the urban farming?
14. When do you think urban agriculture begun in the cooperative?

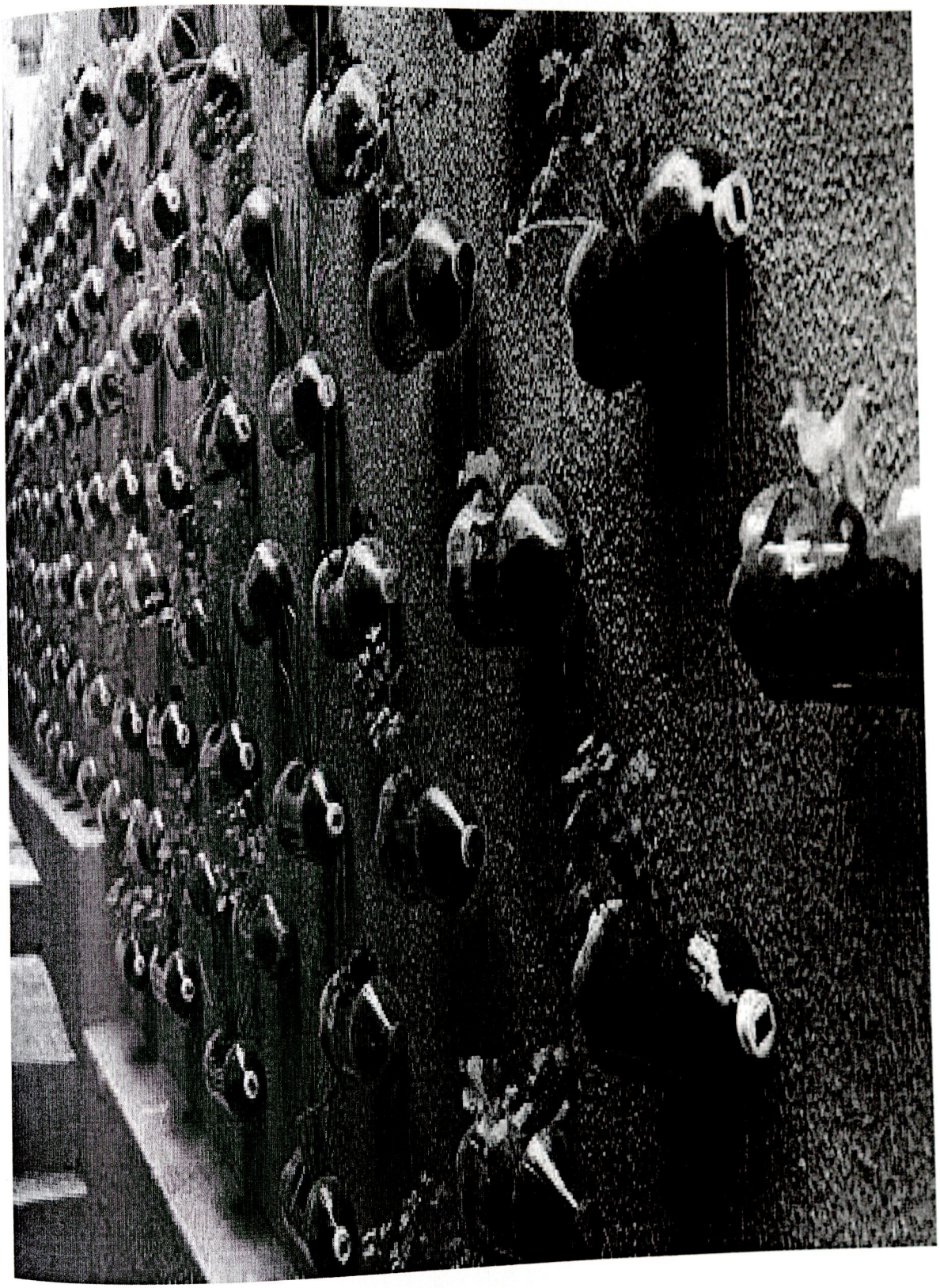
15. What are the situations of economic benefit, social aspect, and environmental advantage of urban agriculture?
16. What are the opportunities & challenges of urban agriculture in Addis Ababa & in your sub city?
17. What types of urban agriculture practicing in the study area?
18. What is the contribution of urban agriculture to income generation, access to job opportunity, access to education, in food security, access any other social service?
19. Do organizations support urban farmer in the study area? What do they support?
20. What are the effects of urban agriculture on cooperative health?
21. What are the basic institutional & policy supports available to urban farming at a local, regional & national level? Would you please explain which policy & guideline supports or prohibited to vegetable farming?

Annex V Fanta Vegetable Producer Cooperative Map



Source: Akaki-Kality Sub -City, *Woreda* Four Administration, GIS service

Options of producing vegetables in the urban area (Photo Retrieved May, 2013)



Annex VII

Informed consent

My name is Yehualashet Tadesse. I am a student of AAU school of social work post graduate program. I am here to take agreement from eligible study participants like you. I am glad to inform you that you are one of the chosen cooperative to participate in this study. The purpose of this study is to explore the role of urban agriculture in the livelihood improvement of the community. The information collected through this interview guide check list will be kept strictly confidential and will not be forwarded to any other person. Your name & address will not be recorded. However you have the right to terminate your participation at any time. I will appreciate and respect your decision.

So, would you like to participate in the study?

Yes/ Agree.....