CHAPTER I: INTRODUCTION

1.1. Background

One of the salient features of the 20th century was the high rate of urbanization. In the beginning of the century, just 13% of the world population lived in cities, a figure that has risen to 30% in the mid and 47% at the end of the century (United Nations [UN] Population Division, 2006). In 2008, for the first time, the world’s population was evenly split between urban and rural areas (Hoornweg & Munro-Faure, 2008). Thus, today more than half of humanity lives in urban areas. No country is exceptional to this spectacular growth of cities though the degree of the growth varied across countries. Developed countries are generally characterized by high level of urbanization but their rate of urbanization is lower. Developing countries, on the other hand, are less urbanized but the urbanization process is progressing much faster than in developed countries. For instance, the level of urbanization in Africa is low (37.1%) when compared to that of developed countries like Europe (72.7%) and North America (79.1%). However, the African continent is the fastest urbanizing region than the rest of the world. The annual urban growth rate in Sub-Saharan Africa is nearly 5%, twice as high as in Latin America and Asia (Romanik, 2007). According to Romanik, the fast rate of urbanization in developing world is attributed to rural–urban migration, economic growth and development, technological change, and rapid population growth.

With population of over 80 million, Ethiopia is the second most populous country in Sub-Saharan Africa. According to Central Statistics Authority of Ethiopia [CSA] (2011a), the urban residents accounts for 17% of the total population. This implies that Ethiopia is one of the least urbanized countries in the world. However, the large population size of the country ensured that the country is among top 10 African nations with large number of people living in cities. Furthermore, the urban population is growing at the rate of 3.98% and urbanization is increasing at the rate of 4.4%. Given this rates, about 42.1% of the total population is expected to be inhabited in urban centers by 2050 (Leulseged, Gete, Dawit, Fitsum, & Heinimann, 2012).
As the urban population has grown, so too has the complexity of how to feed people who are so far removed from the actual production of foods. Rapid urbanization is likely to impact the nature of agricultural food demand in two ways: in intensity and structure. Urbanization often intensifies the demand for agricultural output but it also changes consumer’s structure of food demand. This is because urban community has different consumption patterns from their rural counterparts. According to Romanik (2007), urban dwellers throughout the world tend to prefer a year-round supply of vegetables (and some other food items such as meat, dairy, oils and fats, and fruits). Such changes in demand pattern and the increase in vegetable prices following urbanization call not only for shifting production patterns but also for increasing supply of the items.

Increase in demand of vegetables would bring both opportunities and challenges to economies (like that of Ethiopia) that heavily relied on agriculture. The smallholder dominated agricultural sector is the blood and flesh of the Ethiopian economy. The sector contributes more than 40% to GDP and 84% to export trade and foreign exchange earnings. Moreover, the sector accounts for 85% of employment, and supplies 70% of the raw material requirements of local industries. However, the performance of Ethiopian agricultural sector is not promising because of several factors. First, the sector is dominated by smallholder and subsistence farmers who practiced rain-fed farming and used limited equipments, fertilizers, improved seeds, and other agricultural inputs. According to Ministry of Agriculture and Rural Development of Ethiopia [MoARD] (2010), there were about 12 million smallholder farmers that produce about 95 per cent of agriculture's share of GDP. Second, the agriculture sector of Ethiopia is prone to periodic drought, soil degradation caused by inappropriate agricultural practices and overgrazing, deforestation, high population density, and undeveloped water resources. Furthermore, poor transport infrastructure makes it difficult and expensive to get goods to market (International Development Partnership [IDP], 2012). By and large, subsistence farming, limited use of improved inputs and technologies, mismanagement of natural resources, and the recurrent droughts significantly contributed to the low agricultural performance of the country.
The current government of Ethiopia has taken several initiatives and launched a number of policies in favor of agricultural sector. Some of the notable pro-agriculture policies and strategies were Agricultural Development Led Industrialization (ADLI), the Participatory Agricultural Demonstration Training Extension System (PADETES), the Rural Development Policy and Strategies (RDPS), the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP) and The Five Year Growth and Transformation Plan (FYGTP). Furthermore, in the year 2009, Ethiopia endorsed the Comprehensive Africa Agriculture Development Programme (CAADP), developed in the framework of the African Union / New Partnership for Africa’s Development (NEPAD) that requires the country to allocate the 10% of the total budget to agriculture and rural development. These all policies, strategies, and initiatives were directly or indirectly aimed to reverse the problem of low agricultural productivity, chronic rural poverty, and high natural resource degradation (MoRAD, 2010). Yet, according to the World Bank, (cited in IDP, 2012), the productivity of Ethiopian agriculture is among the lowest in the world, with an estimated 1.2 tons of yield per hectare. As a consequence, farmer households may struggle to find sufficient food to meet their diet requirements along the year.

Therefore, the rural farmers of developing countries like Ethiopia are not in a position to sufficiently respond to the urban market demand. First, rural farmers are accustomed with grain and cereal production and hardly change their production pattern. Second, the perishability of vegetables coupled with the inefficient transport and marketing system do not allow vegetables to be supplied from areas far from urban market. Farmers located around urban areas are, therefore, the first to respond to the growing and unique feature of urban food demand. There are ample empirical evidences that show the response of PU farmers to urbanization and the resultant change in demand by intensifying and diversifying their produce.
1.2. Statement of the Problem

It is true that most of Ethiopia's national food requirement is met by domestic agricultural production. However, Ethiopian farmers do not produce enough food to meet consumption requirements. As a result, Ethiopia remains the world's most food aid dependent country (IDP, 2012). Nevertheless food security remains a critical issue for many households, and for the country as a whole. In particular a very large percentage of the farmer population faces a prolonged hunger season during the pre-harvest period. Moreover the agricultural markets are not yet sufficiently developed, the rural infrastructures not adequate, and farmers have little bargaining power when it comes to sell and market their products. The low productivity of rural agriculture coupled with underdeveloped agricultural markets pose a serious threat for urban population who rely on rural agriculture for its food needs.

Studies show that the urban residents have higher demand for vegetables than their rural counterparts (Ruel, Minot, & Smith; 2005). Thus, there is increasing demand of vegetables with increasing urban population. Furthermore, towns are home for high number of hotels, restaurants and guest lodges. These undeniably warrant a high and unceasing demand for vegetables within the municipality. Though the rural population is the predominant suppliers of most of agricultural products such as cereals, in developing countries vegetables are often produced close to its consumers (or urban centers where its demand is high). This is because vegetables are perishable products and thus have to be marketed fresh (as soon as harvested), before they lose nutritional and economic value. On the other hand, unlike cereals transportation and storage of perishable agricultural products pose a headache to smallholder farmers in situations where marketing and transportation is at rudimentary stage. Thus, the increasing demand for vegetables (due to growing urban population) coupled with difficulty in importing the product from rural areas offer a good opportunity for year round vegetable production in and around the towns.

Peri-urban (PU) vegetable farming has multiple benefits to urban dwellers: provide necessary nutritional needs of the household, ensure food security, create employment
opportunity, and serve as source of family income. The PU vegetable farms are the source of the delicious and beautiful salads in the dish of rich business men and decision making people in the municipality of each town. For PU to continuously supply the vegetable needs of the growing urban population there must be all-rounded support to the sector so that farm productivity is improved. This in turn requires understanding the peculiar features, performances, special need, and challenges of the subsector. In this regard, the Ethiopian urban and peri-urban agriculture is not only the neglected sector but also the most marginalized one.

Population growth (and the consequent growth in cities) leads to strong competition between land used for housing and land used to grow food, while simultaneously increasing the need for an adequate supply of nutritious food such as fruit and vegetables (Carey, et al. 2011). This puts, PU vegetable farming under risk of eviction. The risk of eviction and loss of valuable agricultural land to housing, industry and infrastructure is higher in Ethiopia due to the continuous lateral (horizontal) expansion of towns and lack of PUA’s legal recognition/protection from city administrations.

The public view on PU agriculture as a temporary and for subsistence farming has contributed to the marginalization of the subsector. Many people consider growing food in and around cities as a left-over from rural traditions and as a marginal activity with little economic importance. Furthermore, there is a concern among health authorities regarding the safety of PU vegetable farming and they often lobby against PU farming. As a result, there are also instances when local authorities perceive urban agriculture as a threat to health and thus considered it as "illegal" activity. Though assessing the existence actual and/or foreseen health risk in PU vegetable production is an urgent issue, it is also important to include the economic, social, and environmental sustainability of urban and peri-urban vegetable farming so that the decision makers would better understand the subsector and make targeted intervention. The local authorities and policy makers should understand the economic and social importance of PU agriculture (to a household and the town), the socioeconomic characteristics of PU vegetable farmers, efficiency of the farmers, as well as the challenges they are facing. Knowledge of peri-urban vegetable production efficiency is useful for making sound management decision in resource
allocation and for formulating agricultural policies. By and large, evaluating the production efficiency and sustainability of urban and peri-urban vegetable farming would be essential for informed decision making.

However, studies conducted on this subsector were very limited. Even none of the available research works, at least to the best knowledge of the researcher, assessed the farm efficiency and sustainability of PU vegetable farming. Yilma (2001) had focused only on the (bio-intensive) method of food production in urban areas and pay little attention to neither efficiency nor sustainability of PUA. Similarly, Tsegaye, Ahmed, and Dilnesaw (2009) assessed the availability and consumption of fruits and vegetables in nine administrative regions of Ethiopia. Their assessment was only related to vitamin-A deficiency and did not cover how vegetable farmers were performing (in terms of efficiency) and whether their vegetable farming was sustainable or not. On the other hand, Dereje, Margaret, and Wubetu (2007) had made a good attempt to analyze the practice, challenges and opportunities of urban agriculture in Mekele town. Yet they failed to look at the nucleus of the issue- farm efficiency as well as sustainability of the subsectors. Similarly, Gittleman (2009) had tried to assess the effects of the decline of urban agriculture on livelihood and food security in the Ethiopian capital, Addis Ababa. Though a good attempt, it looked only at the impact of urban expansion on PU agriculture than examining the efficiency and sustainability PU vegetable farming.

Thus, there was apparent lack of empirical research that clearly shows the performance vegetable farming in PU areas of Ethiopia. This has made Ethiopian city municipalities to either overlook or ignore the subsector. The municipalities shows no or poor initiation to improve the subsector because they have no idea as to what is wrong and right in the subsector. This study, therefore, was intended to fill the identified gap, by assessing the efficiency and sustainability of peri-urban agriculture in selected towns of central Ethiopia.
1.3. Objectives of the Study

The general objective of this study was to analyze technical efficiency and sustainability of vegetable production in peri-urban areas of central Ethiopia. In line with this, the specific objectives are set as follows:

- To describe the socioeconomic characteristic of PU vegetable farmers;
- To evaluate the technical efficiency of PU vegetable farmers;
- To point out factors that affect technical efficiency of PU vegetable farmers;
- To evaluate the sustainability of the sub-sector as a viable livelihood to peri-urban farmers.

1.4. Hypothesis of the Study

In line with the research objectives listed in Section 1.3, the following hypotheses were set up, which would be proved or disapproved in the course of analysis.

1. PU vegetable farming is disproportionately represented by the minorities (i.e., the women, the elderly, and migrants);
2. PU vegetable farmers are technically efficient
3. Technical efficiency of PU vegetable farmers is affected more by household characteristics
4. PU vegetable farming is financially, environmentally and socio-politically sustainable.

1.5. Significance of the Study

As an empirical work, the findings of this research paper contribute to the ongoing academic and policy discourse. The paper is the first of its kind that makes an assessment of the efficiency and sustainability PU vegetable farming in Ethiopian towns. It is expected to improve the public understanding on the role of PU farming in war against hunger and poverty and hence advocates for policies that support small and medium scale
PU farming. It may serve as an ice-breaker to future studies on the economic, social, and environmental impact of PU agriculture in Ethiopian cities.

1.6. **Scope of the Study**

Geographically the research is limited to urban and peri-urban areas of central Ethiopia and the empirical analysis refer to the vegetable farmers selected from the region. Conceptually, this paper covers the production of aspect of PU vegetable farming. This can be seen from two angles: first, PU agriculture is not only just growing food; it may include issues like marketing or distribution and many more. But this study focuses only on the production aspects of PU agriculture. Similarly, efficiency is a broad concept that encompasses the production as well as marketing/price aspects. In this study, the production (technical) aspect of efficiency is considered. Thus, this research only focuses on the assessment of the production of locally grown agricultural products (specifically vegetables) that will lead to an improvement to urban food security and poverty reduction.

1.7. **Limitation of the Study**

To the best of the researcher, this research was carefully designed and it has definitely attained its objectives. Yet I am still aware of its limitations that are unavoidable. There are two limitations that need to be acknowledged and addressed regarding the present study. First, the data collection tools used in such studies (such as questionnaires, interviews, and focus group discussions [FGD]) often end up with self reported data. Such data is subject to bias resulting from selective memory, telescoping and attribution. Likewise, this research faces the problem of self-reported bias since it is practically difficult if not impossible to conduct experimental method at this level. For that matter all researchers who have conducted research in same field have used the same type of data collection instruments.

Second, the data collection time allowed by the university gives birth to a number of limitations to emerge. Obviously, the research problem identified in this paper can be
better addressed if panel data is used. But since data collection time allotted to the researcher by the university is very short, it is not possible to use panel data unless some readymade data is available. Since the readymade data that fit the research question is not available, the researcher is forced to use cross-sectional data. It would be better if it was done in a longer time. Furthermore, the time limitation coupled with inadequate research grant forced the researcher to limit its coverage to only three towns of central Ethiopia. This in turn limited the extent to which the findings can be generalized beyond the cases studied. The number of cases is too limited for broad generalizations. To generalize the results for the region and the country, the study should have covered more towns and farmers.

1.8. Operational Definitions

The operational definitions of terms and concepts used in this study are given below.

**Head of Household:** is a person who provides economic supports or manages the household activities. A household head is selected by household members for some reasons of his age or respect regardless of their sex.

**Household:** Consists of a person or group of persons, irrespective of whether related or not, who normally live together in the same household and housing units having common cooking and eating arrangement.

**Peri-urban area:** areas immediately adjoining urban center, localized outside formal urban boundaries and urban jurisdictions, which are in a process of urbanization and therefore progressively assume many of the characteristics of urban areas.

**Smallholder:** is marginal and sub-marginal farmer that operate on farms of less than two hectares of owned or rented land. This definition also assumes that the farm family provides the primary source of labor and that farming constitutes a principal source of income for the family.
**Urban Center**: is municipal town or a locality having a Population of 1000 or more persons, and whose inhabitants are primarily engaged in non-agricultural activities. (CSA, 2011a)

**Urbanization**: refers to a growth in the proportion of a population living in urban areas and the further physical expansion of already existing urban centers.

### 1.9. Structure of the Dissertation

The dissertation is structured as follows. Literature on the trends and challenges of urbanization is presented in Chapter 2. Also included in this chapter are an overview of urban agriculture, the concepts and various evaluation techniques of efficiency and sustainability. Chapter 3 is devoted to the specification of research methodology where the profile of study area, the nature and sources of data, sampling and data collection procedure/techniques, method of data analysis, model specification and related issues will be explained. An overview of Ethiopian economy is presented in chapter 4. It also includes a brief description of the geography, population, and politics of the country.

Chapter 5 provides the descriptive analysis of the sampled PU vegetable farming households where the socioeconomic, demographic and social and farm related information are summarized and analyzed. Estimation and analysis of efficiency scores and factors affecting efficiency are presented in chapter 6. This is followed by chapter 7 where sustainability of PU vegetable farming is analyzed. Chapter 8 is the concluding chapter and is divided into three sections. The first section is devoted to summary of the study. It gives the overall picture of the study from the beginning to the end. The second section offers the conclusion of the study and the third section provides policy recommendations that come out of the study.