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Urban agriculture and food security in the city of Lubumbashi (DRC).

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2010-06-15T08:47:10Z
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CHAPTER 1

INTRODUCTION

The United Nations Population Fund-State of World 2007 has considered 2008 as the year of new departure in human history in that half of the globe's population (3.3 billion) are now living in the towns and cities. The report outlines the fact that most of these urbanites are in developing countries and they are poor. In Africa and Asia, urban population is expected to double between 2000 and 2030. While Asia's urban population is projected to increase from 1.36 billion to 2.64 billion, Africa's urban population is expected to increase from 294 million to 742 million.

As a result of this rapid urbanization, Smith (2002: 19) predicts the following consequences: (i) pollution from water wastes, because of poor and inadequate essential urban services such as waste collection and treatment; (ii) increased level of urban food insecurity and malnutrition, because of poor urban food systems (production and distribution), (iii) and finally increasing urban poverty, accompanied by a widening income gap, with more and more urban dwellers living below the poverty line (30 per cent in 1988 to 57 per cent in 2000). The increasing number of urban population inevitably expands livelihood activities and labour force participation in African cities (Bryceson, 1991).

Considering the increasing number of farming households in the world and specifically in African countries, Smith (2002) asserts that urban agriculture (hereinafter UA) can contribute to the alleviation of some of the above-mentioned problems. In 1996, the United Nations Development Programmes documented that about 800 million people in the world were engaged in urban food production with 200 million doing so for commercial reasons.

The impressive engagement of urbanites in urban food production did not initially captivate the attention of researchers and academics. It is only in the last 10 to 20 years that researchers and academics started showing interest in the development of UA (Peter, 2003; Moustier and Fall, 2004). Although the interest in urban agricultural activities is quite recent, these activities have been practiced for a long time (Jacobi, 2000).

In Western countries for example, UA started as an activity growing food in pots, on windowsills, balconies and in small backyard plots (Madaleno, 2002). Seen as an important source of food, it took on a new dimension during the time of war. According to the World Commission on Environment and Development (1987: 45), in the United States during World War II, for example, "victory gardens" provided 40 per cent of the fresh vegetables. When the United Kingdom was under siege, agriculture developed in cities and thus enabled the country to solve its problem of food supplies. In the nineteenth century, Paris produced more than 100,000 tons of salad crops annually (Stanhill, 1990 cited in Webb, 1996:1).

At present, some families in Western cities have gardens and allotments where they grow mainly vegetables but they also raise poultry and small ruminants such as rabbits and guinea pigs. The Commission on Environment and Development's report recognizes that this supplements the food budgets for the needy.

There has been a growing interest in Europe and North America about the way in which UA has been diversifying its functions. Pouw and Wilbers' (2005: 32) view on the multi-functionality of urban agriculture is that urban gardens provide firstly the urban population with leisure space, secondly a space where children as well as adults can be educated about nature and the environment, thirdly an opportunity to practice environment friendly-gardening and contribute to the maintenance and stimulation of urban biodiversity, and fourthly a cultural location for the organization of art exhibitions, which provide local artists with opportunity to exhibit their artwork.

At the city level, UA can be maintained for agriculturalists as a profession, as a source of food for the poor and a means of social integration, and for urban planners as a means of urban management to solve some problems in the city (Smith, et al. 2004). The multi-functionality of agriculture in the city supports the sustainability of this sector. While UA has been diversifying its functions in developed countries, in Asian and African countries by contrast, urban agriculture is still dominated by its two primary functions: food production and income generation.

In Africa, between 20 to 60 per cent of residents in various cities are estimated to be engaged in food production (Anon, 1996; Moustier, 1998). The following figures reveal how crucial UA has been in African cities. For example, 67 per cent of Nairobi's urban families are farmers, 50 per cent of the land in Kampala is farmed, and urban gardens are an important source of income in that they produce sufficient amounts to make Bamako self-sufficient in vegetables (Mougeot, 1994: X). About 45 per cent of 648 households interviewed in Lusaka were cultivating gardens in 1992-93 (Dresher, 1994). In two areas of Harare four fifths of households interviewed were involved in food production (Bryceson, 1991). In Kampala, more than 30 per cent of urban residents were involved in UA (Maxwell, 1993). Similar percentages were obtained from Addis Ababa (Egziabher, 1994). Vegetables supply reached 100 per cent in Brazzaville, 90 per cent in Bisau and Antananarivo (Moustier and David, 1997).

With regard to urban agriculture in the Democratic Republic of Congo (DRC), despite the increasing number of urban households involved in food production, very little has been documented (Bruneau and Bukome, 1987; MacGaffey, Mukohya, wa Nkera, Schoepf, ye Beda and Engundu, 1991; Petit, 2003; and World Bank, 2004). In 1987, Bruneau and Bukome conducted a study aimed at investigating the spatial distribution of informal economic activities in the city of Lubumbashi. Their findings showed that one yard out of four was farmed. About 13 years later, another study conducted by Petit (2001) recorded that one head of household out of six was involved in farming. Another survey conducted

by the World Bank one year later, found that more than 54 per cent of retired Gécamines[1] employees (11,000) engaged in agriculture as a substitute economic activity.

Apart from these data, nothing more significant has been documented on UA in the city of Lubumbashi. In fact, MacGaffey *et al.,* (1991) omitted to mention urban agriculture among the informal economic activities they called 'real economy of the Zaire' (former name of the Democratic Republic of Congo). The question remains whether urban agriculture can constitute an answer to food insecurity in an African context and more specifically in Lubumbashi.

This study fills the gap by focusing on urban agriculture as the emergent livelihood strategy in the city of Lubumbashi. Its purpose is to find out through economic analysis what the impact of urban agriculture is at the household level. Practically speaking, the study examines the reasons behind Lubumbashi dwellers' engagement in urban food production (push and pull factors), the categories of people involved, the types of crops cultivated and animals and livestock kept, etc.

Theoretically speaking, the study explores the conditions for urban agriculture to become a sustainable livelihood. Urban agriculture sustainability is analyzed with regard to its

[1] Gécamines (Générale de carrière et des mines) is the former Union Minière du Haut-Katanga created in 1906. It is a mining company specialized in the production and exportation of copper, cobalt and many other minerals. It was the most important in DRC by the size of its contribution to the national budget (up to 60% until 1990s).

adaptability to the urban dynamics, its capacity to recover from stresses and shocks, and the support it receives from state and non-state institutions.

In view of the above, the study uses a sustainable livelihood approach to identify the way Lubumbashi dwellers cope with post-Gécamines era. For 85 years (1906-1991), the mining firm Gécamines was the central employer of wage labour in the Katanga Province and the main earner of foreign currency in the Democratic Republic of Congo (DRC). Its collapse in the early 1990s resulted in the retrenchment of thousands of people (loss of more than 11,000 jobs). Instead of seeking to identify all the activities undertaken by urban poor for their survival, as recommended by the sustainable livelihood approach, this study specifically focuses on the emergent urban agriculture because of its potential in food supply and income generation.

1.1 Objectives of the study

The livelihood perspective argues that individuals and households diversify assets, incomes and activities in response to the pressure of push and pull factors (Yaro, 2006: 3). Urban agriculture constitutes a case in point as it emerges among the various livelihood strategies in use in the city of Lubumbashi.

Therefore, the overall aim of this research is to find out the reasons behind the emergence of urban agriculture in the city of Lubumbashi, and more importantly to understand under

which conditions this activity is a response to food insecurity and the implications of this as well.

Concretely, the study pursues four main objectives. Firstly, the study seeks to explore the practice of cultivation and raising livestock within and around the city of Lubumbashi. To achieve this objective, the study identifies the categories of people engaged in food production, the types of crops grown and livestock kept, their location in and around the city, the division of labour within the household, etc. Thereafter, the study identifies factors that pushed Lubumbashi dwellers from their traditional economic activities and those that attracted them to the practice of urban agriculture. The study also examines the impact of urban agriculture at the household level. Said differently, this thesis seeks to find out whether or not urban farming is a response to food insecurity at the household level.

According to the food security literature, there is food security when there is availability of food and when every household member has access to it. Finally, this study raises the question of sustainability of the urban agriculture in the city of Lubumbashi. For urban farming to become a livelihood strategy at the household level, it must be economically, socially and environmentally sustainable.

As a consequence of the above mentioned objectives, the study explores the following questions:

(i) What are the demographic and socio-economic characteristics of urban farmers in the city of Lubumbashi?

(ii) What are the push and pull factors leading to the rise of urban agriculture in the second largest city of the Democratic Republic of Congo (DRC)?

(iii) In what ways is agriculture within and around the city of Lubumbashi a response to food insecurity?

(iv) Is urban agriculture in the city of Lubumbashi sustainable?

The working hypothesis is that urban agriculture in the city of Lubumbashi is a result of a combination of push and pull factors in the post-Gécamines era, characterized by acute economic crisis at a time of rapid population growth and increasing urban poverty. In such context, urban agriculture becomes a response to food insecurity if it is economically viable, socially adaptive to the urban dynamics and capable of recovering from stresses and shocks.

1.2 Structure of the thesis

This thesis comprises nine chapters. Chapter one constitutes an introductory chapter as it indicates the objectives pursued in this study with regard to the questions rose. The post-Gécamines era has seen the emergence of urban agriculture and other activities as

alternatives to the giant mining company. There is a need to look at the socio-economic and demographic characteristics of Lubumbashi farmers, factors that pushed and pulled them into food production, the way it may be a response to food insecurity and the conditions for its sustainability. The second chapter provides the historical, political and socio-economic background of the Democratic Republic of Congo (DRC) and that of the city of Lubumbashi, in order to understand the emergence of current individual, household and community livelihoods. It is important to investigate the conditions of emergence of the modern state and that of the market economy in order to see how their failure caused the emergence of the informal sector. The two periods of time considered include the colonial and the post-colonial periods.

The third chapter provides a theoretical framework for the analysis of urban agriculture as a livelihood strategy of individuals and households. This study has adopted the sustainable livelihood approach based on the alternative development theories. The first part of the chapter briefly reviews literature on development theories with particular focus on theories of alternative development. The second part focuses on the concept of urban agriculture. Urban agriculture analysis requires the use of the sustainable livelihood approach which considers three components: framework, principles and governance issues.

The methodology chapter (four) emphasises the methods used in the collection and analysis of data, and explains why Lubumbashi has been chosen as the study site. The

three major methods used include semi-structured interview, observation and informal conversation. While quantitative data were analyzed by the use of SPSS, those of qualitative nature were interpreted in relation to the literature on urban agriculture.

Chapter five presents the empirical data, starting with the demographic and socio-economic characteristics of Lubumbashi farmers. Thereafter, the chapter locates the areas where urban agriculture has been practiced. It also lists the major food crops grown and livestock kept. To find out the role played by household members, the chapter describes the division of labour within farming households. As maize is the most commonly cultivated food crop, a particular attention is drawn on the quantity produced, marketed, consumed and kept as seed in 2004.

Chapter six presents an analysis of urban agriculture as a response to food insecurity in the city of Lubumbashi. The chapter starts with an identification of push and pull factors to explain the emergence of urban agriculture in the industrialized city. Furthermore, three farming households representing three categories of farmers are examined to show how urban agriculture has been a success for some and a failure for others. The chapter ends with a summary of the types of strategies used by farming households to increase their production and to fight food insecurity, the way urban agriculture has improved Lubumbashi dwellers' diet, and the role women play in the household as the main producers and breadwinners.

Chapter seven and eight explore the way urban agriculture can become a sustainable livelihood strategy. While in chapter seven the attention is drawn to the multi-functionality of urban agriculture, its capacity to adapt to the dynamics of the city and to cope with and recover from stresses and shocks, chapter eight focuses on the institutional support to urban agriculture. In addition to the availability of land, credit system and financial aid, the sustainability of urban agriculture lies in the above mentioned conditions.

Chapter nine constitutes the conclusion of the thesis. It summarizes the crucial findings of the study, theoretical and practical implications, strengths and weaknesses of the study and suggestions for future research.

CHAPTER 2

THE MACRO AND MICRO CONTEXT: THE DEMOCRATIC REPUBLIC OF CONGO AND THE CITY OF LUBUMBASHI

Introduction

This chapter aims to provide a historical, political and socio-economic background of the Democratic Republic of Congo and that of the city of Lubumbashi. To understand the emergence of the current individual and household livelihoods, it is imperative to interrogate the conditions of emergence of the modern state and that of the economic sector. Two periods have been taken into consideration, namely the colonial period and the post-colonial period.

It is obvious that the history of the Democratic Republic of Congo did not start with the Belgian colonization, even though the short period of colonialism profoundly transformed the structures and future of this country. That is the reason why the chapter starts with a brief description of the pre-colonial period of the contemporary Democratic Republic of Congo.

The chapter focuses on the modern Congolese state and economy as products of the colonial era. Since attaining independence (1960), the modern political and economic sectors in DRC have not only been dominated by the Western states and transnational

corporations, but also by the long period of predatory dictatorship of the Mobutu regime, followed in the late 1990s by an era of civil wars which dangerously weakened the state and the market economy.

The collapse of the giant mining firm, Gécamines in the 1990s, the incapacity of the state to provide basic services, such as health care, roads, schools, etc., and the lack of power to protect its citizens against warlords, deepened the economic crisis, affected negatively the living conditions of the citizens, and threatened the existence of the state itself. As a result, individuals and households took matters into their own hands.

Thereafter, particular attention is given to the city of Lubumbashi as the site of study to show how the collapse of the Gécamines deepened the economic crisis and aggravated the conditions of life in the Katanga Province.

The state-centred theories (Evans, 1989; Bayart, Ellis and Hibou, 1997; Chabal and Daloz, 1999 and Ferguson, 2006) are used to understand the emergence of an activity of the informal sector (urban agriculture) in the most industrialized city of the Democratic Republic of Congo, Lubumbashi city.

2.1 Historical context: political and socio-economic background of DRC

The Democratic Republic of Congo (DRC), with an area of 2,345 million square kilometers is the third largest African country after Sudan and Algeria. In terms of natural resources, DRC is one of the richest countries in the world. Its underground is rich in diamond, coltan, gold, cobalt, copper, manganese, etc.

Geographically, the country extends from about 5° N. to 13°S latitude and from 13° to 31°E longitude. Nearly all the DRC's territory is drained by the Congo River. With a population estimated at 65.8 million inhabitants in 2007, the Democratic Republic of Congo is classified among the poorest countries in the world despite the availability of important mineral resources.

The Democratic Republic of Congo was colonized by the Kingdom of Belgium (1908-30th June 1960). Explorers, historians and anthropologists agreed that before the penetration of Europeans, the current Congo was an ensemble of kingdoms, empires and chiefdoms. The most well known among them was the Kongo Kingdom because of its early contacts with Europeans, particularly the Portuguese in 1482.

The Kongo Kingdom was vast; it occupied the lands in northern Angola and the north bank of the Congo. In the 16th century, the Kingdom of Kongo was divided into six

provinces, each headed by a governor. Provinces were divided into districts headed by district chiefs (Kaplan, 1978 and Cornevin, 1963). According to these authors, the Kongo Kingdom used shells collected from Loanda Island as currency. Also, the Kingdom traded in copper and iron. The Kongo king was himself elected from among the male descendants of the conqueror of the area.

Apart from the powerful Kingdom of Kongo, there were many others such as the Bakuba Kingdom, the Baluba and Luba empires, and various chiefdoms. The Bakuba Kingdom, for example, was a federal of about eighteen different groups, headed by a king.

In common, these pre-colonial political organizations were well structured. They practiced agriculture as the dominant economic activity. Some even practiced metallurgy of copper, iron and other minerals. In the Katanga Province for example, geologist Jules Cornet (cited in Joye and Lewin, 1961) noted an intensive exploitation of copper in Luishia and Kambove towns. Copper was transformed into various forms of ingot and served as currency.

It is worth noting that from the 16th century, pre-colonial kingdoms, empires and chiefdoms were victims of the slave trade. The slaves were used on the sugar plantations of Portuguese Islands and later on, they were sent to the Americas. An estimated 5000

Kongo people were stationed at Mpinda port which served as site for the gathering of slaves before being sent to the Americas (Cornevin, 1963).

2.1.1 The Belgian Administration in Congo

Formally, Congo became a Belgian colony in 1908. However, the General Act of Berlin, signed by thirteen European powers in 1885 to settle disputes among them and to exploit Africa, recognized King Leopold's International Association of the Congo as an independent entity, and shortly afterwards it became the Congo Free State.

The 23 years of Leopold II reign of the Congo Free State (1885-1908) was characterized by forced labour, coercion, and extreme violence. The most known case of Leopoldian regime brutality was "Red Rubber" – rubber stained by the blood of the Congolese who were forced to gather it, which shocked world leaders and obliged Leopold II to transfer the colony to the Belgian state in 1908.

The colonial Congo was governed according to the Colonial Charter of 1908, which played the role of a constitution in the colony. Executive power was retained by the king of Belgium. He ruled the colony by decree, but his decrees had to be countersigned by the Belgian minister of colonies. In the colony, the king had a representative, the Governor General. The latter had the authority to issue administrative ordinances that had the force of law, but from 1911 he was assisted by a council of government. As noted by Kaplan (1978:33), native Congolese were not appointed to it until 1949.

Administratively, the colony was divided into six provinces each headed by a provincial commissioner, except for the Katanga Province which was headed by a Vice-Governor because of its economic weight. Boma was the first capital city to be transferred to Leopoldville (Kinshasa). Provinces were divided into districts and districts into territories. All these levels of the administration were run by Belgians. Congolese occupied the lowest levels of the colonial administration: chiefdoms and sectors. Chiefs were expected to provide the link between Congolese and the colonial administration. Where possible, chiefdoms were regrouped into sectors. The creation of schools, dispensaries, and traditional tribunals at their capitals increased the role of sector chiefs. But their appointment reflected more concern for the convenience of the Belgians than for the wants and needs of the Congolese (Kaplan, 1978).

Besides their administrative tasks, administrators helped companies' agents in recruiting and holding workers for the imposition of penalties (fines and imprisonment), for breach of contract. Therefore, it is appeared that colonization was not a peaceful process. According to Cornevin (1963), Young (1965) and Kaplan (1978), the imposition of European administration, business, and religion on traditional life led to the rise of protests or resistance movements. For example, armed resistances occurred among the Azande in the north-eastern Congo, the Yaaka in the southwest, the Luba-Katanga in the southeast, and the Lele between the Lulua and Luongo rivers. Also, the Kimbanguist movement developed in 1921, a resistance group directed against Belgians in general and missions in particular.

After the Second World War, the government council, which was essentially composed of Belgians since 1921, was reformed to include Congolese. According to Young (1965:28), the Africans selected were chiefs or notables who on some cases spoke no French and could not follow the debates. Young further adds that there were African members' representation in the government council, but no real representation in contrast to the very real representation afforded the European community.

On March the 26th, 1957 a decree was signed organizing Congolese cities into entities. The decree introduced the notion of wards, which were grouped into a city with an electoral body formed by Congolese and Belgians. This was the beginning of the administrative decentralization in Belgian Congo. The process started only two years before the independence of the country.

As it appears, the majority of Congolese leaders at the independence of the country lacked professional experience. This constituted a serious handicap for the new independent Congo in 1960. The very few Congolese with administrative experience occupied low positions; burgomaster was the highest position they occupied.

2.1.2 The Church in Belgian Congo

In addition to the expansion of the Belgian administration, Congolese were also affected by the Christian missionary activities. In 1958, Catholic missions recorded 4,220,439

baptized people. During the same period, the number of protestants was estimated at 812,608 (Cornevin, 1963:220).

The greatest contribution of the missions was in the field of education. In 1925 and 1926, the Belgian government instituted a programme in which mission schools were subsidized to train Congolese. Usually the skills they trained them in were those needed by European enterprises. In 1953, only 21 Congolese students were admitted to European schools in the Congo. One year before the independence, the figure was only 1,493 students, less than 10 per cent of the European enrolment (Young, 1965: 94).

The creation of Universities in the colony started in 1954 with Lovanium University in Leopoldville (Kinshasa) followed in 1956 by the State University of Elisabethville (Lubumbashi) created by the liberal-socialist government. At independence (1960), there were a total of 30 holders of University degrees, with 466 Congolese students in the Universities of Lovanium and Elisabethville, and 76 in Belgian Universities (Young, 1965:95).

With a total of only 30 holders of University degrees at the independence of the country, the Democratic Republic of Congo relied on Belgian public servants. But because of the secessions in Katanga and Kasai provinces and mutiny in the army, many Belgians returned to their country, paralyzing the public administration.

2.1.3 The Economy in Belgian Congo: Agriculture and Mineral resources

The economy of the Belgian Congo was essentially based on agriculture and mineral resources. It must be added that the modern economic sector was and still is dominated by the export of minerals. The two sectors (mining and agriculture) should not be seen as relatively equal, whose growth was mutually stimulating, as was the case in the internal economic growth of the United States of America or some countries of Western Europe.

Agriculture during the colonial period was geared towards supplying towns and cities, especially the mining companies, and exportation of commercial crops to industrial countries for foreign currency. About 40 percent of the Belgian Congo's exports came principally from coffee, palm oil, cotton, etc. To achieve these objectives, several agricultural policies were implemented.

First, fertile rural lands were confiscated from local peasants and handed over to white farmers. Congolese peasants were either relocated to inhospitable land or recruited to work by the mining companies. As the mining companies fed their workers (especially Union Minière du Haut Katanga), white farmers were the principal suppliers of agricultural products (maize, rice, cassava). In the meantime, peasants were discouraged from selling their produce to these companies. On the contrary, the majority of them were recruited as farm workers or mining companies' workers.

Second, instead of allowing them to grow subsistence crops, black peasants were forced to produce cash crops such as cotton, palm oil, coffee, etc. for commercial reasons. According to Gran (1979:7), the Belgian colony was a net exporter of maize before independence. In 1959 for example, the total imports of wheat, rice, and maize were 47,000 tons. The cycle of cotton production took nine months before the harvest (December to August). This meant that peasants engaged in this kind of agriculture did not have time to practice subsistence agriculture.

Third, rural populations were organized into *paysanats*[2]. According to Cornevin (1963), 300,000 rural inhabitants were regrouped on these native farming settlements in order to intensify the cultivation of cash crops, to conserve the fertility of the soil, and to facilitate the introduction of modern farming methods. In these farming organizations, peasants were required to grow cotton, palm oil, coffee, maize, and cassava. Priority was given to commercial agricultural products. At the same period, a national institute of agricultural research was created which introduced improved agricultural technology to the colony during the 1930s. As a result of the introduction of improved agricultural technology and the settlement of peasants, the production of fresh cassava passed from 4.5 million tons in 1930 to 7.2 million tons in 1959 (Joye and Lewin 1961:69).

[2] *Paysanats* indigenes are defined by Drachoussoff as agricultural settlement schemes where especial efforts were made to improve traditional farming methods.

It must be said that agriculture during the colonial period was practiced not to meet the needs of peasants, but to satisfy the needs of mining companies and the needs of Belgium. From 1950 to 1955, the national revenue from agriculture increased by 39 per cent, passing from 10 billion to 15 billion Belgian Francs. In 1958, the number of Congolese working in agriculture was estimated at 312,000. Also, the colonial government improved the roads linking rural areas to towns and cities, facilitating the transportation of agricultural products. About 10 percent of the main roads in the country and 24 per cent of the secondary roads were located in Katanga province because of its economic importance.

With regard to the mining sector, the colonization of Congo lasted half a century during which an estimated 5.5 million tons of copper, more than 3 tons of industrial diamond, and more than 260 kilos of gold were exported from Congo to Europe and America (Joye and Lewin, 1961:90). The colonial Congo represented 60 per cent of the world production of cobalt, 16 per cent of germanium, and 14 per cent of beryllium.

The use of copper, as previously said, started long before the colonization of Congo. On a very small-scale, Congolese people from Katanga province used copper in their transactions as means of exchange. But the mining of copper and many other minerals started when the kingdom of Belgium inherited the Free State Congo (1908). Since then, the mining industry became the central sector in the Congolese economy. The development of the means of communication to link the provinces of production with the

ocean, the production of energy, and the development of the industry occurred as a consequence of the development of the mining industry, which was dominated by the Union Minière du Haut-Katanga.

Created in 1906, Union Minière du Haut-Katanga (UMHK) came into existence with an initial capital of 10 millions Franc-gold representing 100, 000 shareholders. The company specialized in the exploitation and export of copper, cobalt, zinc and many other minerals. But UMHK started copper production only in 1911. After 50 years of exploitation of the mineral resources, UMHK reached a capital of 8 billion Belgian Francs. As Katwala (1979:123) observes in *Export-Led Growth: The copper sector*, "UMHK had not only built a copper empire in Katanga that contributed to an autonomous development of the Province but had also become the most powerful company operating in Congo, producing the largest single source of government revenue and three-quarters of its foreign exchange" With concessions of 34,000 square kilometers, the company was divided into three main groups:

- Group South-East concessions comprising Lubumbashi, Kipushi and Lukuni

- Group Centre Concessions with Kambove, Kakontwe, Shinkolobwe, and

- Group West Concessions located in Kolwezi, Musonoi, and Kamoto.

In 1913, Union Minière du Haut-Katanga produced 7,500 tons of copper. The production reached the level of 27,000 tons four years later. In 1929, 137,000 tons of copper were produced. Eight years before the independence (1952), UMHK could produce more than 200,000 tons. By producing 300,000 tons of copper in 1960, the company became the third largest producer of copper in the world.

During the same year, 8,240 tons of cobalt were produced. Thus, Congo became the first producer of this mineral in the world (Joye and Lewin, 1961:219). It can be said that UMHK was the main instrument used by the colonialists to integrate the colony into the capitalist economy as a supplier of mineral and agricultural products.

The raw materials of copper and cobalt produced by UMHK were transformed by the Belgian company "la Société Générale Métallurgique" of Hoboken in Belgium, which employed almost 4,000 workers in the 1960s. The selling of UMHK products was the monopoly of another Belgian company "la Société Générale des Minerais". Union Minière du Haut Katanga was dependent on the above enterprises for the transformation of its raw materials. This was a way for the colonial power to create jobs in Belgium.

Because of the low rate of population density in Katanga province (3.44 inhabitants per km^2), Union Minière du Haut-Katanga recruited its employees from different countries such as Zambia, Mozambique, Rwanda and Burundi, and from more populated

provinces, such as Kivu and Kasai. The recruitment of the workforce from outside the Katanga Province to compensate the low population density cost a lot in terms of transport and maintenance.

In order to stabilize its workforce, Union Minière du Haut-Katanga adopted the policy of paternalism by providing workers with housing, healthcare, food and children education. This social policy remained in application until the reform of Gécamines[3] in 2003. As a result of the recruitment policy, cities in the Katanga Province became very heterogeneous due to the presence of people from different provinces and countries. This was observed when the first municipal elections were held in 1957, only citizens from Kasai province were elected burgomasters in Lubumbashi and Likasi, two of the major cities in the Katanga Province.

To sum up, the colonial period forged the structure of the modern Congolese state and built up the modern economic sector. Parliamentary system was instituted at independence based on the Belgian model. As Young (1965: 478-9) asserts,

> *The problem in the Congo was not the classical federal challenge of providing a framework for union without unity to a series of operative political units; rather the crucial issue was to find a means to accommodate local loyalties which only partially coincided with the administrative subdivisions of a tightly decentralized bureaucratic, foreign-owned and operated enterprise.*

[3] Gécamines is the new name of the Union Miniere du Haut-Katanga from 1972

Consequently, Katanga secession was declared less than two weeks after the proclamation of the independence, which later on was followed by the south Kasai secession.

The Democratic Republic of Congo inherited from the kingdom of Belgium a weak modern state; even though the leaders were elected, the majority lacked experience in leadership and mostly originated from political parties organised on an ethnic basis. Of 100 political parties on the eve of the independence, only the National Congolese Movement (Mouvement National Congolais – MNC) of Lumumba was broadly based and national in scope. Western corporations that exploited the mineral resources of Congo during the colonization period continued to do so when the country became independent and interfered in different ways in the administration of the country. As a result, the country remained dependent on its former colonial power, Belgium. Chabal and Daloz (1999:112) locate the origins of dependence in three areas, namely (i) the continuation of the economic connections, (ii) the place of Africa's economies in the world trade system, and (iii) the growth in international borrowing.

2.2 The Democratic Republic of Congo (DRC)

On June 30, 1960, Congo became independent with Kasavubu as the head of state and Lumumba as the prime minister. Two major factors destabilized the newly elected government and parliament for a long period of time and were followed by conflicts of leadership at the top level of the government. The first major cause of instability was the mutiny in the national army. Soldiers mutinied against their Belgian officers because at

the independence of the country there were no Africans in positions of command. The second factor was the Katanga's secession. At independence, some Belgian officials feared the nationalization of the Union Minière du Haut-Katanga by Lumumba's government. Nationalization of the copper company would have resulted in a massive departure of Belgians and in government interference in day-to-day management of the company (Katwala, 1979:123). As a result, they encouraged the secession of the Katanga Province. On July 11, 1960, Tshombe proclaimed the independence of Katanga and became President. Later on August 8, 1960, Kalonji proclaimed the independence of the Mining State of South Kasai.

Despite the presence of United Nations forces, Belgian troops and even the Africanization of the Congolese National Army (headed by Lundula), the Lumumba government did not end the turmoil in the country. His decision to accept substantial Soviet aid in order to attack the secessionist provinces at that period of the cold war was viewed as a threat to the American and Belgian interests. Lumumba was accused of being a communist.

In September 1960, under the influence of Western governments (United States of America and Belgium) President Kasavubu dismissed Lumumba and some members of his cabinet. But the dismissal was rejected by the parliament where Lumumba was more popular than Kasavubu. Lumumba responded by dismissing the president of the country. After a week's deadlock, the government and parliament were neutralized by Mobutu

who was the Commander in Chief of the army at that time. He established the college of commissioners made up of recent university graduates and which was headed by Justin-Marie Bomboko.

Later on Lumumba was arrested in Kikwit on his way to Stanleyville (Kisangani) to join Gbenye and Gizenga. He was transferred to Katanga province where he was assassinated with two other members of his former cabinet. After the death of Lumumba, there had been a succession of many governments (Ileo, Adoula, and Tshombe) but without bringing stability to the country. In January 1964 for example, a rebellion under the direction of Pierre Mulele occurred in the Kwilu. At that period, the country was divided into four parts with different governments: one government in Leopoldville, another in Stanleyville, a third one in Katanga, and the fourth in the south Kasai.

After the end of Katanga secession (1963), a new constitution was elaborated with a new parliament elected. Tshombe became the new prime minister. However, on October 13, 1965, Kasavubu dismissed Tshombe and appointed Evariste Kimba to form the new government. Tshombe's majority in parliament did not confirm Kimba government. On November 24, 1965, General Mobutu took power and appointed Colonel Leonard Mulamba as prime minister. A new political era, the Mobutu regime had begun in Congo.

2.2.1 The Mobutu Regime

The Mobutu regime lasted 32 years (1965-97). It is important to point out that General Mobutu as a member of Lumumba's political party was previously appointed by Lumumba as secretary of state in the first independence government, and later on by Kasavubu as commandant in chief of the Congolese National Army. He was overthrown from power by Laurent-Desiré Kabila on May 17, 1997. Although the three decades of the Mobutu regime were characterize by relative stability and unity for the country, they were also characterized by mismanagement, corruption, and mass pauperization.

To bring order, strengthen his power, and forge a nation, Mobutu established a centralized administration. In 1965, he formed the Popular Movement of the Revolution (Mouvement Populaire de la Revolution-MPR), as the sole legal party. From 1970, the MPR became the supreme organ of the government. The Democratic Republic of Congo became Zaire. All Zairians were members of the MPR. The party's organs and those of the government were fused in 1972. Despite the representation of provinces in the structures of the party and government, the Mobutu regime was controlled by a single leader (Mobutu) and a small circle of persons loyal to and dependent on him (Kaplan, 1978: 7). According to this author, political institutions organized initially to hold a divided society together, to diminish sectionalism, and to build a nation had turned into a regime tending to maximize the personal power of its head and to treat criticism as essentially subversive. This kind of regime is what Evans (1989) calls a predatory state as it will be described in the following chapter.

Clientilism was the main feature of the political relationships of the Mobutu regime. As stressed by Kannyo (1979), technocratic elite of the politico-administrative class emerged as the immediate holder of political power and primary beneficiary of Mobutu's economic policies. The result was heavy debt in the mid-1970 and the situation persisted into 1978.

Two issues occurred in 1974: the zairianization measures and the decline of copper price on the international market. The nationalization process of small and medium businesses started some months before the year 1974. Thus on November 30, 1973, small and medium-sized wholesale and retail businesses, small factories, farms, and plantations were confiscated from Europeans, handing them over to cronies of the regime. Thirteen months later, zairianization measures were followed by radicalization measures designed to take over slightly larger businesses. And in 1975 stabilization committees were established to deal with the disruptive economic effects of those measures. In 1976 retrocession was decreed. Most former owners took back their business (Gould and Mwana-Elas cited in Kannyo (1979:98). As if that was not enough, the copper price dropped on the international market at the beginning of the year 1974. At the same time, oil price tripled.

The following years, the country faced rebellion (March, 1977 and May, 1978). The National Front for the Liberation of Congo (Front National de Libération du Congo-FNLC) invaded the southern part of the country (Katanga which became Shaba). Unable

to stem the rebellion, the Zairian Government required the intervention of foreign armies (from Morocco and France). As a consequence of the different invasions of Shaba, the international community pressured Mobutu to reform his regime.

The 1990s were characterized by some democratic reforms. Mobutu announced a multiparty system as a result of internal and international pressure. A national conference took place in Kinshasa which ended by the election of Tshisekedi as the new prime minister. However, through a combination of corruption, co-option of opponents and plain threats, the old dictator divided the opposition. Democratic elections which were one of the central resolutions of the national conference failed to take place. At that time, most international aid was suspended. The growth rate of the economy that had been oscillating between 0 and 6 percent since 1974 suddenly reached an all time low of 17 per cent in 1993 (UNDP, 2006).

In 1996, in what may be referred to as the beginning of the Post-Mobutu era, a rebellion under the direction of Laurent-Desire Kabila as the head of the Alliance of Democratic Forces for the Liberation of Congo-Zaire (Alliance des Forces Démocratiques pour la Libération du Congo-Zaire-AFDL) erupted in the eastern part of the country. This had military support from the Rwandan and Ugandan Governments. The Government of Rwanda was engaged in the war to destroy the Interahamwe and Hutu militia organizations located in Zaire since the genocide in Rwanda, while the Government of Uganda was involved in getting rid of Mobutu. Seven months later (May 1997), the

AFDL took power when Mobutu fled the country, and Laurent-Desiré Kabila as the head of the movement became the President. Four years latter, Laurent-Desire Kabila was assassinated (2001). He was replaced by his son, Joseph Kabila Kabange.

2.2.2 The Kabila Regime

The taking over of power by Joseph Kabila Kabange has shortly frozen the hostilities. A power sharing government of transition including different factions and interest groups (MLC, RCD, Mai-Mai, civil society, and political parties) was inaugurated in 2003 as a result of the inter-Congolese dialogue which took place in South Africa. Three years later, in 2006, elections were held with financial and political support from the international community. Joseph Kabila Kabange was elected the President of the third Republic, and his party, the Party of the People for the Reconstruction of Democracy (Parti du Peuple pour la Reconstruction et la Démocratie-PPRD) won 111 seats out of 500 in the new parliament.

The two civil wars (1996-97 and 1998-2003) were economically, socially, and politically devastating, particularly the second one. More than 4 million Congolese died. Peasants' farms were destroyed. Rural population was forced to abandon their fields and villages for security reasons and instead head to urban areas. Even though the eastern part of the country was the most affected, some cities and towns in the Katanga Province such as Lubumbashi, Kalemie, Kolwezi, Kamina, Kipushi, and Likasi received a huge number of the so-called "déplacés de guerre" (internally displaced people (IDPs) due to war). The

presence of IDPs increased insecurity in the city. Table 2.1 below shows figures of IDPs in DRC between 2001 and 2005:

Table2.1: Population displacement 2001-2005

Year	Internally displaced	DRC refugees in neighbouring countries
2001	2,000,000	355,940
2002	2,700,000	373,640
2003	3,400,000	397,662
2004	2,329,000	405,000
2005	1,660,000	201,406

Source: UNDP (2006), p6

The majority of the internally displaced who found refuge in cities and towns resorted to agricultural activities. Municipal authorities in the province of Katanga distributed seeds, hoes, and food with the support of NGOs.

During that time, trains linking rural areas (principal suppliers of food) to urban areas (consumers) were suppressed. Rural settlements such as Kongolo, Nyunzu, Kabalo, Malemba-Nkulu, Bukama, etc. (where maize crops were produced) were isolated from

the main centres of consumption. Some roads and even bridges disappeared. Those that continued to exist became impassable. The only way to supply cities and towns with maize flour as the staple food for the majority of Katangese population was to import it from countries such as Zambia, South Africa and Tanzania. Poor urban population could not afford imported flour. This means that despite the availability of maize flour on the market, large number of Lubumbashi dwellers have no access to it. Also, the fact that neighbouring provinces, namely oriental and occidental Kasai, depended on Katanga province for food supply, led to the increase of maize flour price on the Katangese market. To cope with food insecurity, urban dwellers resorted to urban agriculture and other strategies.

2.2.3 The Mining sector in the new era

In the search of political and economic independence, the Mobutu regime undertook a series of administrative and constitutional reforms. UMHK was nationalized and became Gécomin in 1967, later on renamed Gécamines (1972). The diamond mining-company Miba was also concerned with the nationalization process in 1973. According to Katwala (1979:127), the Mobutu government accepted International Monetary Fund (IMF) proposals and in June 1967 introduced a stabilization programme to restore budgetary control and balance-of-payments equilibrium and to re-establish the profitability of the export sector. Radical measures including the devaluation of Congolese franc, the raise of taxation and abolition of the dual exchange rate were taken and implemented. Advised by IMF-IBRD experts, the Government of Mobutu concluded that an increase in copper production and export would be the fastest and most reliable way of increasing foreign exchange earnings and of raising Government revenue (Katwala 1979). The high copper

prices in the period 1965-70 on the London metal Exchange encouraged the Zairian Government to give priority to copper production and export.

Two-part Gécamines expansion programmes designed to increase production and export of copper and cobalt began in 1970. The first five-year expansion programme (1970-74) provided for an increase in copper production of 100,000 metric tons to 460,000 metric tons. Investments for this first project were put at $US260 million and financed mostly from internationally generated funds and loans of about $US21 million from U.S and European banks. The second five-year expansion programme (1975-79) was designed for the opening of two open-pit mines in the Kolwezi area and for the construction and expansion of treatment plants and infrastructure facilities. Copper and cobalt production was expected to increase by 120,000 tons and 4,000 tons, respectively, raising annual total capacity to 580,000 tons of copper and 20,000 tons of cobalt (Katwala 1979: 132).

It was always with the aim of increasing copper and cobalt production that SODIMIZA (Société de Développement Minier du Zaire) in April 1969 and SMTF (Société Minière de Tenke Fungurume) in September 1970 were created.

In the second half of the 1980s under the Mobutu regime, Gécamines reached the highest level of copper production: 476,000 tons and about 14,000 tons of cobalt, generating external revenue of about US$ 1 billion a year. At that time the company had 24,378

employees. As a paternalist mining company and as a show of success, Gécamines provided its employees with several advantages as already mentioned.

It is worth mentioning that most of the companies in the Katanga Province were economically depended on Gécamines. This was the case of the national railway (SNCC), which transported the Gécamines minerals of copper and cobalt from Lubumbashi to Kalemie or from Lubumbashi to the Republic of Zambia. Gécamines provided health care service to the Lubumbashi population by taking over Sendwe hospital as the state was unable to manage it. In 2000, Gécamines paid as tax for its 24,378 employees an amount evaluated at FC 199,155,267,90 (US$ 485,744) (Tax Service Report 2003).

Just four years later, a combination of several factors precipitated the collapse of the giant company. The mine of Kamoto (one of Gécamines' concessions) near Kolwezi collapsed in September 1990, bringing production levels down to 150,000 tons of copper. Since then, production of copper waned in the following years, reaching the lowest level of 8,000 tons in 2003. Also, mass looting took place in almost all towns and cities of DRC in 1991 and 1993. Economic infrastructure was destroyed. Decline of Gécamines' production, the predatory behaviour of Government apparatus, political instability, and mismanagement, international isolation of Kinshasa Government because of the so-called "Lubumbashi massacre", and the expulsion of more than 300,000 people of the Kasai population from the Katanga Province in 1993, deepened the disintegration of the mining

company. Table 2.2 below shows the declining trend in the production of copper over a ten year period.

Table2.2 Productions of copper (1986-2003)

Years	**Quantity (in tons)**
1986	486,000
1988	450,000
1990	150,000
1992	150,000
1994	40,000
1996	50,000
1998	40,000
2000	20,000
2002	10,000
2003	8,000

Source: Gécamines Report 2003

Despite the collapse in copper production, the distribution of monthly food to employees continued as well as free health care and free school fees until 2003.

Ignoring the economic crisis, Mobutu continued directing ever larger proportions of state revenue towards the presidency and maintenance of patrimonial systems of rule, and

away from economic investment or public goods provision (Nest, 2003:18-9). In this regard, President Mobutu used his position as many other dictators in the world to enrich himself, leaving the rest of the population in extreme poverty. Castells (2000) captures Mobutu's rule as follows:

For three decades, he put the vast country, the second largest in sub-Saharan Africa at the disposal of the CIA and other Western agencies, which used it as staging base for their activities throughout the continent. In exchange, he enjoyed a free hand at home, diverting for his use billions of dollars from Zaire's mineral wealth while leaving most Zairians in poverty (Castells 2000).

Some consequences with financial and social costs were observed. In its fall for example, Gécamines took down a great deal of the economic and social infrastructure of the Katanga province in general and of Lubumbashi in particular. Hundreds of firms for example SNCC and Swanepoel, working in the orbit of the Gécamines have gone bankrupt, increasing the unemployment rate in the province. By maintaining itself and its system (human capital, health, and education) despite the decline in production, Gécamines' debt reached US$ 1, 6 billion in 2003.

The restructuring of Gécamines started after the fall of the Mobutu regime. Gécamines's restructuring plan included the voluntary departure of about half of the company's workforce (about 11,000 workers), a structural adjustment loan that marked the re-engagement of the World Bank in DRC after ten years break, and the hiring of a new international management team to head of Gécamines to kick-start production operations. The main criterion of workers' retrenchment was to have at least 25 years of employment

with Gécamines. The package offered to the retrenched employees represented on average US$ 2,903 for the workers, US$ 11,901 for the managers, and US$ 28,588 for the directors (World Bank Report 2004). The amount of money each category of employees received was largely less than what the company should have paid them after several years without salary.

As a result of Gécamines's restructuring process, new mining companies with foreign capital were created. They all exploit Gécamines' concessions. In return, they are supposed to pay 20 per cent of their revenue to this company. The most outstanding of the new mining companies is the Tenke Fungurume Mining. However, the recent downturn (2009) caused the closure of the majority of the new mining companies. As a result thousands of workers lost their jobs and once again urban agriculture constituted the substitute for the household survival.

2.2.4 The agricultural sector in the new era

At independence people in DRC enjoyed freedom of movement. They could move from rural areas to urban ones without any restriction. The rural-urban migration deprived rural areas of their workforce. To address the situation, a series of policies were conceived and implemented. Despite the proliferation of strategies, the Mobutu regime was more preoccupied by it own survival than by the development of the agricultural sector. Leaders at that time were convinced that the development of Zaire was possible only after the modernization of the mineral sector. That is the reason why despite the political will,

only one percent of the national budget was allocated to agriculture. As a result, all plans and projects aimed at agricultural revival failed.

The first measure of a series of plans was the Mobutu Plan (1979-80), followed by the Agricultural Minimum Programme, which was followed later on by the Agricultural Revival Programme (1982-84). The last one was a five-year agricultural plan (1986-90). As seen in table 2.3 that follows, from 1970 to 1995, the amount of money allocated to agriculture was very insignificant: less than 2 per cent of the national budget.

Table 2.3 Evolution of budget allocated to agriculture in American dollars (millions)

Year	National Budget	Budget allocated to agriculture	Percentage
1970	600	6	1
1975	1,240	13,1	1.05
1980	1,500	17	1.13
1985	1,120	13	1.16
1990	960	8.7	0.90
1995	1,111	9.14	0.82

Source: Ministère de Finaces et Budget 1995

With an average of 1 percent of the national budget allocated to agriculture, this sector could not meet the needs of population in terms of food security. As stressed by Mawazo

(2004) in his thesis L*'agriculture et le cuivre ou la loi de la somme zero à l'epreuve de la massification ouvriere et paysanne au Katanga*, agriculture even though declared the priority of priorities was more of a slogan than a reality.

Announced in the President's speech on November 25, 1977, The Mobutu Plan was readily implemented in January 1980. The main goal was to boost the national economy through the revival of agriculture. To achieve this goal, the plan undertook the following actions; (i) the rehabilitation of infrastructures of communication (roads) to facilitate the transportation of agricultural products from rural areas to towns or cities, (ii) the promotion of commercial agriculture to earn foreign currency, (iii) the promotion of subsistence agriculture to achieve food security, and (iv) the improvement of living conditions of rural populations through the rehabilitation of sanitation, education and infrastructure. The Mobutu Plan was too big to be implemented and relied too much for its implementation on foreign resources; consequently, it failed to reach its objectives.

The failure of the Mobutu Plan pushed the authorities to conceive another more realistic plan: the Minimum Agricultural Plan. Conceived to correct the first one, this plan was to be financed by the Government. The Minimum Agricultural Plan was a strategy to improve the agricultural production in the country, which was decreasing each year. Only three objectives were pursued: intensification of subsistence agriculture, promotion of commercial agriculture, and production of raw agricultural products for national agro-industries.

Table 2.4 Agricultural production in tons

Products	Needs	Production	Deficit	Objective
Maize	700,000	509,500	190,500	1000,000
Rice	150,000	127,000	23,000	200,000
Cassava	4,000,000	2,284,000	1,706,000	5,000,000

Source: Conseil Exécutif, PAM 1980, p.6

Table (2.4) implies that the Minimum Agricultural Plan should deal with the deficit of each product in order to allow the country to become self-sufficient in maize, rice and cassava. Thus, the goal of 1000,000 tons of maize, 200,000 tons of rice and 5,000,000 tons of cassava was targeted by the plan. However, due to the short time (1 year: 1980) given to achieve these objectives, the Minimum Agricultural Plan also failed.

From 1982, another agricultural programme was implemented named Revival Agricultural Plan. Like the two previous plans, the revival plan sought to promote the subsistence agriculture, increase industrial agriculture, and promote production for commercial purposes. The major innovation introduced was the distribution of responsibilities between the Government and the private sector. The Government had the role of conceiving the agricultural policy, coordinating agricultural activities, and creating basic infrastructures while private sector had to produce and commercialize agricultural products. The main objectives to be achieved were the improvement of subsistence agriculture and rural development. Three cities were chosen as centre of

development for the rest of the country: Kinshasa, Lubumbashi and Kisangani. Not surprisingly, as with many other plans or programmes, the Revival Agricultural Plan failed to reach its objectives. The smallness of the budget allocated to the promotion of agriculture could explain why agricultural programmes or plans failed. Additionally, despite the unsuccessful efforts of the various plans or programmes to promote agriculture, the state of roads considerably deteriorated particularly those linking the centres of agricultural production (rural areas) to the centres of consumption (towns and cities).

It must be mentioned that at the national level, the economic sector in the post-colonial era in DRC was dominated once again by the export of mineral resources. Central Government's efforts consisted of either reinforcing Gécamines' capacity of production or of creating new mining companies. The collapse of Gécamines engendered many other mining companies (Tenke Fungurume Mining, Rwashi Mining, Chemaf, etc). But the recent world financial crisis pushed many corporate organizations to stop their activities because of the fall of the mineral prices. On the other side, the agricultural sector has been the least of Government's concerns.

2.3 Historical and Socio-economic Background of Lubumbashi City

Formerly called Elizabethville, the city became Lubumbashi in 1967, named after the river flowing near its centre. The city was founded in 1910, four years after the creation of the Union Minière du Haut Katanga (UMHK). That is the reason why Lubumbashi is commonly called "the capital of copper".

According to Fetter (1979), the primary function of Lubumbashi was to serve as a hub for the nascent mining industry of southern Katanga and to shelter the great railway station where the line ended after having left the Cape and climbed through South Africa and Rhodesia. It also constituted a landmark of the Belgian presence before the British sphere of influence.

The cosmopolitan character of Lubumbashi city can be explained by the mode of recruitment of workers used during the colonization. As previously said, from 1911 to 1955 workers were recruited in the Katanga Province, the neighbouring provinces of Kasai and Kivu, as well as in some African countries such as Rwanda, Burundi, Zambia and Zimbabwe, with the exception that the qualified workers were recruited in Europe, particularly in the Kingdom of Belgium. Black workforce for the entire colony was estimated at 1,197,696 people in 1956 (Joye and Lewin, 1961: 119-120).

Generally speaking, Lubumbashi population grew from 6,000 inhabitants in 1911 to 169,989 in 1955 (City Council of Lubumbashi, 2004). But from 1955 to 1960, there was no population growth because of tensions and problems that occurred when the country acceded to its independence. This period was followed by another period of instability: Katanga secession and ethnic conflicts between people of Katanga and those of the Kasai Province (1960-65). Some Kasai people returned to their provinces (Western and Eastern Kasai). Despite these conflicts, Lubumbashi population was estimated at 216,296 people in 1965.

A combination of several factors such as rapid population growth during the 1970s, economic urban expansion in the 1980s and the recent civil wars in the 1990s (1996-97 and 1998-2003) which affected mostly rural population, contributed to the increase of the number of inhabitants in the capital city of the Katanga Province, Lubumbashi. Currently, there are about 1,200,000 people living in the city of Lubumbashi.

For almost a century (1910-2003), Lubumbashi lived to the rhythm of the giant Gécamines. Gécamines health services represented an important part of the health infrastructure in the Katanga Province: 64 per cent of all hospital beds in Lubumbashi, 42 per cent in Likasi, and 47 per cent in Kolwezi. The running of the national hospital, Sendwe, with 1,000 beds, 7 local hospitals, 3 clinics, 4 health centres, and 18 factory health centres cost US$ 30 million to the company in 1990 as operating budget. Gécamines local hospitals and health centres played an essential role as the only medical facilities available in areas like Kipushi, Mangombo, Kambove, Kakontwe, Kakanda, Kando, and Luana.

The restructuring of Gécamines because of the decline in production had a strong social impact in areas such as education and housing, health care, etc. At the educational level, one third of teachers were retrenched while the remaining teachers did not receive their salary. Schools were in complete disrepair with missing doors, windows, etc. Educational level has been going down in the last ten years.

About 1,300 households living in formerly Gécamines-owned houses or apartments were vacated in 2004, as the houses and apartments they were living in were sold by the company to other company employees. Also, by dropping the budget of health care from US$ 30 million in 1990 to US$ 0.00 in 2003, Sendwe hospital could no longer play its essential role in the national medical system or served the medical needs of the whole Katanga. As a consequence, people go to non-Gécamines health centers, which are rather expensive.

The best of the professionals in education and health sectors have left the country (mainly for South Africa and Zambia). According to the University of Lubumbashi survey (2004), 85 per cent of retrenched Gécamines employees and 82 per cent of the remaining only have one meal a day or none. During the same period, Lubumbashi city received only 2.38 per cent of the total value of the tax retro-cessions from Gécamines which were owed to it according to the law. It had to function with an annual operating budget of US$ 8,640 compared to the US$ 485,744 in 2000, for a population of about 1.2 million (Rapport de la Mairie de Lubumbashi, 2004).

Agriculture on the other hand became the primary choice for the retrenched. During the many years without salary, about 54 per cent of Gécamines employees and their family members went into agriculture. But the lack of capital, poor road infrastructure, and the high cost of inputs constituted some of the constraints to succeed in this activity.

Ngongo (2001) lists five steps which were followed in agricultural production in Katanga province: (i) 1960 to 1970 as a step of relative extension; (ii) 1970 to 1978 as characterized by a stagnation of agricultural production; (iii) 1980 to 1989 as the beginning of decline of the agricultural sector; (iv) early 1990s is marked by the acceleration of the decline; and (v) the beginning of 2000s marks the dependence of the province on agricultural supplies. According to this author, stagnation, decline and regression of the agricultural sector in Katanga province (even in the rest of the country) resulted in the dependency of the province on the importation of 75 per cent of peanuts, 70 per cent of fish and meat, and 100 percent of milk.

Table2.5: Food production compared to Lubumbashi populations' needs (2003)

City	Maize in tons			Cassava in tons			Rice in tons		
	Production	Needs	Deficit	Production	Needs	Deficit	Production	Needs	Deficit
Lubumbashi	13,214	274,340	261,126	28,706	174,152	145,446	-	59,003	59,003

Source: Rapport Annuel/Inspection Régionale de l'Agriculture/Katanga 2003

The above table shows that Lubumbashi residents produce maize and cassava, but not rice. Although they produce these two products, the quantity produced in not sufficient to cover all the needs of the city. This means that the city must either import or buy from rural areas of the province about 261,706 tons of maize, 145,446 tons of cassava and 59,003 tons of rice to meet the needs of its population. But considering the shortage in maize (506,278 tons) and rice (252,809 tons) at the provincial level, the only option is

importation. The needs of Lubumbashi residents in cassava flour are met by the surplus of production from Haut-Katanga and Lualaba districts.

Since their installation, the new Provincial Government officials have conceived what they have called "Programme d'Appui à la Mécanisation Agricole des Groupements Paysans des Entités Décentralisées de la Province du Katanga" (Support Programme of Agricultural Mechanization towards Peasant Settlements of Decentralized Entities of Katanga Province) to reach food security in the Province. With 64 per cent of Katanga population involved in agricultural activities mostly in rural areas, agriculture is undoubltedly the most important sector. Unfortunately, the rudimentary of means of production especially the hoe, deprive the rural population of producing enough food. The provincial programme acts like a remedy by privileging the mechanization of agriculture. More details about the agricultural plan in the Katanga Province will be given in chapter 8, which deals with the institutional support to urban agriculture.

2.4 Conclusion

The chapter has demonstrated that the contemporary Congolese state and the economic sector have their origins in colonialism. At the political level, the Democratic Republic of Congo, though administered from the Kingdom of Belgium, inherited from its former colonial power a parliamentary system to form a union without unity, to use Young's terms. With very few holders of University degrees and with leadership from political parties formed on an ethnic basis, leadership conflicts exploded

The second republic tried to bring peace and unity. National resources have been looted for the benefit of a small group of elites. The departure of Mobutu did not necessarily bring stability in the country, neither Laurent Desire Kabila (assassinated in 2001) nor his son, Joseph Kabila Kabange elected in 2006, succeeded in strengthening the state.

At the economic level, the Democratic Republic of Congo has specialized in the export of raw materials and agricultural products. The majority of companies that exploit copper and cobalt are from Western countries. The World Bank and International Monetary Fund are the key institutions that control the economic policies in the country, through what is commonly called “structural adjustment programmes”. The Gécamines reform for example has been decided by both international financial institutions and implemented by the World Bank. In other words, not only does the Government of Congo not control its own resources, it also receives injunctions from Western countries through World Bank and IMF. It is in this context that individuals and households have taken their destiny into their own hands by resorting to urban farming as one survival strategy among others.

CHAPTER 3

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Introduction

This chapter aims at providing a theoretical framework for the analysis of urban agriculture as a livelihood strategy for individuals and households. The study adopts a sustainable livelihoods approach based on alternative theories of development. Practically speaking, the study explores the impact of urban agriculture on Lubumbashi farming households in the Katanga Province while at the same time examining the conditions of its sustainability.

First, the chapter reviews the literature on development theories with a particular attention drawn on alternative theories of development. Alternative theories constitute a move away from the state and market and a move away from the large-scale model of development. As De Janvry *et al.* (1995: 4) stresses that ”when the state fails to deliver public goods, minimum basic needs, etc. civil organizations may develop to fill the vacuum”. Similarly, market failure may lead to the emergence of an underground economy. Therefore, a particular attention is drawn to institutions such as the household which, in the case of a failed state, becomes a refuge for the hungry and needy. Here, the household is viewed at the same time as a unit of consumption and a unit of production. The emergence of urban agriculture at the household level might mean the rise of household economy while the mainstream economy and the state fail.

Second, the chapter defines the sustainable livelihoods approach and describes its components, framework and principles in order to understand the emergence of urban agriculture as a household strategy. Particular attention is drawn to the capital assets and the external environment they face. This leads to an examination of their vulnerabilities and the range of policies, institutions, and processes which support or hinder them.

Third, the chapter looks at the concept of urban agriculture. In this section, the urban agriculture concept is defined, its historical background is provided, push and pull factors are identified while the categories of farming households are described and the importance of urban agriculture as a source of food and income generation is outlined.

3.1 From large- to small-scale theories

Large-scale theories consider the state and the market economy as the key players in development. Though there is unanimity among most theorists about the role of the state and the market in development, the debate remains about the nature of African state and market.

Polanyi (1957:71) asserts that no society can exist without a system of some kind which ensures order in the production and distribution of goods. The reason advanced by the author is that a market economy can exist only in a market society. According to Polanyi,

regulation and markets grow together. This view is shared by Andreski (1983) and Lewis (1955).

Weber, quoted in Andreski (1983:150), asserts that "state as a political association, with a rational, written constitution, rationally ordained law, and an administration bound to rational rules or laws," has come into existence only in the western world. Lewis (1955) acknowledges the importance of Governments in stimulating economic activity. The author goes far by declaring that no country has made economic progress without positive stimulus from Government.

Lewis (1955:376) lists nine categories of Government functions that are relevant to economic growth: (i) maintaining public services, (ii) influencing attitudes, (iii) sharing economic institutions, (iv) influencing the use of resources, (v) influencing the distribution of income, (vi) controlling the quality of money, (vii) controlling fluctuation, (viii) ensuring full employment, and (ix) influencing the level of investment. Concerning the public services for instance, a Government is supposed to maintain law and order internally, to which must be added services such as roads, schools, public health, research, and so on. Externally, Government must protect citizens by securing the country's borders, and defending its sovereignty.

Nurkse quoted in Martinussen (1997:59) shows that the expansion of the market requires not only the creation of strong incentives for investment along with increased mobilization of investible funds, but also a state that internally ensures mobilization of resources and externally brings foreign aid. Although there is apparent unanimous agreement about the role of the state in economic growth, Lewis (1955) acknowledges that in reality Governments may fail either because they do too little, or because they do too much.

The point of view of Marxist and dependency theorists is that the state is an instrument of exploitation at the disposal of the dominant class. Therefore, the role of the state is to maintain the status quo in their favour. Amin (1980:22) reinforces this view by stressing that "to separate the economy from the state is to accept the artificial division between 'pure economics' and 'political science' by which bourgeois scholarship attempts to refute historical materialism." Regarding Marxist and neo-Marxist perspective, Chabal and Daloz (1999:5) contend that "the modern state (whether in the West or in Asia) has been instrumental in fostering and co-coordinating economic growth for the benefit of a large array of social classes – and not just of the political elites."

However, large-scale theories have been criticized for a number of reasons that Martinussen (1997:309) spells out as follows:

(i) National income accounts do not reveal how income is distributed either socially or territorially. As a result, they do not indicate how aggregate growth affects different groups of people or different regions in a country. Because of the focus on those aggregate figures and the information they provide on macro-economic performance and balances, the theories using them as central inputs tend to treat countries as far more homogeneous and economically integrated than they are in reality;

(ii) Conventional measures of economic growth are often misleading and do not present an accurate picture of the total production of a society. Specifically, three major types of productive activities are not accurately reflected in national accounts statistics: subsistence activities in agriculture, forestry and fisheries; activities in the so-called informal sector, including some illegal activities, and household production activities.

While the role of state has been crucial for the economic growth and development of the western countries and Asia, the state's role in the majority of African countries is in question.

3.1.1 African states and economies

The failure of economic development, political instability, social divisions, violence, crime and civil wars in contemporary African states, as they have been enumerated by Chabal and Daloz (1999: xvi), have pushed Africans and Africanists to see the African

state as a weak, powerless or a failed state and economy. The crisis of Africa south of Sahara started in the 1970s. Before that, many Africans and Africanists acknowledge that:

> *From the 1930s to the end of the 1970s, sub-Saharan Africa underwent an experience of economic growth based on the widespread, neo-mercantilist exploitation of primary resources, from which activity rents were extracted. This was spread across the sectors of agriculture, mining and oil. This economic model, constructed after the economic crash of 1929 and continued in the period of political liberalization after the Second World War, permitted the growth of a nationalist elite which, after independence, administered the system to its own benefit through the instruments of a state sector and parastatal companies (Bayart et al. 1997:xvii).*

Unfortunately, from the end of the 1970s, the repayment of loans and their interests, the effects of the structural adjustment programmes in the 1980s, and the desperate investments to promote production for export has had disastrous consequences for both the poor and the environment (Friedmann, 1992).

Bayart *et al.*, (1997) consider the criminalization of the state as the dominant trait of the sub-Saharan African countries from the 1970s. These authors consider African states, especially those located in the sub-Sahara region as criminalized states because of their involvement in the smuggling of mineral resources, drug trafficking, and so on. By criminalization of politics and the state, they mean the routinization of practices whose criminal nature is patent, whether as defined by the law of the country in question, or defined by the norms of international community, and most particularly that constituted by aid donors. It should be pointed out that the criminalization of the state is not only found on the African continent. Friedmann (1992) regards countries such as Bolivia and

Colombia (Latin America) as criminalized because part of their economies was based on the production of cocaine and crack.

Myrdal (quoted in Martinussen, 1997) characterized the nature of developing countries in general as "soft" because of their inability to function as engine of growth and development. After having described the three most common analytical interpretations of the post-colonial state in Africa (neo-patrimonial model, hybrid state approach and the paradigm of the transplanted state), Chabal and Daloz (1999) conclude like many others by describing the sub-Saharan African states as vacuous (rapidly disintegrated and empty shell) and ineffectual (lack of institutionalization) states. These authors further stress the fact that the very weakness and inefficiency of the state in Africa has been profitable to African political elites in the sense that it allowed them to respond to the demands for protection, assistance and aid made by the members of their constituency communities in exchange for the recognition of their political prominence and social status, which as patrons, they crave (1999:14).

In his book *Global shadow: Africa in the neoliberal world order,* Ferguson (2006) describes African states as "shadow states". They are not copies of Western states, but just their shadows. According to this author, economically, sub-Saharan Africa in recent years has suffered from increasing marginalization, low or negative rates of economic growth, and a striking failure to attract foreign investment. Politically, the African continent has been marked by a series of civil and interstate wars. Even in stable

countries, clientelism and corruption have rendered states unable or unwilling to provide public services, such as roads, schools, health care, etc. (2006: 9-10). Although a process of democratization took place in the 1990s in many African countries, with multiparty elections which invigorated the political life, African states were denied foreign aid, which was channelled to Africa through non-governmental organizations.

Most writers agree that economically and politically, developing states particularly the African states are powerless, weak or failed states. Deprived of economic resources, some states are unable to provide basic services and therefore cannot stimulate economic growth and development.

The new state-centred theories in the 1980s on the other hand rejected this kind of generalization about the ineffective states of developing countries. Based on Evans (1989: 562), one of the prominent scholars in this school of thought, "states are not standardized commodities. They come in a wide array of sizes, shapes, and styles". This author distinguishes three types of states, namely predatory, intermediate and developmental states.

The major characteristic of the predatory state is that state administration lacks coherence and efficiency. This constitutes a handicap to the promotion of economic and social development. The predatory state is politically dominated and economically exploited by

small political power elite. National resources are abused by the clique (team of major political players) in power for their own interests. Evans has taken Zaire (former name of the Democratic Republic of Congo from 1973 to 1997) as a prototype of this form of state. To quote Evans (1989: 569-70):

> *"The Zairian state apparatus have extracted vast personal fortunes from the revenues generated by exporting the country's impressive mineral wealth. During the first two decades of Mobutu's rule, Zaire's gross national product per capita has declined at an annual rate of 2.1% (World Bank, 1988), gradually moving the country toward the very bottom of the world hierarchy of nations and leaving its population in misery as bad as or worse than they suffered under the Belgian colonial regime".*

The launch of a multiparty system in the mid-1990s did not improve the situation. This coincided with the collapse of the giant mining firm (Gécamines), the collapse of state services, bad governance and corruption.

In contrast to the predatory state, the developmental state is described by Evans as having a well developed coherent bureaucracy, resembling more of Weber's ideal-type of bureaucracy. Johnson (1982) quoted in Martinussen (1997: 239) distinguishes four fundamental characteristics of the developmental state:

(i) political stability;

(ii) an elaborate division of labour between the state and the private sector;

(iii) the state's extensive and continuing investment in education, combined with policies to ensure the equitable distribution of opportunities and wealth; and

(iv) the state's preference for policies and interventions based on the price mechanism.

Contrary to the Republic of Zaire, which has been classified in the category of predatory states, Japan is classified in the category of developmental states.

Between the two extreme forms of the state, there is a third one called "intermediate state". Brazil has been classified in this category of states because it has built up a certain administrative capacity. International structures of the state remain fragmented, divided and unstable but they perform significantly better than the predatory state. According to Evans, administrations in intermediate states have occasionally and in certain respect achieved positions independent of the political power elite, and the economic interest groups.

The Democratic Republic of Congo has seen the rise of grassroots institutions and organizations and the emergence of a parallel economy, in the context of a failing state and economy. This is due to factors such as the turmoil that accompanied independence from Belgium, the 32 years of brutal and debilitating dictatorship under President Mobutu followed by civil wars and invasions of the country by foreign forces from Rwanda, Uganda and Burundi. The economic crisis has been so deep that the giant mining company in the Katanga Province, Gécamines, collapsed in the 1990s. The transportation system in the country deteriorated. As a result, scarcity of food is rife,

foreign exchange is officially unobtainable for all but a powerful few, and the official marketing system barely functions (MacGaffey *et al.*, 1991:13), leading these authors to conclude that as people and households take matters into their own hands, seeking to find remedies to these problems, the informal economy expands.

In order to take into account all kinds of economic activities at the local level, a move away from large-scale theories toward small-scale theories of development is necessary. Small-scale theories focus their attention on institutions and organizations other than the state, and activities that are not part of the formal economy, in order to examine their impact at the household, community and national levels. Where national institutions cease to function properly, and the market economy fails to play its role, substitute institutions at the local level and parallel economy play their role.

3.2 Alternative theories of development

The origins of alternative theories of development are often linked to Dudley Seers' speech in 1969 in which he posed for the first time three pertinent questions which became reference points for the redefinition of development:

> *The questions to ask about a country's development are therefore: what has been happening to poverty? What has been happening to unemployment? What has been happening to inequality? If all three of these have become less severe, then beyond doubt there has been a period of development for the country concerned. If one or two of these central problems have been growing worse, and especially if all three have, it would be strange to call the result "development", even if per capita income had soared (Seers, 1972 cited in Martinussen, 1997:194).*

Since then, development ceased to be seen only in its narrow economic dimension. The new conception of development focuses on the need to overcome poverty, unemployment and inequality.

The starting point of alternative theories of development is the autonomous organizations of citizens, and their focus is on the local community. Polanyi (1977) and Friedmann (1992) contend that economic relations and economic activity are deeply embedded in the matrix of social and cultural relations. Therefore, it is necessary to probe into the socio-cultural institutions of society.

However, two types of alternative development theories have been distinguished. The proponents of the first type of alternative development include Dudley Seers, Amartya Sen, Paul Streeten and many others. In this school of thought, economic growth, which has been the key focus in the traditional theory of development, has been rejected as an end in itself. In contrast, these theorists have emphasized welfare and human development with increased choices as the higher-order objectives. They define development as a process of enlarging people's choices in a much broader sense than proposed in mainstream economy development. Instead of economic growth, human development has become the goal to be achieved. The difference is that the traditional view of development focuses on the expansion of only one aspect – income - while the alternative view embraces the enlargement of all human choices - economic, social, cultural, or political (Haq, 1995).

This is to say that proponents of this school of thought do not establish a rigid causal link between expanding income and expanding human choices. According to Haq, the link depends on the quality and distribution of economic growth, not only on the quantity of such growth. Primarily, the human development approach draws attention to three areas, namely (i) the opportunity to lead a long and healthy life, (ii) the opportunity to acquire knowledge and (iii) the opportunity to have access to the resources needed for a descent standard of living.

In contrast to the first type of alternative theory which maintains the body of mainstream economic development theory, the second type of alternative theory of development shifts the whole perspective and focus towards civil society. In this school of thought, the state is viewed in negative terms. The state is considered bureaucratic, corrupt, and therefore unsympathetic to the needs of the poor. For these reasons and many others, some proponents of this approach believe that the state is part of the problem and should therefore be avoided as much as possible (Friedmann, 1992). Friedmann argues that alternative development theories begin locally, but they cannot end there because the state's collaboration is needed to improve the lot of the poor.

Civil society has emerged to offer what the state (public goods and welfare) and the market (jobs) are no longer able to deliver. One of the indicators used by the UNDP to measure the level of freedom in a country is the strength of civil society. Broadly, the term civil society covers activities and organizations that are separate from the state and

from the market, but debates rage about the precise boundaries (De Janvry *et al*., 1995:1). Civil society is usually defined as made up of a range of organizations, community groups, trade unions, church groups, cooperatives, business, professional, and philanthropic organizations, and a range of other non-governmental organizations (Mellwaine, 1998 cited in Willis, 2005).

The local dimension has been acknowledged in alternative development as the privileged terrain of the disempowered sectors (civil society). In giving attention to the local level, alternative development focuses on the empowerment of civil society whose long-term objective is to rebalance the structure of power in society by making state action more accountable, strengthening the powers of civil society in the management of its own affairs, and making corporate business more socially responsible (Friedmann, 1992). Additionally, this author acknowledges that although an alternative development is initially based on localities, its long-term aim is to transform the whole of society through political action at national and international levels. Although alternative development literature acknowledges the central role of the household as the core of civil society, Friedmann insists on the fact that a strong state is needed in the long-term.

3.2.1 Parallel economy

A combination of subsistence production, petty commodity production, small-scale trading, services and other forms of unregistered, informal activities have become more important sources of income for a fast growing number of households (Kongstad and Monsted, 1980). Quoted in Martinussen (1997), Feige (1989) states that economists have

generated a plethora of terms to describe various aspects of this unobserved sector of the economy, such as underground, subterranean, shadow, informal, hidden, parallel, black, clandestine, second, household, etc. The author adds that the unobserved sector consists of two components: a market sector that utilizes money as a medium of exchange in the production and distribution of goods and services, and non-monetary sector in which real goods and services are produced but are either directly consumed by the producing unit (the household) or are informally exchanged by a bartering mechanism (1989:21).

One of the theories proposed to explain why the second economy has continued to grow in many countries in Asia and Africa points to the fact that labour force in these countries has grown much more rapidly than the number of jobs in the organized economy and the public sector (Martinussen, 1997). The International Labour Organization (ILO) shows that growth in the organized economy contributed very little to absorbing the rapidly growing workforce in many developing countries (ILO, 1972, 1976).

In the Democratic Republic of Congo, the informal sector has enormously expanded because the state's administrative capacity has declined and also because the marketing structures of the official economy have deteriorated to the point where they barely function (MacGaffey *et al.,* 1991). The erosion of state authority and capacity, which started just when the country gained its independence from Belgium, resulted in a predatory state system. The withdrawal of Mobutu from power was accompanied by two civil wars (1996-97 and 1998-2003). The country was divided into three parts with a

central government controlling only half of the country. The economic crisis deepened particularly because of the collapse of the giant mining company Gécamines and many others. Before the collapse, Gécamines provided some 80 per cent of Congo's foreign exchange earnings in 1987, with 65 per cent from copper (Wa Nkera and Schoepf, 1991).

As a consequence, the majority of adults lost their jobs; unrecorded trade took place within Katanga province itself and within other provinces of DRC. The unrecorded trade includes trafficking in minerals, spare parts, fuel, stolen cars, foodstuffs, pharmaceuticals, and manufactured goods, as well as the sale of foreign currencies, and poaching. In this list, Rukarangira and Schoef fail to mention urban agriculture as one of the emerging informal activities at that time in the capital city of Katanga province. Among the informal activities mostly practiced by Lubumbashi dwellers, urban agriculture was classified as the dominant one by Bruneau and Bukome (1987) in their article on the spatial distribution of informal economic activities in the city of Lubumbashi. The focus of this thesis is on urban agriculture because of the involvement of growing number of urban dwellers in food production, and because of the nature of urban agriculture (food supply and income generation).

Despite the fact that urban agriculture is analyzed at the household level, the study reserves a place to some organizations of civil society such as non-governmental organizations which are engaged in the promotion of this practice. In the literature on

alternative development, NGOs are perceived as the answer to the limitations of the state and the market in facilitating development from below for the following reasons:

(i) NGOs can provide services that are much more appropriate to local communities because they work with population at the grassroots to find out what facilities are required;

(ii) NGOs are able to provide such services more efficiently and effectively through drawing on local people's knowledge, and also using local materials;

(iii) Because of the scale of operation and the linkages with local people, NGOs are able to react more quickly to local demands;

(iv) NGOs are beneficial to non-material aspects of development, in particular processes of empowerment, participation and decentralization. (Willis, 2005:98-9).

The role played by NGOs in the Democratic Republic of Congo is crucial. For example, most of the disarmament, demobilization and reintegration programmes in the Democratic Republic of Congo were implemented with NGOs, often working under larger international NGOs acting as an umbrella agency for smaller national and local NGOs and groups (UNDP, 2006). NGOs are among the organizations of civil society that promote urban agriculture in the city of Lubumbashi. They generally provide seeds, technical training, fertilizers, and sometimes money to farming households.

It must be noted that social theorists do not all agree about the role played by NGOs as engine of development in the place of the state. Chabal and Daloz (1999) for example regard the explosion in the number of NGOs in Africa, not as a reflection of the flourishing of civil society in the Western sense, but as an adaptation by African political actors to the changing complexity of the international aid agenda.

In this thesis, alternative theories constitute the theoretical foundation for the sustainable livelihood approach, used in the analysis of urban agriculture as one of the strategies employed by the urban poor to cope with economic crisis.

3.2.2 Household as Polity and Economy

Polanyi (1977) and Friedmann (1992) regard the household as the basic organizing unit of civil society, through which the individual relates to society, and through which non-market and market relations are articulated. The household is commonly defined as a group of people who pool resources or eat from the same pot. The term 'household' includes not only family members, but also a large kin of networks as well as unrelated co-residents. Similarly, Friedmann (1992:32) understands a household to mean a residential group of persons who live under the same roof and eat from the same pot. These persons may be blood-related or not.

The alternative development literature views the household as an elementary unit of civil society, though essentially each household forms a polity and economy in miniature. Friedmann (1992: 46) argues that

> *As a polity or political economy, conflicts internal to households over questions of power, who does what kind of work, who controls what portion of whose income, whose voice should count "in the last instance" in decisions, reveal the household to be an open and permeable construct.*

He adds that the household is a pattern of relationships and processes that connect it to extended family, neighbours, the market economy, and civic and political associations. As a miniature political economy, the household has a territorial base (life space) and is engaged in the production of its own life and livelihood. For instance, members of the household arrive at decisions affecting the household as a whole and individually in ways that involve negotiating relations of power.

As an economy, the household is at the same time a unit of production and a unit of consumption (Polanyi, 1977; Friedmann, 1992). The household is involved in two kinds of economy: the economy of capital accumulation and that of subsistence. According to Friedmann, the area of overlap between market economy and subsistence economy is the informal economy, which may be directly linked to capital accumulation through the formal production sector or may be largely peripheral to it. Friedmann concludes that, while some activities of the informal economy of a household may be directly linked to capital accumulation, others may be purely subsistence activities. Farming households cultivate some food crops principally for commercial reasons, while others are grown for food supply.

The size, composition and location of households remain fluid because there are a variety of household types. Murray (1981) opposes the conventional view that urban households are more likely to be nuclear. According to this author, this view of households ignores the development cycle of a domestic unit. This manifests itself in a diversity of household types, with any household changing its shape and form overtime.

As a unit of production and consumption, the household allocates, consumes and exchanges resources within its boundaries, based on age, gender and seniority. In addition, households are also a social core of socialization, emotional support, caring, and feeding of members.

In the Democratic Republic of Congo context, households have become the place to which the weak Congolese state and its failing market have been transferring the burden of survival. A series of studies conducted in 1969, 1975 and 1986 by Houyoux (1986) (quoted in MacGaffey et al., 1991) showed how wages declined resulting in the emergence and expansion of the second economy, and a remarkably changing role of women in the urban economy (MacGaffey *et al.,* 1991). While in 1969, 99.1 per cent of the income of officials and 70 per cent of the income of other earners came from wage, in 1986, only 33 per cent of the income of officials, 43 per cent of the income of salaried

workers and 37-47 per cent for different categories of labourers came from wages and salaries (Houyoux and Kinavwuidi, 1986:173).

It is worth saying that this thesis goes beyond the conception of household as a natural unit, where members of the household work harmoniously for the benefit of all. The new conception of the household considers it as a social unit within which social and particularly gender relations need to be examined. By focusing on urban agriculture, the study examines how the production is distributed, allocated and shared by household members. The thesis will show how the division of labour takes place within the farming household and how the context of liberalization of economy has affected the choice of food crops to be grown and livestock to be kept, and also how urban poverty has affected the level of production and shaped locative rules and obligations.

About the intra-household relations, literature on gender analysis advises taking into consideration the inequalities of power and welfare among household members. It is no longer acceptable to assume that the household itself can be treated as an undifferentiated unit. Therefore, there is a necessity to examine the nature of such relations. It is also necessary to examine localized struggles and decision-making in the household.

The emergence of institutions of civil society such as the household goes together with the rise of the so-called parallel economy, second economy or informal economy. The

informal sector may produce both an organized market economy and civil society (Martinussen, 1997). Most of the time, women play the dominant role in this kind of economy (Friedmann, 1992). In 1969 for example, trade gave Zairian women a greater degree of autonomy and independence in city life than they had in the colonial period (Houyoux, 1986 and MacGaffey *et al.,* 1991). It must be added that this kind of autonomy or independence has been often accompanied by conflicts in households because of the patriarchal relations regulating life in them.

3.3 The Sustainable Livelihoods Approach: Definition, Framework and Principles

Rapid urbanization in sub-Saharan Africa, economic decline and structural adjustment policies have resulted in urban poverty. The Department for International Development (DFID), in the United Kingdom adopted the 'sustainable livelihoods' approach as a strategy for reducing urban poverty, which was largely developed in a rural development context.

3.3.1 Defining the sustainable livelihoods approach

The common definition of livelihood is that formulated by Chambers and Gordon (1998) that a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living.

A livelihood becomes sustainable "when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future,

while not undermining the natural resource base" (Carney 1998:4). Therefore the sustainable livelihoods approach is conceptualised as:

> *…the mix of individual and household survival strategies, developed over a given period of time that seeks to mobilize available resources and opportunities. Resources can be physical assets such as property, human assets such as time and skills, social assets, and collective assets. Opportunities include kin and friendship networks, institutional mechanisms, organizational and group membership, and partnership relations. This mix of livelihood strategies thus includes labour market involvement, savings, accumulation and investments; borrowing; innovation and adaptation of different technologies for production; social networking; changes in consumption patterns; and income, labour and asset pooling (Grown & Sebstad, 1989:941)*

According to Rakodi (2002: xv), the sustainable livelihoods concept surfaced in the Brundtland Report (*Our Common Future*) of the World Commission on Environment and Development in 1987. Since then, a number of development agencies, such as the World Bank, the United Nations Development Programme (UNDP), Care International, Oxfam, Canadian International Development Agency (CIDA), and the Swedish International Development Agency (SIDA) adopted and implemented the sustainable livelihoods approach even though emphasis may differ from one agency to another, but the concerns remain the same (Rakodi, 2002).

As Rakodi (2002: xv) pointed out:

> *Numbers of researchers and development agencies have been developing a livelihoods approach as a way to improve understanding of the situation and actions of poor people, as a guide to thinking about the objectives, scope and priorities for development; as a framework for designing policies and practical interventions; and as a basis for evaluating interventions with respect to their effectiveness in achieving poverty reduction.*

Having defined the concept of sustainable livelihoods approach, the following sub-sections describe the livelihoods framework and the principles as main components of this approach.

3.3.2 The sustainable livelihoods framework

A framework is just a schematization of a reality which is always complex. It is useful as a guide or lens through which to view the world. According to Rakodi (2002:8), the value of a framework lies in "its ability to capture key components and their interrelationships as a starting point for identifying critical analytical questions and potential leverage points where interventions might be appropriate". But a framework has the disadvantage of being rigid. Also, it is limited as it cannot portray the whole of reality, everywhere and at all times. In other words, the livelihoods framework as well as many other frameworks is open to criticisms of rigidity and trying to codify complexity (Beall 2002:72).

The sustainable livelihoods framework is built on capital assets. This means that the livelihoods approach focuses on the strengths or what poor people already have instead of thinking in terms of need or problem. The idea behind is that "poor may not have cash or other savings, but they do have some sort of assets such as labour, skills and knowledge, friends and family and the nature around them" (Rakodi 2002:10). In other words, poor people are not as passive or deprived as it seems to appear.

Five types of assets have been identified on which individuals and households draw in order to build their livelihoods, including natural, social, human, physical, and financial capital. In order to analyse UA as a livelihood strategy, this section identifies the types of assets involved in agriculture.

Human capital: includes labour and health. It is determined by factors such as household size, age in the households, education, level of skills, leadership potential, etc. Labour (both its quantitative and qualitative dimensions) is a vital asset in urban areas. But a combination of various factors including economic decline, structural adjustment programs and rapid urbanization has made urban labour a fragile asset in the Democratic Republic of Congo as well as in the majority of developing countries.

On the one hand, the quantitative aspect of labour refers to the number of household members involved in income-earning activities. In the DRC context, after the collapse of Gécamines, the principal provider of foreign currency, there has been emergence and expansion of the informal sector, involving primary commodities, trade, transport, urban agriculture, construction, etc. The informal economy enabled tens of millions of Congolese to survive despite crumbling state services and economic crisis.

On the other hand, the qualitative aspect of labour concerns skills and education, the lack of which affects the ability to secure a livelihood more directly in urban labour markets than in rural areas. Urban farmers' knowledge is transferred from generation to

generation, from parents to children and from NGOs to farmers' associations. The formal educational level of farmers is not so bad. That is the reason why the majority of farmers manifested their enthusiasm for participating in training.

***Social capital**:* originally social capital was defined by Bourdieu (1986:248-9) as the "aggregate of the actual or potential resources" that lies in membership in a group, which provides its members with a "credential, which entitles them to credit." Social capital comprises "rules, norms, obligations, reciprocity and trust embedded in social relations, social structures, and society's institutional arrangements, which enable its members to achieve their individual and community objectives"(Narayan 1997, cited in Rakodi 2002:10). Rakodi (2002) argues that to be considered "capital", social interactions must be persistent by giving rise to stocks of trust or knowledge.

Lubumbashi is made up of people who are originally from various provinces and who grew different crops. Four categories of social capital in Lubumbashi might be identified: individuals, household, community groups, and state actors, such as the local government.

(i) Individual actors, especially wealthy people, community leaders, have access to networks with other groups that allow them a greater control of information and resources;

(ii) Households have kinship ties and linkage that influence their actions. Household members are those who perform the majority of activities in the field;

(iii) Community groups are an important source of social capital and include organizations, such as farmers' associations, churches and non-governmental organizations;

(iv) State actors, such as the local, provincial and national officials have weak ties with the farming population and there exists high degree of mistrust between them.

Physical capital: includes infrastructure such as transport, shelter, water, energy, communications, and productive and household assets including tools, equipment, housing and household goods and stocks such as jewellery (Moser 1998; Rakodi 2002). As means of production, urban farmers mainly use the hoe to work on the land. Heavy machinery such as tractors is rarely used. In the peri-urban areas of the city, farmers dig wells for water.

Access to roads and means of transportation, and the proximity of agricultural activities to the market have contributed to the expansion of urban agriculture. The city is at the same time an area of production and an area of consumption.

As far as housing is concerned, a shelter may generate income from rent and or from home-based enterprise. Moreover, the practice of cultivation depends on the status of the farmers. When the farmer has the ownership of the house, there is an opportunity to practice urban agriculture at the backyard or around the yard. The majority of farmers in the outskirts of Lubumbashi are owners of the houses they occupy and have large portion of land at their disposal to cultivate.

Financial capital: According to Meikle (2001:46), financial capital is the most significant asset in urban areas because urbanites are all dependent on cash income. But it is through the mechanism of savings the surplus that financial capital is generated. The surplus of income may also be converted into some other form of asset, such as jewellery (Chambers, 1997).

In the absence of wage labour or because of its limited nature, other resources such as pension funds, disability grants and child grants become crucial for many poor urban households in a country like South Africa (Mosoetsa, 2005). In the Democratic Republic of Congo where these kinds of funds and grants are absent, urban dwellers resort to informal activities.

In addition, poor urban residents are involved in food production and animal husbandry for home consumption as well as for commercial reasons. Income derived from the sale of their produce may be invested or spent on other household needs. The investment may consist in children's education, building a house, buying jewellery, etc. While financial capital is commonly considered as more significant in urban areas, by contrast the natural capital is viewed as less significant in the cities.

Natural capital includes land, water, and other environmental resources. In the context of economic decline, with the consequence of high levels of unemployment, and the limited wages for those still working, financial capital may not necessarily be significant in urban areas. Availability of land within and around the city has led 800 million people all over the world to grow food crops and to keep livestock (UNDP, 1996). The importance of UA was noticed in the second largest city of the Democratic Republic of Congo, where 54 per cent of the 11,000 retrenched workers from the mining company Gécamines resorted to agricultural activities as a substitute. Urban farmers may primarily produce for home consumption, but they also sell part of their produce in order to meet other needs.

In the case of some Lubumbashi's poor residents, natural capital (land around the city) is more significant than any other type of capital. Producers occupy land alongside the roads, power lines, railways and any other concessions. Yard is the common place where food crops such as vegetables are grown. However, the installation of mining firms

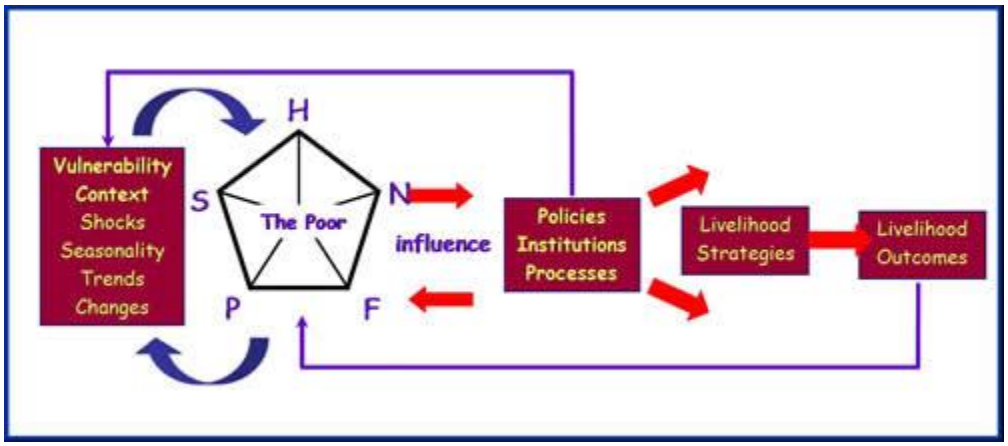
around the city of Lubumbashi constitutes a real threat to the expansion of agricultural activities in the periphery.

The principal water source is rain. That is the reason why there are food crops grown only in rainy season and those that are grown only in dry season. In the dry season, urban producers use tap water or dig wells particularly in peri-urban areas to water their vegetables. Very few farmers use land located on the border of the river.

While Meikle (2001) minimizes the role of natural assets in urban areas, Mosoetsa (2005) excludes the natural asset from the list of assets used by urban poor. Nevertheless, Meikle recognizes that land may be an important asset for some urban residents such as urban farmers. Both authors confine natural assets to rural households.

The sustainable livelihoods framework is presented in a schematic form in figure 3.1 below:

Figure 3.1 the sustainable livelihoods framework



Source: IFAD (International Fund for Agricultural Development), 2008

Figure 3.1 shows the main components of sustainable livelihoods approach and how they are linked. It does not work in a linear manner and does not attempt to provide an exact representation of reality. Rather, it seeks to provide a way of thinking about the livelihoods of poor people that will stimulate debate and reflection about the many factors that affect livelihoods, the way they interact and their relative importance within a particular setting. This should help in identifying more effective ways to support livelihoods and reduce poverty.

3.3.3 Principles of the sustainable livelihoods approach

The sustainable livelihoods approach has seven guiding principles (Carney, 1998; Rakodi, 2002; IFAD, 2008). They are flexible and adaptable to diverse local conditions. The guiding principles are:

Be people-centred. The sustainable livelihoods approach begins by analyzing people's livelihoods and how they change over time. Priority is given to people rather than resources, services or facilities. The people themselves actively participate throughout the project cycle.

Be holistic. The approach acknowledges that people adopt many strategies to secure their livelihoods, and that many actors are involved.

Be dynamic. The sustainable livelihoods approach seeks to understand the dynamic nature of livelihoods and what influences them.

Build on strengths. The approach builds on people's perceived strengths and opportunities rather than focusing on their problems and needs. It supports existing livelihood strategies.

Promote micro-macro links. The sustainable livelihoods approach examines the influence of policies and institutions on livelihood options, and highlights the need for policies to be informed by insights from the local level and by the priorities of the poor. Micro-level should inform development of policy. Macro- and meso-level structures and processes should support people to build upon their strengths.

Encourage broad partnerships. The sustainable livelihoods approach counts on broad partnerships drawing on both the public and private sectors.

Aim for sustainability. Sustainability is important if poverty reduction is to be lasting. There must be balance between all four dimensions: economic, institutional, social and environmental.

Some scholars, such as Toner (2003), Moser and Norton (2001) have questioned the operationalisation of these principles. Toner's criticism of the principles of the sustainable livelihood approach focuses on bottom-up empowerment of the poor. According to this author, design, implementation and evaluation should be as participatory and responsive as possible. The second aspect of the criticism deals with the lack of gender analysis of power and control. To address the issue of poverty, it is necessary to consider power relations between men and women in the household. Lastly, Moser and Norton (2001) highlight the fact that people-centred approach must take into consideration the rights of the poor.

To understand assets, the livelihoods framework advises their contextualization. First, the context of vulnerability (trends, shocks and season movements) must be taken into consideration because of its impact on people's livelihoods. Second, the structures and processes (organizational and institutional policies, culture, and laws) impact on the access of the poor to all types of assets and on the effective value of those assets. Third, the strategies adopted and the outcomes are influenced by the interaction between livelihood opportunities and household assets.

3.3.4 The Vulnerability Context

According to Moser (1996; 1998), vulnerability refers to:

> *"…the insecurity of the well-being of individuals, households or communities in the face of a changing environment. Environmental changes threatening welfare can be ecological, economic, social or political…With these changes often come increasing risk and uncertainty and declining self-respect. Because people move into and out of poverty, the concept of vulnerability better captures processes of change than more static measures of poverty".*

The vulnerability context consists of the external environment in which people exist. Put differently, people's assets or livelihoods are affected by the context within which they live. They are affected by some factors such as trends, shocks and seasonal shifts over which they have little or no control namely some policies, institutions, and processes.

According to Adger and Winkels (2007:189), vulnerability is an important characteristic of individuals, social groups and natural systems. Vulnerability is defined as an underlying condition, undermining people's capability to respond adequately to the disaster, thus precipitating a negative outcome with respect to their well-being (Kreiner and Arnold, 2000 quoted in Adger and Winkels, 2007:195). Reducing vulnerability has become an essential goal in sustainable development.

Urban agriculture is sensitive and susceptible (vulnerable) as it is often exposed to some stresses and shocks. To be sustainable, urban agriculture must be able to cope with and recover from stresses and shocks and produce food indefinitely, without causing irreversible damage to the ecosystem's health (Adger and Winkels, 2007).

Stresses: include the limited urban land, rapid population growth, and urban poverty, among many others. The central factor in urban food production is land. Land in the city is not only limited, it is primarily designed for developmental purposes. In addition, rainfall is crucially needed for non-declining food production and income generation. Farmers depend on the rains to grow their crops. Any change of climate during the rainy season can bring disruption in the production of food and affects the household income.

Another threat to urban agriculture with regard to its impact on land is rapid population growth. The increasing number of people in the city increases the competition for land use not only between developers or planners and farmers, but also between farmers themselves. Poverty cannot be ignored as threat to the expansion of urban agricultural activities. Poverty limits farmers' capacity to extend their activities.

Shocks: include eviction from farmland, conflicts related to land use, and illness or death of the central food producer. It may be noticed so far that there is not yet a dramatic change of climate in the city of Lubumbashi, eliminating it as one of the shocks affecting agriculture in and around the city. Another type of shock to urban agriculture is the loss of production capacity. This may be the result of death, abandonment, illness, and accident of the central producer. Also included in this category of shocks is failure of a small business (or an attack on it by municipal task force), unexpected family obligations

such as funerals, and destruction of crops for public health reasons (Maxwell *et al.*, (2000). Theft is another factor that puts urban agriculture under threat. Theft discourages farmers in their efforts to increase their productivity.

3.3.5 The sustainability of urban agriculture

The livelihoods approach claims that sustainability is important if poverty reduction is to be long-term. Sustainability includes various dimensions, mainly social, economic, institutional and environmental. Even though it is a people-centred approach, it "does not compromise on the environment" (Carney, 1998:4).

Sustainable urban agriculture refers to the ability of a farm to cope and recover from stresses and shocks and produce food indefinitely, without causing irreversible damage to the ecosystem. Two key issues are bio-physical (the long-term effects of various practices on soil properties and processes essential for crop productivity) and socio-economic (the long-term ability of farmers to obtain inputs and manage resources such as labour).

Sustainable urban agriculture must be a response to the dynamism of a city: (i)Urban farmers respond to the effects (urban poverty, food insecurity/malnutrition) of urbanization by producing food and generating income; (ii) the urban environment provides opportunities and relative advantages for producers: direct access to urban consumers and market, availability of cheap inputs (organic wastes), credit and technical advice, etc; and (iii) through conductive urban policies, norms and regulations, urban

agriculture can fulfil functions such as recycling, greening, buffer zones, land management, recreational services, mitigation of HIV-AIDS, social inclusion, etc.

By sustainable urban agriculture, I mean non-declining current agricultural production, which must be increased without damaging the urban environment. Urban agriculture sustainability increases by fulfilling multiple functions in addition to food supply and income generation and by its rapid adaptability to urban dynamism. Though on the one hand the sustainability of urban agriculture can be acknowledged, on the other hand it must be said that urban land (central capital) is claimed by more than one stakeholder. The vulnerability of urban agriculture is generally linked to the shortage of land.

3.3.6 Policies, Institutions and Processes

The sustainable livelihood approach recognizes that policies, institutions and processes condition the environment within which people operate. Policies, institutions and processes can be considered include:

The organizations which influence people's lives;

The services they receive;

The policy environment;

The incentives available, whether overt such as grants, or covert such as unwritten power relations; and

The rules of the game and power relations which govern people's lives (Khanya, 2003:3)

The emphasis here is put on the link between micro-macro levels of governance, in other words the link between local realities and central policies. This study addresses the critical governance issues identified by Khanya Institute at each of the micro-macro levels to determine the type of support urban agriculture receives from governmental and non-governmental institutions.

Micro level

(i) poor people should be active and involved in managing their development (claiming their rights and exercising their responsibilities);

(ii) there needs to be a responsive, active and accessible network of local services providers (whether community-based, private sector or government)

Meso level

(iii) at local government level (lower meso) services must be facilitated, provided or promoted effectively and responsively, coordinated and held accountable;

(iv) there needs to be a regional/ provincial (upper meso) level, providing support supervision of the lower meso, and possible a strategic level for planning;

Macro level

(v) the centre (province/national) needs to provide strategic direction, redistribution and oversight;

(vi) international institutions and processes must help promote the capacity of nation states to take on the strategic roles to eradicate poverty.

Agriculture within and around Lubumbashi primarily involves individuals and households and rarely is community-based. However, the Provincial Government, non-governmental organizations and some international agencies of development provide support, such as agricultural inputs (seeds, fertilizers,), hoe, training, etc. Analysis of this kind of support to urban agriculture constitutes the aim of chapter 8.

3.4 Urban Agriculture

3.4.1 Defining the concept of urban agriculture

Tinker (1994) acknowledges that it is difficult to define the terms 'urban' and 'peri-urban' because municipal boundaries seldom reflect land-use and also because cities expand, thus often-engulfing existing villages whose residents continue farming in increasingly constricted surroundings. In the light of this difficulty, some social scientists have attempted to define the concept of urban agriculture (UA). For Mbiba (1995:15), UA is the production of crops and/or livestock on land, which is administratively and legally zoned or at the periphery of urban areas. This activity, he argues, is done within the zone or at the periphery of urban areas, i.e. land likely to be re-zoned from rural agriculture to urban land—the peri-urban areas. Mougeot (1994:1) adds that the production in question concerns food and non-food plants, and tree crops and animal husbandry, and fringing (peri-) built-up urban areas. Inspired by Mougeot's view of UA

in his thesis, Peter (2003) uses the terms for activities located within the urban area of a town or city, which involves the growing of crops and/or the raising of animals, and using materials, products and services found in and around urban areas. The following activities are regarded as relevant to UA: crops, fruits, vegetables, parks, gardens, orchards, animal husbandry, fuel wood plantations and aquaculture (Mbiba, 1995; Mougeot, 1994; Peter, 2003; Yeung, 1988; Egziabher, 1994; Tinker, 1994).

Since 1996, the United Nations Development Program (UNDP) has enriched the definition of UA by taking into consideration most of what are considered elements and components such as location (urban and peri-urban areas), purpose (market oriented, local consumption and sale), products (food and non-food), roles (food, income and employment) and status (legal or illegal). Thus for UNDP, UA is an activity that produces, processes and markets food and other products, on land and water in urban and peri-urban areas, applying intensive production methods. In this thesis, I use the term urban agriculture to refer to agricultural activities (cultivation of crops, raising animals, forestry, aquaculture, etc) practiced on urban or peri-urban lands, which provide food, income and employment to urban residents, particularly in developing countries. In Francophone literature the most commonly used term is ‘peri-urban agriculture’ while in Anglophone literature it is ‘urban agriculture.’ In this thesis, the term ‘urban agriculture’ also includes peri-urban agriculture and intra-urban agriculture.

3.4.2 Background to Urban Agriculture

Agriculture, i.e. cultivation of crops, raising animals, aquaculture, and forestry, has been considered for a long time the major activity of people living in rural areas. Thus, it serves as one of the criteria of distinction between rural and urban settlements. While agricultural activities characterized rural areas, secondary and tertiary activities characterized the urban ones.

Because agriculture was mainly considered a rural activity, it was inconceivable to speak about agriculture in the city. In addition, the International Labour Organization (ILO, 1972) excluded agricultural activities from its definition of informal activities in the city. Also, agriculture in the city was forbidden or simply declared illegal by many governments, mainly in Africa. Referring to findings from different researches undertaken in many African cities, Tinker (1994: vii) asserts that:

> despite its role in producing food for city dwellers around the world, urban food production has largely been ignored by scholars and agricultural planners; government officials and policymakers at best dismiss the activity as peripheral and at worst burn crops and evict farmers, claiming that urban farms are not only unsightly but also promote pollution and illness.

Urban agriculture came into spotlight recently (1970-1980s) (Freeman 1991; Tinker 1994, Mougeot 1994; Mbiba 1995). The term ‘urban agriculture’ is not only ambiguous but sometimes contradictory. By urban agriculture, most studies include intra-urban, peri-urban and urban agriculture. In France, for example, various terms have been used to

describe the emergence and expansion of agriculture during the 1990s in French cities. Fleury (1998: 17) identifies terms such as 'Agriville'(Agricity) in 1989, 'Agriculture et Foret periurbaines sortent de l'ombre'(Agriculture and peri-urban forest come out from shadow' in 1996, 'Villes fertiles'(Fertile cities) in 1996, and 'Terres en ville, les agriculteurs, acteurs de l'espace urbain' (Soils in city, agriculturalists, actors of urban space) in 1998.

This section is principally based on Tinker (1994), Mougeot (1994), Lee-Smith and Memon (1994), Madaleno (2002), UNDP (1996), Egziabher (1994), and Obudho and Foeken's (1999) works. The urban agriculture phenomenon is as old as the city. Archeological evidence indicates the existence of agriculture in urban settlements of ancient civilizations (Mbiba, 1995; Webb, 1996; Lee-Smith and Memon, 1994; and Mougeot, 1994). It has been found that Greek city-states were self-supplied with goat milk and olive-oil fuel for house lighting, and vast agricultural drainage schemes were revealed on Roman imperial sites of Timgad in Algeria and Volubilis in Morocco (Mougeot, 1994:2). There is evidence that agricultural activities existed 4000 years ago in the towns of Ticoman and Tilatoco in Mexico (Burland 1976, cited in Okike 2002: 121). In western countries, the first type of planned urbanization created to bring people closer to nature was the garden city of the nineteenth century. France, Germany, the United Kingdom, and the United States were built according to this design (Madeleno, 2002). According to City Farmer, Canada's office of urban agriculture (CFCUA, 2005), UA was an important part of food production of European Cities during the Middle-Ages (when armies laid siege for them). The Australian Bureau of Statistics revealed that about

2.5 million Australian households (about 35 per cent) grow some of their own fruits and vegetables. This is estimated to be about 11,000 tons of fruit and about 153,000 tons of vegetables a year. About 8,000 Australian households have poultry that produce around 2,000 tons of meat and more than 26 million dozen eggs (CFCUA, 2005). A 1980 U.S. census revealed that about 30 per cent, by value, of America's food was produced in urban centers. A 1990 census in the United States also revealed the total to be moving closer to 40 per cent. This increase indicates the rise in intensive UA within city boundaries as well as the encroachment and encirclement of traditional agriculture on urban fringes (UNDP, 1996). Urban agriculture has been witnessed in other European countries like Portugal, Spain, and the Russian Federation. In the Netherlands for example, De King (1997) cited in Pouw and Wilbers (2005) gives an example of a horticulture farm located at the city boundaries of Wageningen using biological farming principles.

Urban agriculture in Western countries is predominantly a supplementary survival activity even though in certain circumstances such as war it may become the main survival activity. UA started as an activity growing food in pots, on windowsills, balconies and in small backyard plots. Seen as an important source of food, it took on a new dimension during the time of war. According to the World Commission on Environment and Development (1987: 45), in the United States during World War II, for example, "victory gardens" provided 40 per cent of the fresh vegetables. When the United Kingdom was under siege, agriculture developed in cities and thus enabled the country to solve its problem of food supplies. In the nineteenth century, Paris produced

more than 100,000 tons of salad crops annually (Stanhill 1990, cited in Webb 1996:1). At present, some families in western cities have gardens and allotments where they grow mainly vegetables but also for poultry and small ruminants such as rabbits and guinea pigs. The Commission's report recognizes that this supplements the food budgets for the needy.

Far from disappearing, UA in Europe and in North America has been changing its functions. Despite the rise of the population's well-being, gardens remain but become recreational gardens. At the city level, UA can be maintained for agriculturalists as a profession, as a source of food for the poor and a means of social integration, and for urban planners as a means of urban management to solve some problems in the city (Smith *et al*. 2004). While UA is changing its functions in developed countries, in Asian and African countries because of the high level of poverty, urban agriculture is still characterized by its primary functions: food production and income generation.

In their studies, Mougeot (1994), Tinker (1994), and Mbiba (1995) stress the role played by a Canadian international agency, the International Development Research Centre (IDRC), in the promotion of UA. However, Mougeot (1994) argues that before IDRC started the promotion, a survey conducted by Vannetier (1961) in Pointe-Noire (Congo-Brazzaville), revealed that 16,500 people (30.6 per cent of Pointe-Noire's population) practiced UA, of whom 4,500 were women. As a result of this study, Vannetier has been

credited as having launched a new field of inquiry in urban farming in sub-Saharan Africa and beyond.

The 1980s marked the starting point for recent research on urban agriculture. Recognizing the importance of urban food production, IDRC held a seminar on UA in Singapore in mid-1983 and commissioned a literature search by Urban Resources Systems, which produced some 222 annotated entries. In the later half of the 1980s, IDRC funded projects on urban food production in Kenya, Tanzania, and Uganda (Mougeot 1994). In 1983, IDRC under Yue-man Yeung funded a study of six urban centres in Kenya to be carried out by the Mazingira Institute of Nairobi (Tinker 1994).

In the Democratic Republic of Congo (DRC), Bruneau and Bukome (1987) recorded that 21 to 25 per cent of yards were farmed in the city of Lubumbashi. Maize, beans and vegetables were the most cultivated crops based only in the yard gardens. They also noticed that urban agriculture was more practiced on the unplanned than on the planned areas of the second largest city of DRC.

In 1996, the United Nations Development Programmes published an important book entitled *Urban Agriculture. Food, Jobs and Sustainable Cities*. This book has the advantage of demonstrating that UA is a worldwide reality. This has been followed in 1999 by Obudho and Foeken's publication *Urban Agriculture in Africa,* which is a

bibliographical survey research report with over 500 annotated entries. The book gives a concise summary of some of the findings of the studies on UA in Africa. Among findings highlighted in most studies on UA, the predominance of women in urban food production is emphasized. This may be explained by the fact that traditionally women are responsible for the household's food provision and often, women in Africa usually have a lower educational level than men and have more difficulties finding some other kind of employment. Three types of UA are distinguished. First, there is the backyard or on-plot farming, i.e. the cultivating of crops and/or the keeping of animals in one's own compound near the house. On-plot farming usually concerns middle-income households (Obudho and Foeken, 1999). Second, there is off-plot farming. Contrary to the on-plot farming, the off-plot farming is practiced on open spaces, for example alongside the roads, rivers, railways lines, under power lines, and in parks. Third, there is a type of UA common in the outskirts of African cities (Mbiba, 1995), which consists of crops fields surrounding cities.

Currently, various international organizations and programmes have taken major initiatives on urban agriculture: RUAF Foundation (Cities feeding for the future), FAO (PAIE "Food for the Cities"), CGIAR (Urban Harvest program), WHO (Healthy Cities programs), ICLEI (Agenda 21), and UNDP (Cities Feeding People program).

3.4.3 Push and Pull Factors of Urban Agriculture

Push factors: A combination of several factors such as continuing rural-urban migration, economic recession, structural adjustment, rapid urbanization, ineffective agricultural policies, wage cuts, civil strife, war, and natural disasters, among many others are mentioned as causes of emergence and expansion of urban agriculture in most African cities (Mougeot, 1994; Obudho and Foeken, 1999; Pélissier, 2000; De Lattre, 1994). Among the external factors pushing African people into farming are the following: the dependency relationships between peripheral economies of the Third World and core economies of the First World, the decline in world prices of primary commodities, and the structural adjustment programs. As is widely known, most African countries had been specialized in the supply economies of primary commodities as exports.

The situation has not changed remarkably forty years later. Thus, the former colonized countries remain in a position of subordination in relation to core needs of western economies. Additionally, the prices of primary commodities (agriculture and mining) are always cheaper except some commodities such as oil, coffee and so on; whereas the manufactured commodities from developed countries are often expensive.

The seventies and eighties have been particularly tough for the majority of the Third World countries especially non producers of oil because of the decline in world market prices of primary commodities. Oil prices for example quadrupled. In order to cope with

the severe economic crisis of this period, many African governments relied on the World Bank and International Monetary Fund (IMF). By 1989, more than half the countries in Africa were involved in World Bank-funded structural programs (Jesperson, 1996, cited in Van De Walle, 2001:215). The structural adjustment programs consisted in the effort of stabilizing the weak economies of the South. But the loans from the two Breton Woods institutions were accompanied by severe requirements: (i) the local currency was devaluated to make imports more expensive, (ii) the budget deficit was cut, (iii) ceiling on interest rates were raised to discourage borrowing, to curb inflation and to stop capital flight, and (iv) price controls were abolished or phased out (De Beer and Swanepoel, 2000). At the micro level, the effect of adjustment in many less developed countries led to the closure of several public sector units, loss of employment, spiralling prices, declines in food security, introduction of user fees in hospitals, increasing costs of services due to decline in Government subsidies and provisioning of social sector (Lingam, 2005).

As a result of this situation, there has been economic stagnation in most African countries, a rise in unemployment, a rise of poverty, a decline in purchasing power for the working class, etc. Given the circumstances, people have had to cope in different ways to ensure survival, using various forms of social organization such as tribal or religious associations, the informal economic activities, and particularly agricultural activities.

Several internal forces have also been pushing African households into UA. The following are the most recognized: low wage and/or salary, unemployment, rapid population growth, economic crisis, war, poverty, natural disasters (droughts, earthquakes, floods), agricultural crisis in the traditional sector, etc (Maliyamkono and Bagachwa, 1989; Freeman, 1991; Mougeot, 1994; Mbiba, 1995). In this section four factors are explored: rapid urbanization, low wage, economic crisis and poverty.

Between 1930 and 2020, the total population of the West Africa will move from 45 to 500 million, and urban population estimated to reach 4 per cent in 1960 will be 50 to 60 per cent in 2020. In 1994 the urbanization rate was 36 per cent in West Africa, 33 per cent in Central Africa, 48 per cent in South Africa and 21 per cent in East Africa (Peléssier, 2000; De Lattre, 1994). According to Waltps' survey cited in Tambwe (2006), in 1930 one rural resident could feed another one; predictably in 2020 one rural resident should have the capacity to feed one rural and two urban residents if one assumes that food supply in cities must be supplied only by the rural population.

In addition to the issue of rapid urbanization, the wage earned by most working-class in the developing world is not sufficient for its basic needs. For example, in the 1980s a wage earner in Ghana, Guinea, Uganda, and Angola could only feed his family for less than one week (MacGaffey *et al.*, 1991). In his survey conducted in Lusaka (Zambia) in the 1970s, Rakodi (1988), cited in Freeman (1991:17) interprets the increase of gardens as a response of people to the failure of wages to keep pace with the costs of urban life. In

a study conducted on three Zairian cities in 1970s and 1980s, it is stated that from 1969 to 1983 the real purchasing power of incomes declined sharply. In 1983 for example, public services salaries went seven times higher than in 1975, but the prices went 113 times higher (Houyoux, 1986 cited in MacGaffey *et al.*, 1991:13).

In 1986-87, the National Institute of Statistics (NIS) in Zaire estimated the average monthly salary food budget for a family of seven at Z 5915 (118US$). One US dollar was the equivalent of 50.15 Zaire at that time. About 62 per cent of monthly household expenditures went to food (Petit, 2001:125). Given this situation, despite salary increase in 1984, 1986 and 1987, urban dwellers found outside the formal wage and salary system not only the sole means for survival of unemployed, but also essential supplementary income MacGaffey *et al.*, 1991: 13). Petit (2001) listed more than 60 informal economic activities in 2000 in the city of Lubumbashi. The study recognises that urban agriculture because of the increasing number of people involved in and the proportion of land used is the most practiced informal economic activity in the city of Lubumbashi.

Similarly, economic crisis has worsened the living conditions of people in the world, particularly in Africa and Asia. Considering the growth of urban agriculture in Harare, Mbiba (1995) believes that UA is a response activity to some national economic crisis associated with nationwide poverty or general erosion of assets. This has been at the origin of the increase of unemployment.

Poverty is one of the determining factors identified in urban agriculture literature that pushes urban residents to use other means of survival than the formal ones. The issue of poverty is variously documented. Poverty is commonly defined as an insufficiency of basic needs. There have been a series of debates regarding the notion of 'basic needs'. Two meanings of basic needs emerge: the first is 'what is necessary to assure survival' and the second is the 'average standard of living of the particular society' (Roach and Janet (1972: 21-2). While poverty tends to be defined in terms of how nearly the lowest segment of society approaches the average, the second meaning of basic needs seems to be the more dominant definition of poverty. May (1998:1) states that poverty can be defined 'as the inability to attain a minimal standard of living, measured in terms of basic consumption needs or income required to satisfy them'. It includes 'alienation from community, food insecurity, crowded homes, usage of unsafe and inefficient forms of energy, lack of adequately paid and secure jobs, and fragmentation of the family'. Since someone will be below the average, social inequality exists, therefore there will be poverty. It is estimated that two-thirds of world population is poor.

Two types of poverty are distinguished in the literature: absolute and relative poverty. Absolute poverty 'describes a situation in which people are barely existing, where the next meal may literally be a matter of life and death as the cumulative effects of malnutrition and starvation enfeeble all, particularly children'(Webster 1990:16). While 'poverty line' is the standard to measure absolute poverty, the bottom segment of the

income distribution is used to measure relative poverty. Even though there is a move from absolute to relative standard of poverty, the use of absolute standard is more prominent in nations where much of the population suffers from severe physical deprivation. The poverty line to measure absolute poverty is subject to discussion because (i) the estimates of nutritional needs are typically only average and do not take into account the composition of households, the age of family members, their job and non-work activities, (ii) poor people have to meet the increasing price of foodstuffs whose extra cost does not necessarily mean an increase in nutritional value, (iii) estimates of what clothing is needed can be challenged since they are often based on what the poorest family spends on clothing, (iv) the family budget and pattern of expenditure deemed to be adequate relying on a degree of rigorous accounting and disciplined personal behaviour , and (v) the estimates are rarely revised to reflect changing customs and needs that develop in the wider society (Webster 1990:18-9).

To measure poverty, some indicators have been retained such as the Gross National Product (the share of total income in the nation), per capita income, per capita consumption, the Physical Quality of Life Index (life expectancy, infant mortality and adult literacy), calorie intake, protein intake, housing (number of homes with water, electricity and plumbing), etc. For example, low calorie and protein intake is an evidence of hunger which is associated with poverty. Another example is that of Gross National Product, per capital income, and per capita consumption. When they are low indicate the lower standard of living. Based on their per capita GNP, the World Bank divided 133 countries of the world whose populations are more than a million into four categories:

•low-income countries (with per capita GNP less than US$785 in 1997);

•middle-income (between US$786 and US$3 125);

•upper-middle income (between US$3 126 and US$9 655); and

•high-income (above US$9 655).

In total, 26 countries fall in the high-income countries, and 107 fall into the remaining three categories (Todaro, 2000: 30). The Democratic Republic of Congo is part of the low-income countries with less than US$785 per capita GNP. The measuring poverty is essential and is advantageous as it leads to the understanding of the causes and effects of poverty and more importantly to the ways to reduce or eliminate poverty. High rate of unemployment and rapid urbanization are among the most cited factors of poverty in African countries. In many African countries, unemployment is a very serious issue. Employment depends heavily on the public sector, which has, anyway, been the victim of structural adjustment programs initiated by IMF since the 1980s in most African countries. According to the ILO (International Labour Organization) report (2001), the unemployment rate in the late 1990s was estimated at 29 per cent in Algeria, 9 per cent in Lebanon, 22 per cent in Morocco, and 8 per cent in Egypt. But in Southern Africa the report revealed that unemployment rates were 19.5 per cent in Namibia, 23.3 per cent in South Africa and 42 per cent in Lesotho. Although the agricultural sector employs more than half of the African population, self-employment is growing faster than employment in the formal sector.

Pull factors: The main motivation for the poor, while commercial considerations are usually of more importance for the middle- and high-income households (Obudho and Foeken, 1999). Many of the poor also sell some of their produce in order to enable them afford other basic needs. Nevertheless, subsistence farming is dominant in the African urban centers.

In his effort to understand why urban dwellers in Dar es Salaam are engaged in UA, Sawio (1994) found out the answer in the daily expenditures on food per urban farmer household. He reveals, for instance, that almost 30 per cent of households in each ward reported expenditures on food of 901 to 1,150TZS per day- in 1993, (US$1=575 TZS[4]). Furthermore, Sawio (1994: 37) observes that food costs in rapidly urbanizing cities in the world are rising. This has also been stated by the Washington-based Population Crisis Committee (PCC) in a 1990 survey, which found that food exceeded 50 per cent of house-hold income in 23 cities.

Maxwell's (1994) study on Kampala indicates that roughly 20 per cent of the staple food consumed within a 5-km radius of the city centre is produced within the same area. Statistics from the government of Uganda note that some 70 per cent of the poultry products consumed within Kampala are produced there. In view of the fact that an estimated 25.2 million kg of crops, worth about 60.9 million KES[5] (about US$ 4 million

[4] TZS= Tanzania Shilling
[5] KES= Kenya Shilling

in 1985) was produced in urban areas in one season in Kenya, Lee-Smith and Memon (1994) assert that most of this production was consumed by the households and only 23 per cent of urban farmers sold even a portion of what they produced.

Underlining the importance of urban food production on the basis of findings from different parts of Africa, Tinker (1994) states that 23 per cent of urban farmers in Kenya sell some of their production to buy fuel for cooking, although most food is grown for consumption. About 30 per cent of the women food vendors grow their own food.

UA is not only a source of food and income, but also of employment. Most studies stress the nutritional and financial aspect of UA. In his study on Ethiopya, Egziabher (1994) tries to fill the gap. Basing his observation on cooperative members in Ethiopia, the author asserts that the combined household and cooperative strategy of the urban producers has created full-time employment for the heads of households and their spouses, and part-time employment for their children and other members of the households. This has been the advantage to reduce the urban unemployment rate and therefore improves the living conditions of urban residents. However it is worth noting that UA in Africa has a low level of inverstment.

3.4.4 Urban Agriculture as a survival household livelihood strategy

Considering its conditions of emergence (economic decline in most African countries), the destination of it products (home-consumption), and the category of people farming

(predominantly women), urban agriculture is regarded as a survival strategy used by urban poor to remain alive.

The literature on urban agriculture considers the economic decline in the majority of developing countries, especially in Southern African countries as a pre-condition for the emergence and expansion of this practice (Drescher, 1999; Sanyal, 1987; Tricaud, 1987; Lynch, 1994; Nugent, 2000). As a reaction to the economic decline, urban people grow food crops, raise livestock, plant fruit trees, etc. using open spaces all over the city for their survival. To support the "crisis model" view, Drescher *et al* (1999) report the cases of Jakarta thus:

> *The economic turmoil that hit Indonesia in 1997 has left millions of people vulnerable to food insecurity, without enough money to buy sufficient food. First, urban areas were dramatically affected. Alarming food related problems were reported (FAO 1999a). As a reaction to this people started to produce food on small plots and open spaces all over the city-even transformed former public parks into gardens and government bodies encouraged the people of Jakarta to grow their own food. Problems started in urban areas to spread to rural areas later caused by migration. In some rural communities the population has increased up to 30 per cent, putting severe pressure on those areas (FAO 1999a).*

In the case of Mongolia, they note;

> *The recent "shock therapy" measures taken by the government have created great hardship as prices for consumer goods rise while salaries remain unchanged. The prices for food, coal, wood, electricity, transportation, etc. are skyrocketing. In 1990/1991, 850 families grew vegetables in the city. In 1996 this number has increased over 20 times reaching 21,000. More and more families have begun to realize that urban agriculture might be a way to improve their standard of living.*

In the two cases mentioned above, it is clear that urban residents resorted to agricultural activities to reduce their vulnerability in food insecurity. In other words, urban agriculture constituted a response to economic crisis for these developing countries.

With regard to the Democratic Republic of Congo (DRC), the rise of oil prices coincided with a drop in copper prices. In 1974 for example, the price of copper dropped from US$ 3,370 per metric ton in April 1974 to US$ 1,350 in December 1974 and to US$ 1,280 in December 1975. This was followed by the closure of Banguela railroad linking Angola to DRC and the invasions of the Katanga Province which disrupted the copper mining production in 1977-78. About 14 per cent of households selected remembered starting the practice of cultivation in the 1970s and the beginning of the 1980s. The 1980s correspond to the implementation of the structural adjustment measures that left many Congolese without jobs. Many workers in public administration and also in public companies were dismissed. Student scholarships were cut off, transport facilities suppressed, and canteens closed by the Mobutu government in 1984 as consequence of the implementation of the structural adjustment policies. During that period, students developed different survival strategies, such as the selling of bread, maize flour, kitchen, oil, and the growing of vegetables around the campus.

At regional level, there was a severe shortage in food production in Zimbabwe as well as in Zambia where maize flour was particularly imported. Despite some attempts to address the economic crisis (zarianization policy in 1973, radicalization measures in 1974,

Mobutu plan in 1975, a debt rescheduling agreement with IMF in 1983, and very recently the restructuring of Gécamines which is in its experimental phase), no success has yet been noticed. Apart from economic crisis as a pre-condition for the emergence of urban agriculture, the crisis model acknowledges the effects of other factors such as rapid population growth, continuing rural-urban migration, structural adjustment policies, wage cuts, war, natural disasters, and many others previously mentioned.

The rich potential of urban agriculture has led researchers, academics and development practitioners to promote this informal activity as a means of poverty alleviation in African cities. Emphasis has been put on home-consumption as the primarily reason for which most urban dwellers are engaged in farming even though they may sell part of their produce.

With 50 per cent of farmed land in the city of Kampala, 70 per cent of poultry and eggs are produced there. Furthermore, 20 per cent of tubers (basic staple crop) are consumed by the growers while the rest is sold. Evidently, home consumption has the advantage of reducing household expenditures on food and leaving members with cash that otherwise might have been spent on buying vegetables.

Finally to confirm the survival aspect of urban farming, literature on urban agriculture stresses the predominance of women (classified in the low-income category of

population) in urban food production. The Kenyan study records 56 per cent female farmers in all towns, but notes that the proportion rises to 62 per cent in larger cities. Of these women farmers, 64 per cent are heads of households, a fact that illustrates how critical UA is to the survival of poor families (Tinker 1994: xii). In addition, Lee-Smith and Memon (1994: 72) note that urban farming in Kenya is undertaken by two groups, traditional farmers, who have been engulfed by urban development, and recent migrants. In Manzini (Swaziland), the majority of the urban farmers are women, 58 per cent (Peter 2003: 80). In his study on Harare, Mbiba (1995: 42) confirms the predominance of women (63 per cent) in off-plot agriculture. Obudho and Foeken (1999) owe this predominance to low literacy rates among women.

Because of its economic crisis origin, its subsistence aspect, and being mostly practiced by low-income households, initially, urban agriculture was conceived as a survival activity. Currently, this conception of urban agriculture is challenged. The next section explores alternative view on UA, such as the idea that urban food production is not only a survival activity, but also an entrepreneurial one.

3.4.5 Urban Agriculture: an entrepreneurial household livelihood strategy

To justify the entrepreneurial aspect of urban agriculture, social researchers such as Sawio, 1994; Mbiba, 1995; May and Rogerson, 1995; Webb, 1996; and Hovorka, 2004, 2006 consider three main elements, namely (1) planned areas of the city as residence for farmers, (2) the involvement of middle- and high-income households in urban food production, and (3) commerce as the principal reason for which these categories of

people practise cultivation. In Dar es-Salaam for example, Sawio's (1994) survey recorded that 65 per cent of urban farmers were living in planned areas and only 35 per cent in non-planned areas. Referring to Briggs' (1991) findings, Webb (1996: 104) states that the value of the land in the peri-urban zone is increasing as "middle-income inhabitants seek land on which to grow crops for subsistence and, increasingly for sale." Describing the process, which prevented the low-income households (recent migrants and the unemployed) from cultivation in Warren Park (a suburb in Harare); Mbiba (1995) affirms that cultivation was restricted to residents that were allocated land in the early 1980s. Based on findings from their research on the city of Durban, May and Rogerson (1995) assert that UA is not only practiced by the poor because the percentage of households in this category participating in cultivation was lower than that of categories with higher income levels. The same applies to Addis Ababa where cooperative members were primarily growing vegetables for commercial purpose, even if the families also consumed some of their produce (Egziabher, 1994). All this is to say that UA is not only a survival strategy for poor urban residents but also a means of enrichment for middle- and high-level classes in the city, which may be cultivated on unplanned and planned areas of the city as well.

In her paper *Entrepreneurial opportunities in Botswana: (re)shaping urban agriculture discourse*, Hovorka (2004:367) argues that the failure to fully recognize and explore in-depth the entrepreneurial aspect of UA is in part a consequence of the discourse of crises within which discussion of this activity, and African cities in general, are embedded. She demonstrates that the rise of urban agriculture and its particular form and function in

Greater Gaborone may be attributed to the convergence of Government initiatives (such as the Financial Assistance Policy). The goals of the Financial Assistance Policy (FAP) included employment generation for unskilled labour, economic diversification, skills training; and production of goods for import substitution or export (Republic of Botswana (RoB) 1998:24, cited in Hovorka, 2004:374). About 48 per cent among the enterprises she surveyed received such Government grants, allowing Botswana entry into commercial agricultural ventures. According to her, agricultural diversification as well as FAP was the significant catalyst for the emergence of entrepreneurial urban agriculture. The findings of her survey reveal that 48 per cent of the enterprises acknowledged that they were attracted to this "new" sector because it offers a source of quick and steady income-generation. All these companies benefited from the favorable returns on investment. This was made possible through the financial incentive and support available from FAP, as key factors for the entry into UA.

3.5 The growing importance of urban agriculture

The growing importance of UA is mostly in relation to its contribution to urban food security. To measure its importance, researchers consider the following indexes: (i) the proportion of urban dwellers that produce food (see Table 3.2 demonstrating the significance of urban food production), (ii) the proportion of foods that come from production within and/or around the city (Table 3.3 focusing on the contribution of UA to urban food demand), and (iii) the proportion of urban and peri-urban land area under cultivation (see Table 3.4 showing the dimension of urban land under cultivation). In this section, I draw on Smith's (2002: 23-24) chapter entitled *Overview of urban agriculture and food security in West African cities* in which he records data from several authors.

This has the advantage of giving an overview of the phenomenon of urban agriculture in Africa. Also, I gathered data from other social scientists in order to highlight the amount of land under cultivation in some African cities. It would appear that urban agriculture is an economic activity characterised by rapid expansion in Africa. The expansion is mostly due to the rapid population growth, which exercises strong pressure on urban land. I examined this expansion in relation to three factors: first, the proportion of urban farmers, second, the proportion of foods produced and third, the proportion of land under cultivation.

3.5.1 Proportion of urban farmers

Table 3.1: Significance of urban food production

City	Proportion of urban dwellers involved in urban agriculture (per cent)
Dar es Salaam (Tanzania)	44-70
Harare (Zimbabwe)	80
Kampala (Uganda)	25-57
Kano (Nigeria)	75
Kumasi (Ghana)	25
Lusaka (Zambia)	45-60
Nairobi (Kenya)	29 (Higher proportions found in smaller towns 57 in Kitui, 30 in Mombasa)
Ouagadougou (Burkinafaso)	36
Yaounde (Cameroun)	35
Zaria (Nigeria)	80

Source: Smith 2002:24

The proportion of African people engaged in urban food production is high and still increasing. From table 3.1, the highest proportion reaches 80 per cent of the urban population as seen in Zaria (Nigeria) and Harare (Zimbabwe) and 75 per cent in Kano (Cameroun). This implies that urban farmers come from different categories of

population, and not only from low-income households. According to urban agriculture literature, most of these urban farmers are women. About 20 to 60 per cent of African people are involved in farming in the city (Anon 1996; Moustier 1998; Smith 2002).

3.5.2 Proportion of foods produced

Table 3.2: Contribution to urban food demands by urban producers

City	Proportion of demands supplied
Dakar (Senegal)	70% of vegetables
Bamako (Mali)	100% of vegetables, 50% of poultry products
Accra (Ghana)	90% of vegetables
Guinea-Bissau (Guinea Bissau)	90% of leafy vegetables
Kampala (Uganda)	70% of poultry meat and eggs

Source: Smith 2002:24

Urban agriculture has rendered certain African cities such as Bamako (Mali), Guinea-Bissau (Guinea-Bissau), Accra (Ghana) and even Dakar (Senegal) self-sufficient in vegetables. As the above table (3.2) shows, urban farmers sell part of their produce even though they mostly produce for home consumption. It is argued that UA contributes to producers' well-being in different ways including cash-saving, income generation nutrition, health, and employment.

3.5.3 Proportion of land under cultivation

Table 3.3: Dimension of urban land under cultivation

City	Proportion of land under cultivation (%)	Source
Dar es Salaam (Tanzania)	23	DSM/ARDHI, 1992
Harare (Zimbabwe)	15-29	Mbiba, 1995
Kampala (Uganda)	50	Mougeot, 1994
Zaria (Nigeria)	66	UNDP, 1996
Lubumbashi (DRC)	21-25	Bruneau and Bukome, 1987

As earlier on mentioned, land in the city is not for agriculture. But there is more and more urban land being used for agricultural activities. Table 3.3 reveals that the largest amount of urban land under cultivation reaches 50 to 66 per cent (Kampala and Zaria). For the whole African continent, about 20 to 60 per cent of urban land is in agricultural use (UNDP, 1996). With regard to the city of Lubumbashi, about 21 to 25 per cent of its land was under agricultural use in 1987 (Bruneau and Bukame, 1987), today this is likely to double as most of Annexe (the largest ward in Lubumbashi city) inhabitants are farmers.

The importance of urban farming is well articulated when evaluated in comparison to households' expenses on foodstuffs. Tinker (1994: 10-11) illustrates this importance

using data from authors such as Lee-Smith *et al* (1987); Diallo and Coulibally (1988); Khouri-Dagher (1987); Sawio (1994); and Pain (1985). For example, poor urban Kenyan households spent 40-50 per cent on food and cooking fuel alone in 1987. In 1983, surveyed households in Bamako spent 32-64 per cent of their average income on food and cooking. In Egypt, food represents 60 per cent of family budgets for more than 50 per cent of all urban households. In Dar es Salaam, the percentage of income spent on food rocketed from 50 per cent in 1940 to 85 per cent in 1980. In Kinshasa, in 1982, food purchases were already taking up an average 60 per cent of total household spending. Quoting Young (1985: 2), Tinker showed that city dwellers of five developing countries surveyed, paid 10-30 per cent more for their food than rural dwellers.

3.6 Conclusion

The aim of this chapter was to provide a theoretical framework to the study on urban agriculture and food security in the city of Lubumbashi, in the Democratic Republic of Congo. Urban agriculture in the city of Lubumbashi has been emerging in the context of both a weak state and a collapsed market economy. In this context, mainstream theories which consider the state and economy as the key players of growth and development become obsolete. Therefore, the thesis relies on the alternative theories of development to explain the emergence of organizations and institutions of the civil society such as the household, and the growing importance of parallel economy as a substitute to the state and the market economy.

At a practical level, the study uses the sustainable livelihood approach for the analysis of urban agriculture as individual, household and community livelihood. This approach is generally used to explore how the poor survive by identifying their livelihood and socio-economic activities. Despite the fact that this study is not intended to identify all the types of livelihoods used by poor Lubumbashi dwellers for their survival, the analysis of urban agriculture gives insights on the categories of urbanites involved in food production, the division of labour within the farming households, the types of food crops grown and livestock kept. More importantly, the study examines the conditions of sustainability for urban agriculture as a response to food insecurity and the type of support from governmental and non-governmental institutions.

The contextualization of vulnerability in the livelihood perspective is essential to examine the impact of trends, shocks and seasonality on Lubumbashi residents' assets. Instead of focusing only on urban poor, this study includes other categories of urban farmers (middle-and high-income farming households).

CHAPTER 4

METHODOLOGY

Introduction

This chapter outlines the major methods used in the collection and analysis of data. Three major methods were used for data collection, namely semi-structured interviews, observation and informal conversation. The analysis was done according to the nature of data collected. For the quantitative data, for example, the Statistical Package for Social Sciences (SPSS) method was used to interpret the standardized research data. The process of qualitative data analysis included three phases namely observation, collection and thematic content analysis. Data collected were interpreted according to the existing literature on urban agriculture and food security.

The chapter is subdivided into four sections. The first section gives the reasons why the city of Lubumbashi was chosen as a research site and the socio-economic and historical aspects of the city. The second section looks at the criteria for the selection of informants. Three criteria were used, namely the areas of cultivation, the location and the gender of urban farmers. The third section focuses on the methods of data collection and those of data analysis. While semi-structured interviews, observation and informal conversation constituted the main methods used for the collection of data, SPSS and content analysis were used to analyse the data.

4.1 Research Site: Lubumbashi

Three main reasons have led to the choice of Lubumbashi city as a research site. First, the collapse of the giant Gécamines led to the collapse of Lubumbashi economy in terms of deteriorating the living conditions for its residents. Therefore, it became imperative to see how people cope with the economic crisis in the post-Gécamines period. Second, after a series of researches on the informal sector conducted by MacGaffey, et al. in the 1990s, and very recently by Pierre Petit and a team of researchers from the University of Lubumbashi, it was crucial to examine the effectiveness of one of the emergent responses to food insecurity, namely, urban agriculture. Third, the post-Gécamines period is characterized by the creation of new mining companies in the Katanga Province. In this context, the sustainability of urban agriculture must be examined for the future of this livelihood strategy.

Access to the target population was facilitated by the number of years that the researcher spent in the city (almost 20 years) and his facility to speak and write French (official language) and Swahili (lingua franca of the area). The fieldwork started in November the 20th, 2004 and ended on the 3rd of March 2005. Approximately three months and two weeks were necessary to cover the seven wards of the city for data collection. Lubumbashi, the second largest city of DRC, is administratively divided into wards like other Congolese cities. Administratively, the city comprises seven wards, namely Annexe, Kamalondo, Kampemba, Katuba, Kenya, Lubumbashi, and Rwashi. Lubumbashi has a surface area of 747 km^2. With regard to the number of its residents (1,

200 000 inhabitants in 2005)), one can say that there is overpopulation as the density is estimated at 1,606 inhabitants/km². The increased number of unemployed people, the lack of basic infrastructures, and the anarchic occupation of urban land are among the consequences of this overpopulation.

Lubumbashi comprises three types of areas: residential areas formerly called “the white city” which is currently occupied by Lubumbashi ward, and partly by the present “Bel-air”; planned areas where the wards of Kamalondo, Kenya, parts of Rwashi and Katuba wards are located; and unplanned areas which are basically kinds of shanty towns (Annexe and parts of Rwashi and Katuba). While secondary and tertiary activities dominate the residential and planned areas of the city, the agricultural activities are increasingly emerging in the unplanned areas.

The city centre (corresponding to Lubumbashi ward), Bel-air and the industrial areas of Kampemba ward are characterized by trade and industrial activities. The majority of companies (Vodacom, Celtel, NGOs, Banks, etc), shopping centres and stores have their offices or activities operating in this space. For security and comfort reasons, high-income groups live in the city centre and Bel-air, representing Lubumbashi and Kampemba wards. Because of the intensity of activities taking place, there are not enough open spaces for cultivation. This is the main reason why urban agriculture is invisible in the city centre of Lubumbashi. Even though agricultural activities seem invisible in the city centre, few residents practise urban agriculture at the periphery of the

city (Rwashi, Katuba and Annexe wards) where land is available. Apart from Bel-air which is a residential area, the rest of Kampemba ward is dominated by industrial activities, meaning that there are very few abandoned spaces to be utilized for agricultural purposes.

More and more residents of Kigoma, Bongonga, Kampemba, and Kafubu (in Kampemba ward) resort to agriculture for their survival. Kamalondo and Kenya are the smallest wards in the city with only five areas in total. Both are dominated by small businesses, bars, prostitution, crime, etc. The density of population is very high in these wards. Open or abandoned spaces are very rare to find. In Kamalondo ward, for example, agricultural activities are only visible in the Police Camp and along the railway line separating Kampemba ward from Kamalondo and Kenya wards. Police officers and their spouses grow vegetables on a space which formerly served as a street separating the camp from the rest of Kamalondo population. Even though there is not enough space to cultivate, some Kamalondo and Kenya dwellers grow food crops and vegetables along Kipushi and Kasumbalesa roads or in the peri-urban areas of the city.

With a number of areas surpassing half of the total number of areas in the city, Annexe, Katuba and Rwashi wards are dominated by agricultural activities. UA is thus the most important informal activity developed in Lubumbashi, considering the number of people involved (mostly from Annexe, Katuba and Rwashi wards containing the highest number of Lubumbashi population) and the density of lands under cultivation. The three wards

are also characterized by a high degree of ruralization. People cultivate food crops and others raise livestock and sell part of their produce.

Poverty is the common characteristic in the three wards. In Annexe ward, basic infrastructure does not exist. Houses are not electrified. Access to these areas is rendered very difficult when it rains. Most of its residents have a rural lifestyle. The majority of children are not schooled. Agriculture is the main activity even though people resort to other activities like selling vegetables. It is worth noting that Rwashi population is also involved in the exploitation of malachite and industrial activities. Potable water is scarce both in unplanned and planned areas of the city.

4.2 Informants Selection

In the logic of survey research, interviews are conducted with a representative sample of a larger population, drawn systematically in order that the findings will be generalizable to the population (Holstein and Gbrium 1995; Spradley 1979, quoted in Warren 2002: 87). If gardens and farms were visible in the majority areas of the city, the number and distribution of Lubumbashi farmers were unknown. That is the reason why I chose a non-probability sampling technique. In qualitative interview studies, Warren suggests that respondents be chosen on the basis of a priori research design, particular respondents may be sought out to act as key informants.

Three criteria were used to select informants, namely the areas of cultivation, the location and the gender of farmers. According to the literature, UA is practiced in the backyard or

on spaces near the house, on open or abandoned spaces (for example, alongside the roads, rivers, railways lines, under power lines, etc), as well as on the outskirts of the city (Mbiba 1995; Obudho and Foeken 1999). Thus, maize, vegetables, beans, sweet potatoes, and many other crops are cultivated in almost all the Lubumbashi wards. Along the SNCC railway lines linking Lubumbashi to Sakania, people grow crops on both sides. The same applies to Lubumbashi, Luswishi, Rwashi and Munama rivers. Gardens and small farms cover most of the open spaces, except in the city centre, Bel-air and Kamalondo. For example, the administrative building of the University of Lubumbashi located in Lubumbashi ward is surrounded by small farms, most of them belonging to its personnel's families. The Annexe, Katuba and most parts of Rwashi wards as rural-urban areas are dominated by agricultural activities. Almost each yard in this ward possesses a garden.

The urban agriculture literature also asserts that farmers are located in unplanned and planned areas, meaning that it is an activity practiced by low-income, middle- and high-income households as well (Freeman 1991, Lee-Smith and Memon 1994, Maxwell 1994, and Mbiba 1995). It was very difficult to find cultivated spaces in the city centre, Kamalondo and in some areas of Kenya ward mainly because there was not enough open spaces. Despite the lack of available land, some of the residents cultivate at the periphery of the city, for example the surroundings of Luano Airport, the concessions of the University of Lubumbashi, Kilobelobe Radio-Television station, etc. In the Annexe ward and in most areas of Katuba ward, a house occupies just one third of the yard, the rest is left to agricultural activities.

The predominance of women in agricultural activities in the city is outlined in most studies on urban agriculture (Tinker 1994; Maxwell 1994; Mbiba 1995). The presence of farming women was visible not only in farms or gardens during the interviews, but also in the market, selling their produce. The response that women are the majority in UA dominated the first research question, who is really farming or raising livestock in the household, wife or husband?

The non-probability sampling method was carried out through the quota, snowball and judgment techniques. A quota of three urban households was used in areas where urban agriculture was a wide spread activity. This was the case in Annexe and Katuba wards and part of Rwashi. And only two farming households were selected in each of the rest of Lubumbashi wards. But the snowball method consisted in locating one farmer in one area, then that one located other farmers through her or his social networks (Warren 2002). Seeking out one farmer was very useful to locate the place where others cultivate in the wards where small farms and/or gardens were not visible like in Lubumbashi, Kamalondo, Kenya and some areas of Kampemba ward. For the rest of the wards (Rwashi, Katuba and Annexe) in which urban agriculture was a prevalent activity, the identification of informants became easy. In these areas, farmers were selected according to the judgment technique, which consisted of choosing one farming household after another by jumping two to three streets depending on the size of the area. Concretely, the city was divided into the seven administrative wards and each area was taken as reference

point for the selection of informants. A quota sampling of two farmers was given to each area regardless of the fact that the number of urban farmers or gardeners was unknown.

Officially, there are 41 areas in the city of Lubumbashi. In order to obtain a representative sample, besides the criterion of farmers' distribution in all the seven wards, the density of land under cultivation determined the number of farmers allocated to each ward. Thus, with an average of one garden in each yard in Annexe and Katuba wards, three urban farmers were selected in each of the two wards, giving a total of 51 farming households representing 17 areas. For the rest of wards (Kamalondo, Kampemba, Kenya, Lubumbashi and Rwashi), as the predominance of agricultural activities was not evident in comparison with other informal activities, two farmers were selected in each of these areas, totalling 48 informants from 24 areas. By selecting at least two farmers in each area of each ward, all Lubumbashi wards were represented in the sample. In addition, most of the socio-economic categories of people living in this city were represented. Gender was also taken into consideration. More than half of the farmers selected were women because in the majority of households visited, urban agriculture was viewed as women's activity even though some men were also involved.

Table4.1 Wards in which informants were selected

Wards	Areas	Number of informants
Annexe	Kimbembe;Luwowoshi;Naviundu;Kalebuka;Kasungami;Kisanga; Munua; Kasapa	24
Kamalondo	Kitumaini; Njanja	04
Kampemba	Industriel;Kigoma;Bel-airI;Bel-airII;Bongonga;Kampemba;Kafubu	14
Katuba	Kisale;Bukama;Lufira;Mwana shaba;Nsele;Musumba;Kinyama;Kimilolo;Upemba	27
Kenya	Lualaba;Luvua;Luapua	06
Lubumbashi	Makutano;Kiwele;Lumumba;Mampala;Lido-Golf;Kalubwe;Gambela	14
Ruashi	Mateleo;Bendera;Shindaika;Congo;Kalukuluku	11
Total	41	100

Of 100 farming households selected, 49 were selected from 23 areas in Kamalondo, Kampemba, Kenya, Lubumbashi, and Rwashi wards, two respondents in each area, (with the exception in Shindaika area belonging to Rwashi ward where three farmers instead of two were selected); and 51 households were selected in 17 areas of Annexe and Katuba wards.

Previously, it was decided to select two farming households in each area of Rwashi ward, but during the interview, one farming household in Shindaika area who was not selected expressed the desire to be interviewed. That is the reason why there are more informants in Shindaika area than in other areas of Rwashi ward. As a result of this, the number of informants moved from 99 to 100.

4.3 Limits of the Sampling Method

A sample of 100 households gives a real picture of urban farming in Lubumbashi. However, as long as the number of farmers in the city was unknown, their coverage could not be complete. Consequently, this cannot enable a broader generalization of the findings.

This study however gains in-depth analysis by focusing on only urban agriculture rather than focusing on all urban livelihood strategies. By dividing farmers into the seven wards that constitute the city of Lubumbashi, and these into their 41 areas, the objective was to see each ward and each area to be represented in the sample with their differences and

similarities. As recognized by Conway (1967:129), stratified sample has the advantage to have smaller sampling error. This is due to the fact that each stratum is represented in the sample. Furthermore, the number of households selected in each area depended on their size distributions in the city. That is the reason why more farmers (3 in each area) were selected in peri-urban areas of the city where urban agriculture was more practiced than in areas within the city.

4.4 Methods Used

The three major methods used to collect primary data were semi-structured interviews, observation and informal conversation. Despite the fact that primary data was the most important source of information in this thesis, some secondary data was also collected. The archival information used included government and non-governmental organization documents, academic papers, Union Minière du Haut-Katanga or Gécamines archives, books, statistical summaries, Internet articles, and maps gathered from libraries.

Documentary research is important to understand the social world and to trace events, origins and the development of places (Denzin, 1978; Leedy, 1989; Hill, 1993). The first step was looking at secondary materials to review the literature on urban agriculture and to establish a theoretical framework for this research. The second step was gathering background information about the research site in order to answer questions such as when and why the city was established, who were authorized to live in it, what were the dominant economic and political forces at play and how had the environment changed over years.

Primary materials were equally useful in chapters 5, 6 and 7, especially when exploring the practice of cultivation and keeping livestock, the benefit gained from cultivation, the nature of urban agriculture, the viability and sustainability of this activity, etc. In most social research, notes Stanley (1969: 101), more than one method might be used. In all the cases one method is a check on the others. According to this author, for some kinds of research, secondary analysis may be the main method of the research. Conversely, in this research, semi-structured interview was the primary source of data collection.

4.4.1 Semi-Structured Interview

Semi-structured interview was the central technique to gather data. Here, the interviewer is supplied with a rather detailed topic guide or with a skeleton questionnaire in which the key questions were specified but a great deal of space is provided for writing down detailed and lengthy answers (Walker, 1985). Semi-structured interview was used to gather in-depth information. In order to supplement with quantitative data, I used a questionnaire with two components.

Informants were asked to answer questions (written in separate sheets) related to the practice of cultivation while the in-depth information was useful to draw out the attitude, values and meanings held by the respondents. Survey methodology including both interviews and questionnaires is the most used source of data collection in social sciences

Concretely, the selected farmers responded to a questionnaire with two components. First, farmers answered questions in relation with the area of residence (residential, planned, or unplanned), the size of the household, the age of the head of household, the main economic activity and other sources of income, the level of education for the head of household, the religion practiced, and the different assets for the household. From this information, demographic data of farmers was obtained. The literature on urban agriculture considers as very important variables such as age, gender, education, and number of children in the categorization of urban farmers. Second, other questions were related to the size and location of the farm or garden, the period of cultivation, the list of cultivated crop plants and livestock raised, the number of household members involved in food production, the quantity produced for home consumption or for commercial reasons, and that kept as seeds, tools used, list of fruit trees, and expenditures on food. The importance of these variables is in relation to the effectiveness of urban agriculture and its sustainability.

The open-end questions were adopted in this research. In open-end questions the respondents are free to reply to the questions in a way they wish (Stanley 1969:77). Chamba (2005: 35) advances the following as advantages of open-end questions. First, they permit an unlimited number of possible answers. Second, respondents can answer in details, and can qualify and clarify responses. Third, unanticipated findings can be discovered, and permit adequate answers to complex issues.

The semi-structured interview questions for gathering information on farming households were divided into five sections, as shown in the following table:

Table 4.2: Summary of questions

Section	Title	Topics
1	Practice of cultivation	Sources of income; Crops and vegetables cultivated; Quantity produced; Benefits and problems
2	Foodstuff	Staple food; Number of meals consumed; Daily expenditures on food
3	Habitation	Type of dwelling; Advantages and disadvantages
4	Status	Employment history; Experience in cultivation,
5	Social networks and dynamism	Types of assistance; Regularity Division of labour; Internal relations

The first section of the questions focused on the practice of cultivation. The aim was to find out what is cultivated, where it is cultivated, the quantity produced, its destination, the benefits gained, and the problems related to the practice of cultivation and keeping livestock. The second section aimed at obtaining information related to the staple food of Lubumbashi dwellers, the number of meals consumed per day, and the expenditures on foodstuff. The investigation of the third section was on the location of the farmer, with a focus on whether the type of housing may either constrain or promote urban agriculture. The status of the respondent constituted the fourth section. This consisted of looking at the employment history of the respondent and his/her experience in cultivation. The last section was related to the social networks of the respondents in order to find out the types of assistance existing, their regularity and their real value.

The interview was administered on a face-to-face basis. A number of consequences are associated with this approach. The researcher was able to see and experience the conditions under which crops and vegetables were grown, the kinds of crops cultivated and the animals and livestock raised. Moreover, the interaction between the farmers and the researcher contributed to establish an atmosphere of confidence needed in this kind of research. Thus, a great insight was gained into their perceptions, attitudes, practices and struggles. For example, respondent number one did not provide enough information concerning the other sources of income for his household the first time he was met. During the second visit, he was more confident to tell me what additional activities were practiced by his household members.

In general, there was a very positive attitude from the informants towards me. It is worth noting here that despite the growth of the positive attitude mentioned, I was always accompanied by a field assistant in order to avoid any suspicion from married women interviewed in the absence of their husbands. One day an incident happened in Kamalondo ward. A young married female farmer accepted to answer the questions while she was reaping beans and vegetables from her farm located along the Circulaire Avenue, which separates Kamalondo from Kampemba ward in the north and from Kenya ward in the south. After answering questions related to the practice of cultivation, she did not accept to answer the questions related to other aspect of her household, such as the number of rooms in her house, the number of meals consumed daily, the other sources of income, the total amount of money earned by the household. She could not understand the relationships between the practice of cultivation and other questions raised. The suspicion in this case was not overcome.

Sometimes, my assistant and myself were taken by some farmers as members of an NGO seeking information in order to distribute fertilizers, seeds, tools, etc. and this, in spite of our introduction. The respondents in this case adopted two kinds of attitude: positive and negative. Those who were expecting material or financial support from NGOs adopted a very positive attitude. By contrast, people who were disappointed in the past by some NGO members who were unable to fulfil the promise of distributing fertilizers to urban farmers adopted a negative attitude. Fortunately, only fifteen out of 100 selected farming

farmers were concerned about NGOs, therefore their attitude did not affect the outcome of the research. In addition, I explained that I was not an NGO agent, but a researcher from Wits University (South Africa). Upon presentation of my research document co-signed by the Deputy-Mayor of the city, this kind of misunderstanding was overcome. Researchers from the University of Lubumbashi, for example, easily get cooperation from the Lubumbashi population.

In fact, the interview began only when the Deputy-Mayor co-signed the letter from Wits University, which was initially signed by my supervisor. Most of the times, the letter was presented to the official authorities of each ward in order to obtain their permit before conducting interview in their area. However, the majority of respondents did not require the presentation of the letter to answer questions. This attitude may be due to the fact that Lubumbashi residents are used to answering these kinds of questions all the times as researchers (students and lecturers from the University of Lubumbashi) often conduct surveys and interviews. This facilitated communication between researcher and informants, and also helped the researcher to easily obtain answers to the questions posed.

Only one field assistant was recruited, basically for financial reasons. The researcher was not financially able to pay the remuneration for more than one field assistant. The one used was in his early thirties. Recently graduated from the University of Lubumbashi in International Relations, his knowledge of the city was an advantage. His presence was

very useful to the researcher firstly to locate the 41 areas constituting the city of Lubumbashi, and secondly to increase the level of confidence of female married farmers towards the researcher who otherwise could be reluctant even suspicious to be interviewed in the absence of their husbands. Training of the only field assistant consisted of explaining the aims pursued by the research, the time table of interviews, and his role during the process of interviewing. In fact, the interview was conducted by the researcher with the main contribution of the field assistant being to locate the area one day before the interview took place.

4.4.2 In-depth Questions

Qualitative interviewing is a kind of guided conversation in which the researcher carefully listens "so as to hear the meaning" of what is being conveyed (Warren 2002: 85). In order to supplement the quantitative data of the semi-structured interview, in-depth questions were asked to provide information of a more qualitative nature. These were conducted with farmers as well as with key informants selected from the executive members of some organizations, such as the World Vision International Congo[6], SADRI[7], FAO[8] and the agricultural service at the provincial and local levels. One lecturer from the University of Lubumbashi was also selected due to his participation in urban agriculture.

[6] World Vision International DRC is an international non-governmental organization, which is specialized in relief and poverty alleviation. Its operation in DRC started in 1985.
[7] SADRI (Service Agricol de Développement Régional Integré) is non-governmental organization of the Congolese Church of Christ.
[8] FAO: Food and Agriculture Organization of the United Nations.

The choice of these two non-governmental organizations (World Vision and SADRI) was due to their support to urban farmers in the city of Lubumbashi. They all distributed fertilizers and maize seeds. They encouraged farmers to form agricultural associations or cooperatives in order to increase their productivity and to better manage their produce. These NGOs organized training sessions for farmers to learn how to respect an agricultural calendar.

FAO was mostly involved in the distribution of tools, seeds and fertilizers. It also provided advice to farmers on the kind of crops relevant to the type of soil in Lubumbashi. Although most of the farmers liked cultivating the maize crop, FAO directed farmers toward the cultivation of sweet potatoes and cabbage.

The executive members of the provincial agricultural department were chosen in consideration of their position. In fact, they were in charge of collecting and publishing statistics related to agriculture in the Katanga Province and in its capital city. Even though the collection methods used were not 100 per cent reliable, it was possible to see figures such as the types of crops cultivated, their size, the quantity produced, and so on. The interaction between these executive members of the provincial department of agriculture and the urban farmers for example, was very little because of lack of motivation. Similarly, the attitude of local Government officials towards urban agriculture was different from one area to another.

The experience of the senior lecturer of the University of Lubumbashi in farming was needed to see the impact of this activity on his family. During his doctoral research in international relations, he cultivated groundnuts in order to supplement his meagre salary. While he was living in Lubumbashi city, his supervisor was a member of the University of Kinshasa staff (more than 2000 km far away from Lubumbashi). An air ticket was needed to reach the supervisor in Kinshasa. As the University was unable to pay the air ticket, the cultivation of groundnuts constituted a financial solution for him.

As aimed to supplement the quantitative data, the themes investigated were those summarized in table 5 with as difference that here answers from in-depth questions were collected. According to Johnson (2002:106), in-depth interviewing seeks "deep" information and understanding. For this author, if the interviewer is a current or former member or participant in the activity, he or she may use in-depth interviews to explore or check his or her understandings, to see if they are shared by other members or participants. Concretely, while the questions for the first theme were related to the practice of cultivation, the in-depth questions aimed to investigate the reason why Lubumbashi residents chose urban agriculture among many other informal activities and their preference for some crops plants rather than others. Here, their attitude towards urban agriculture was compared with that of other competitive informal activities.

It has been noticed that each ward had its own characteristics. For example, trade was the predominant activity in the city centre pertaining to Lubumbashi ward. Kamalondo ward was known as a place of taverns while Rwashi ward was dominated by handicrafts activities. Despite the predominance of other activities, urban agriculture was practiced by a large number of urban residents. The second theme related to foodstuffs involved examinination of the diet of urban farmers. By cultivating maize crops for example, how did urban farmers see their diet in comparison with what it was five or ten years ago? What could be the reason for farmers to keep cultivating maize crop even though its productivity was not granted? Concerning the habitation as the third theme, it is worth noting that the status of the farmer as a tenant or owner might have an impact on the practice of cultivation. Although a landlord may freely undertake cultivation in his or her yard or around, this is not easily given to the tenant. To do so, the tenant must obtain an authorization from the landlord. Also, the farm size depends on the location. Backyard gardens were always much smaller than farms at the outskirts of the city. This also shows that people living in the peri-urban areas had more opportunity of farming than those in the city centre. The way urban residents saw themselves as farmers since they had been farming and how they could see the future of their activity was the preoccupation of the fourth theme. Finally, the level of assistance that households received from different personal networks provided an important backdrop against which urban agriculture could be evaluated.

Interaction with farmers was facilitated by their availability the day of interview; this was not the case with the other categories of respondents. Most of the executive members of

the concerned organizations were often busy. Consequently, the in-depth interviews were postponed several times. For example, the executive member of SADRI was moving too much. He was training members of some associations on election and democracy, as the Democratic Republic of Congo was preparing its second election after more than 40 years of independence. In the meantime he could go to the field to supervise the distribution of seeds and fertilizers to farmers. Even though the executive member of World Vision International DRC was also very busy, he nevertheless facilitated the researcher and his assistant to visit farms of some agricultural associations for three days. The visits led them to find out that some urban farmers were obliged to cultivate in the surrounding villages (Kafubu, Kikanda, Kaponda, etc) mainly because of the lack of enough land in the city, but also lands in the villages do not necessary require the use of fertilizers. Thus, some farmers walked every day for two to three hours to reach their farms unless they possessed a bicycle. Some of them had moved to the village where they stayed during the entire period of cultivation.

The use of in-depth interviews has the advantage of finding answers to unanswered questions of quantitative nature. For example, it was observed that while urban agriculture was widely practiced in most areas of Rwashi ward, in others (such as Matoleo and Shindaika) despite the presence of open spaces, urban agriculture was not much developed. As already pointed out, the development of urban agriculture might not only depend on the availability of land, but also on the attitude of the local officials.

4.4.3 Observation

In addition to the interviews, use was made of direct non-participant observation. According to Stanley (1969), the methods of observation in social sciences fall into two groups: participant and non-participant. If in the former case the observer joins the group in study as a member, in the second case the observer is not one of the members of the group. Even though the observer was not participating in any role except that of observer in the ward life, he was a participant in the larger Congolese society being himself a Congolese and a Lushois[9]. Besides, the researcher cultivated vegetables in the past in his own yard.

One of the objectives of this observation consisted of looking at the manner Lubumbashi residents dealt with the economic crisis since the collapse of the Gécamines mining company in order to solve their food insecurity problem. For that, the key aspects for the observation were as follows: spaces on which farmers were cultivating, types of crops cultivated and animals raised, size of farms, sorts of tools used, categories of people involved in food production, and organisms promoting urban cultivation. It also looked at the period of cultivation and the kind of life lived by farmers.

In order to identify the places where urban agriculture was practiced in the city of Lubumbashi, I visited many open spaces like schools, rivers, roads, railways lines, and

[9] A lushois is an inhabitant of Lubumbashi city.

power lines. The objective of the visits was first to identify the types of spaces on which urban agriculture was practiced and then to identify the types of crops grown and the size of the farms or gardens. The size of gardens and farms largely depends on the location. The development of urban agriculture depends on many factors such as availability of land, quality of soil, attitude of local officials, existence of market, use of agricultural inputs, availability of credit, etc. Apart from land, which obviously was not available in every area of the city, I also visited local markets (Lusonga, Kenya, Rwashi, Katuba, etc) and various streets where agricultural products were sold.

Observation was also focused on individuals engaged in urban food production. According to urban agriculture literature, this practice is dominated by low-income households. They are engaged in this activity for home consumption. But this literature on urban farming recognizes that some middle and high-income earners are also involved in food production, particularly for commercial reasons. The discovery of these categories of urban farmers might lead to the existence of various types of urban agriculture.

Female dominance in urban agriculture was another focus of observation. It consisted of looking at the types of work done, types of crops grown or livestock raised, the decision-making concerning the production, and son on. Visiting some homes of farmers and places where crops were cultivated provided insights about the diet habits of the

Lubumbashi residents, the distance between the living place and the place of cultivation, and the kind of support received from NGOs and other organizations.

The size of the city (714 km²) was the major constraint not only for the observation but also for the interviews. Though it was easy to move on foot from one area to another within a ward, on the contrary it was difficult to move from one ward to another. Most of the times a taxi was hired as the researcher and his assistant did not have their own means of transport. The price to pay depended on the distance mostly because of the state of roads in the area. To reach areas like Kalebuka, Kasapa and Kimbembe in Annexe ward, the researcher had to pay the double of the ordinary price. These areas were far away from the city centre (2 to 5 km) and roads were often impassable. Sometimes, a bicycle was used to move from Bongonga to Kafubu in Kampemba ward as taxi could not be hired. Even though the research was mainly carried out in the city of Lubumbashi, as some farmers were cultivating in some surrounding villages of Lubumbashi like Kikanda, Kamakanga, Kaponda, etc, a vehicle was needed to visit these places. Fortunately, World Vision DRC provided a means of transport as our visits coincided with those of the project manager.

4.4.4 Informal Conversation

Informal conversation was used as a supplement to the above methods. It consisted of discussions with some farming household members who were available during the visits in order to collect additional information about their consumption patterns. There was no structured plan, but the theme of discussion was known: the diet of farmers. Concretely,

the researcher visited these households during lunch times. Obviously, lunch times varied from one household to another.

The aim was to trace the diet history of some Lubumbashi farming households. The history of the Democratic Republic of Congo is dominated by two periods: the colonial and the post colonial periods, the latter is divided into the Mobutu regime and the post-Mobutu reign. Each period corresponds to a dominant type of diet. It is true that during each period there were different types of diets considering the stratification of the population, but there was always a dominant one. Therefore, the informal conversation focused on the following information:

-Staple food;

-Quality of food;

-Supply in foodstuffs;

-Number of meals consumed daily; and

-Expenditure on foodstuffs

Comparison was done between the colonization and the Mobutu regime, and the current period.

By so doing, the informal conversation had the advantage of completing the semi-structured interviews, in-depth questions and observation because it helped to understand changes over time of household consumption patterns and household structure. In fact, informal conversation provided insights about household production, reproduction and consumption, as it helped the researcher to understand the intra-household dynamics over time. To avoid any subjectivity, informal conversation was complemented by archival information, semi-structured interviews, observation and in-depth information.

4.5 Data Analysis

Data analysis was done taking into consideration the nature of the data collected. Thus, for the quantitative nature, there was use of SPSS as software of analysis. Data were grouped according to different themes of the research. Tables, charts, simple means and percentages were calculated. The first task consisted of drawing the demographic, socio-economic characteristics of urban farmers in the city of Lubumbashi. The second concern categorized and analyzed factors having led Lubumbashi residents into the practice of cultivation or raising livestock in the city. The third focus was on the impact of urban agriculture at household, community and national levels.

The qualitative data from in-depth questions were transcribed and organized according to the broad themes of this research. As the themes were already well structured in the semi-structured interview, the transcribed materials easily fitted with the themes. Findings were interpreted according to the urban agriculture literature. Transcribing the tapes was the most costly in terms of time and difficulty of exercise, as it required some of the tapes

being played several times. Data collected from observation and informal conversation was analysed using thematic content analysis.

4.6 Conclusion

By combining different techniques of data collection, the purpose was to obtain data of quantitative and qualitative nature. While in-depth information was necessary to find out the attitude, opinion, and perception of informants about urban agriculture, survey questions gave insight about the practice of cultivation and raising livestock. It was through observation that more information was gathered about the kinds of urban agriculture practiced in the city of Lubumbashi. Informal conversation supplemented information collected from semi-structured interviews by giving more insights about the consumption patterns of Lubumbashi farming households.

It must be said that the study was mainly based on primary sources. But documentary sources, including books, articles, magazines, and the Internet were also used.

CHAPTER 5

URBAN AGRICULTURE IN LUBUMBASHI CITY

Introduction

This chapter presents the findings of the semi-structured interviews, in-depth questions, observation and informal conversations administered to one hundred Lubumbashi farming households from November 2004 to March 2005. The chapter contains the description and analysis of the findings. The argument in this chapter is that the economic crisis which started in the 1970s and deepened in the 1990s constitutes the pre-condition for the emergence and expansion of urban agriculture in the city of Lubumbashi.

Since the majority of farming households are poor, home consumption is the central reason why inhabitants are engaged in food production, with food crops as the dominant crops grown, generally on small plots. Though the majority of farmers are poor, it must be pointed out that urban farming is practiced by low-income households as well as middle-and high-income households. While the low-income groups are more motivated by household consumption, the middle and high-income groups primarily pursue UA for economic purposes.

To assess the importance of urban agriculture in the city, the chapter presents the socio-economic and demographic characteristics of Lubumbashi farmers, identifies push and

pull factors that led to the emergence of UA and the categories of urbanites engaged in this activity, categorizes the types of food crops grown and livestock raised, and so on.

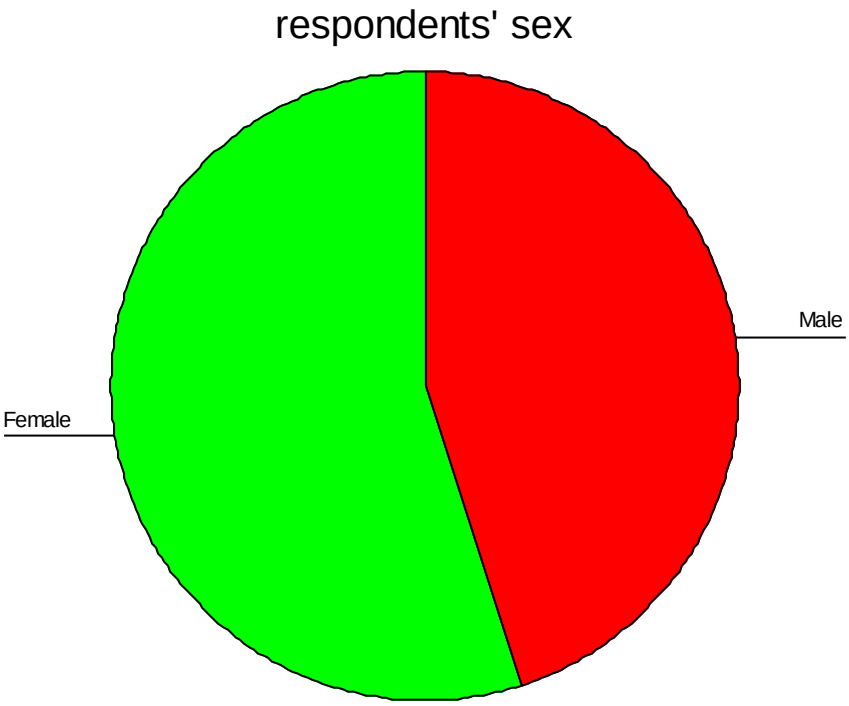
Basically, the chapter comprises five sections. Besides the introductory section in which the aim of the chapter is given, the second section deals with the demographic characteristics of the selected farmers based on variables such as gender, age and number of children, in order to highlight the main characteristics of Lubumbashi farmers. Also, the section examines their experiences in urban farming. The practice of cultivation in the city of Lubumbashi is the focus of the third section. The section seeks to identify the types of food crops cultivated and livestock raised, as well as the spaces on which they were cultivated. To measure the importance of maize in the population diet, and the expenditures on foodstuffs, the quantity of maize produced in 2004 was taken as a reference point in order to compare the quantity of maize consumed and the quantity of maize sold as it was the staple food for the majority of Lubumbashi residents. The fourth section looks at the habitation of farmers in order to determine its impact on food production whether the farmer is owner or tenant. Finally, the fifth section identifies the types of urban agriculture practiced in the city of Lubumbashi: the survival, entrepreneurial and the survival-entrepreneurial UA.

5.1 Demographic characteristics of Lubumbashi Farmers

In order to establish the biographic data on the farmers in the city of Lubumbashi, farmers were asked to answer questions related to gender, age and the size of their households. Figure 5.1 below reveals that both women and men practiced urban

agriculture in the city of Lubumbashi. The majority of urban farmers were women (55 per cent) compared to 45 per cent for men.

Figure 5.1 Distribution of farmers by sex



Literature on urban agriculture views UA as a female preserve. The predominance of women in urban agriculture is generally linked to their category of vulnerable population. Therefore, their predominant presence in urban agriculture is firstly explained by their lack of adequate education which prevents them from well remunerated jobs. Secondly, women are supposed to perform traditional roles, such as reproduction and domestic works (cooking, washing, collecting fuel, and water, and child-minding) which are not remunerated. Thirdly, most women are considered having no control over household

income because neither domestic chores nor agriculture and family business is remunerated.

However, the narrow difference (10 per cent) between the numbers of women (55 per cent) and men (45 per cent) engaged in food production in the city of Lubumbashi does not reflect the findings of the previous studies. Table 5.1 below reveals for instance that the majority of farmers were in the 34-55 age groups. Since women live longer than men in a country where the life expectancy is 49 years, this difference does not make this activity a preserve of women. The idea behind female predominance is to demonstrate that urban agriculture is an activity dominantly practiced by low-income households. The poor might be dominant in food production, but their presence does not exclude the middle- and high-income categories of urbanites.

Table 5.1 reveals that in terms of age profiles of the respondents who participated in the interviews, the largest proportions of respondents (77 per cent) were in the 34-55 age groups. Few farmers (23 per cent) were in the older age-groups (more than 55 years old).

Table 5.1 Distribution of Urban Farmers by age

Group-age	Percent
34-43	48
44-53	29
54-63	19
64- years and more	4
Total	100

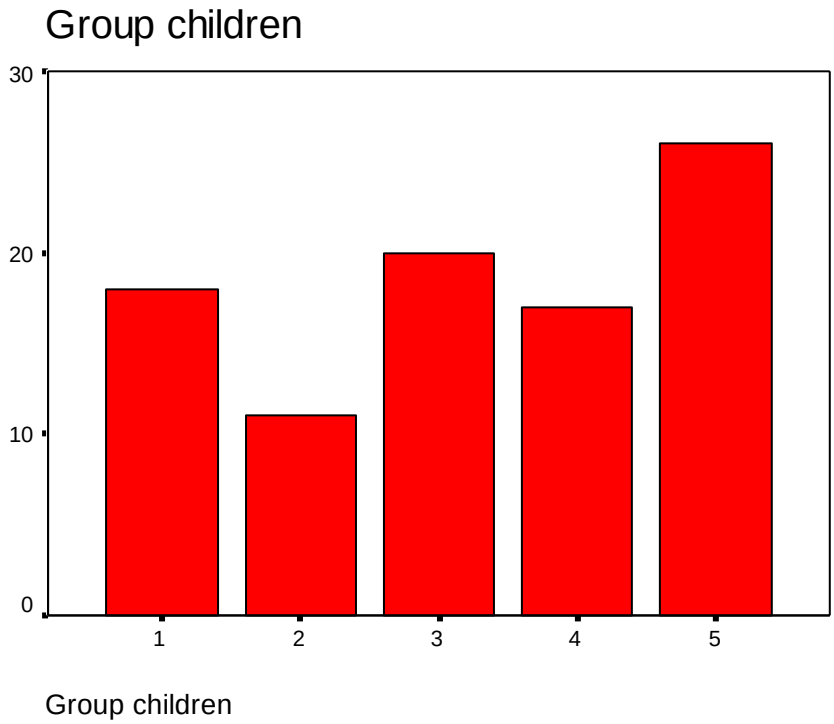
Source: Fieldwork 2004/2005

With an average of six children per farming household, figure 5.2 below shows that only 29 per cent of households had less than 5 children, meaning that 63 per cent had a higher number of children (varying between 5 and more than 8).The rest of the households (8 per cent) were without children when the interviews were conducted. In addition to the children, many relatives were part of the household such as nephews, nieces, parents or grandparents, sister and brother (in-law), cousins, etc. The minimum number of household members was ten.

In his survey carried out in the city of Lubumbashi, Petit (2001) stated that a household of six members spent more than 60 per cent of the household income on food. This means that the higher the number of children per household, the more the proportion of income spent on food consumption. This was also pointed out by Sawio (1994:35) in his

study on Dar es Salaam that the number of persons in household influences the amount of food consumed in the household and also the amount of labour that the household can spend on foodstuffs.

Figure 5.2 Respondents' number of children



Farmers were also asked to reveal their educational level. Table5.3 below considers two variables, education and gender of farmers.

Table 5.2 Distribution of farmers by level of education and gender

Educational level	Gender		Percentage
	Male	Female	
Primary	6	15	21
Secondary	31	36	67
Tertiary	8	4	12
Total	45%	55%	100

Source: Fieldwork 2004-2005

It can be concluded from this table that urban farmers were unequally distributed across the three education levels. About 79 per cent of the respondents were educated, of whom 67 per cent were of secondary school level and 12 per cent of tertiary school level. The rest of the farmers (21 per cent) had only primary schooling. Among the 67 per cent of the secondary school category, 36 per cent were women and 31 per cent men. The number of educated women was higher because it included those having done only the first two years of secondary school. The high level of educated farmers (12 per cent at the tertiary level) engaged in food production in a sense might be an indication that the rate of unemployment in the Democratic Republic of Congo is alarming. The lack of jobs on the market pushed university trained graduates to undertake other activities than those for which they were trained.

5.1.1 Division of labour within Farming Households

Interviewees were asked to describe the role played by the household members in the growing of food crops and raising livestock. Parents were the main actors, particularly

when the size of the farm increased. On the contrary, small scale farms (gardens) were predominated by women. In a case the husband was working somewhere else, the wife was the main actor. Obviously, the woman was the central actor in the case of a woman headed household.

Besides wife and husband as the main actors, to some extent children at a certain age were included. Also, adult relatives such as grandparents, aunts, uncles, nephews, nieces, cousins, etc. were used in UA. The role they played was either direct or indirect. They were directly included in food production by preparing soil, planting seeds, or selling products. At least, other members of the household (the elderly people) could take care of children when husband and wife were busy working on the farm. The youngest household members (children, sisters or sisters in-law, nieces), particularly female members were in the most cases the ones selling the products on the market or the street. While female members were employed in selling, male members were likely used in the transport of products from farms to the house. The bicycle was the common means of transport.

Wealthy farming households used their domestic workers, bodyguards, and even recruited farm workers to cultivate crops and raise livestock, especially those with big size farms.

To sum up, UA is an activity that includes all members of the household. But it is dominated by parents where both exist or by one parent when the second does not exist. Even in the case where husband and wife were both involved in farming, in many households, women were the main producers (figure 5.1).

However, from the moment women's contribution to the household income becomes the central or the substitute of man's income, a shift in decision-making might be noticed. As some unemployed men stated during the interview:

Since I have lost my job, I am fed by my wife. She is the one who brings or buys food for the family. She is the one who decides what to do with the money she earns from the selling of agricultural products. Sometimes she may ask me for some advice (Interview 15, November 2004).

I don't earn enough to feed my family. I rely on my wife's activities: selling of vegetables, groundnuts and maize flour. As she makes more than what I bring, she wants to manage the family income. What do you want me to do? I just accept (Interview 23 December 2004).

Men's position in the household and community is linked to their economic position. Therefore, the loss of jobs or the earning of a low wage or salary may undermine their authority in the household and even in the community. They have to rely on their wives' income to solve some of their problems such as school children fees, health care, etc. On

the other hand, women's position as managers in the household economy may be enhanced and their role in the household reinforced.

5.1.2 Professional Backgrounds of Farmers

People involved in urban agriculture were from various professional backgrounds, such as police officers in Kamalondo ward and teachers of primary and secondary schools as public servants from local administration, workers from different local companies, especially Gécamines and SNCC, vendors in shops or on streets, business persons, etc.

Figure 5.3 Professional backgrounds of farmers

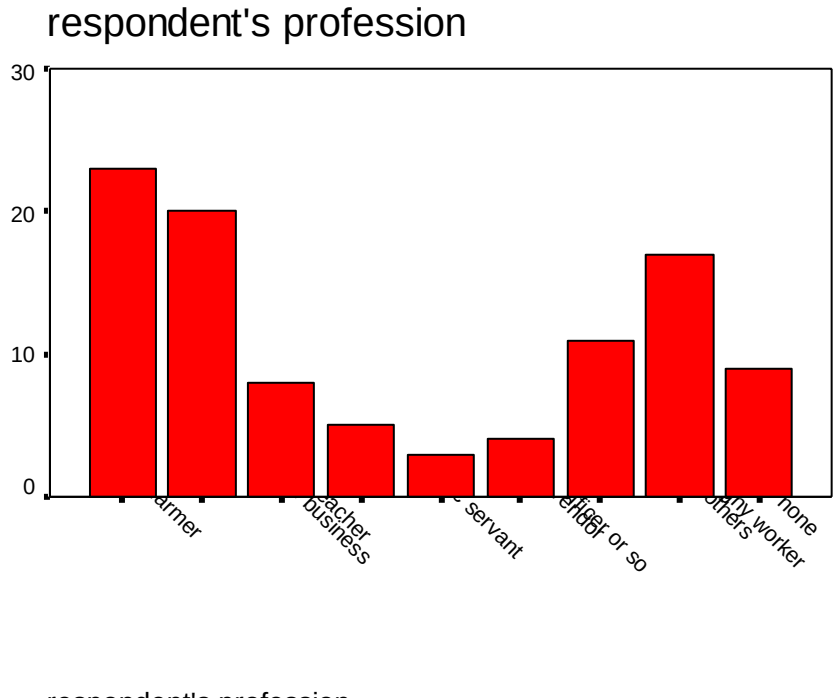


Figure 5.3 above shows that only 23 per cent of farmers had agriculture as the only economic activity practiced. For this category of farmers, urban agriculture was the

primary activity. About 77 per cent of the selected farmers had either a remunerated job (public services and public and private companies) or practiced more than one informal activity (for example small business). For this dominant category of farmers, urban agriculture was a supplementary activity because of the low salary they were earning. Cultivation might start as a supplementary activity (a backyard garden) and became later on a primary activity (maize farm) because of its benefit in food and income generation. As one woman stated:

I started growing vegetables in the backyard in 1993. Two years later, I found a space in Annexe ward which could be used for agricultural purpose. So, I decided to grow maize. Since then, my maize farm has become the main source of income for the entire family. My husband still works downtown as a vendor (Interview 34, December 2004).

Table 5.3 Time in farming-scale of Lubumbashi farmers

Years in farming	**Number of farmers**
Less than 1year	4
1-5 years	28
6-10 years	48
11-15 years	6
16-20 years	0
21 years and more	14
Total	100

As this table indicates, 82 per cent of farmers had been practicing urban agriculture since the 1990s. Only 14 per cent started cultivating in the 1970s and the beginning of the 1980s. Each period corresponds to a specific situation of the economic crisis that occurred in the country.

The 1970s are known as the years of oil price increase in the world while the 1990s were characterized by the collapse of the mining company Gécamines. Urban poverty engendered by the economic crisis pushed millions of the world population into farming for food, income and employment reasons.

5.1.3 Geographical distribution of farming households

Farmers were asked to indicate their area of residence. Three major types of residence were identified: residential, planned and unplanned.

Table 5.4 Distribution of farmers (per cent) by type of residence and gender

Type of Residence	Gender		Percentage
	Male	**Female**	
Residential	8	1	9
Planned	11	22	33
Unplanned	26	32	58
Total	45%	55%	100

Source: Fieldwork 2004-2005

Table 5.4 shows that farming households were unequally distributed in the three areas of the city (unplanned, planned and residential). The majority of farmers were living in unplanned areas (58 per cent corresponding to the Annexe and parts of Rwashi and Katuba wards). About 33 per cent of other farmers were living in planned areas of Rwashi, Kampemba, Kamalondo, and Kenya wards. And very few farmers (9 per cent) were living in the residential areas of Lubumbashi ward and part of Kampemba ward, particularly Bel-air.

Contrary to Sawio's study (1994) which pointed out that most of farmers in Dar es Salaam (Tanzania) were living in the planned area, in Lubumbashi unplanned areas were the ones mostly occupied by farmers. Unplanned areas correspond to Annexe, parts of Rwashi and Katuba wards. Here, people build up houses without applying the norms of urbanism. These were characterized by lack of electricity, running water and other basic infrastructures. A high level of poverty was noticed in these areas. With a concentration of 58 per cent of selected farming households, this is an indicator that the majority of urbanites engaged in food production were poor. On the other hand, unplanned areas had the advantage of having large proportions of available land to be used for agricultural purpose.

The planned areas with 33 per cent of interviewed farmers correspond to the former areas of the city occupied by black people. Basic infrastructures, such as schools, hospitals,

roads, etc still exist though most of them are now desegregated. Irregularly, people still have running water, electricity and housing.

Finally, the residential areas correspond to Lubumbashi ward and Bel-air area, formerly occupied by white people. These areas have the advantage of being modernized, clean and secure. They possess the enviable infrastructures of the city like roads, hospitals, schools, etc. The majority of banks, malls and companies are located in this category of areas.

5.2 Practice of cultivation

5.2.1 Spaces of cultivation

A previously said, land in the city is not designated for agricultural activities. But in the context of poverty and food insecurity, urbanites may legally or not utilize any available land. Visits to some places such as schools, rivers, roads, railways lines, and power lines provided insights about the types of land used for agricultural purpose and the size of gardens or farms.

Participants were asked to indicate the area in which food crops were grown. Table5.5 below reveals that 30 per cent of farmers were growing food crops on open spaces (along roads, railways, under electric power lines), 30 per cent were cultivating in the peri-urban

areas, and only 23 per cent of farming households were doing so in the surrounding villages. Almost all farmers interviewed had the practice of backyard gardens.

Table 5.5 Spaces under cultivation

Areas of cultivation	Percentage
Yard only	17
Around the city and yard	30
Surrounding villages and yard	23
Open spaces and yard	30
Total	100

Source: Fieldwork 2004-2005

Gardens and farms in wards like Lubumbashi, Kamalondo, and parts of Kampemba and Kenya were less visible. This was due to the poor quality of their soil and the lack of available land. By constrast, agricultural activities were widespread in Rwashi, Katuba, and Annexe wards. Open spaces (roads, power line, schools, University, etc.) were widely occupied by crops like maize, beans, sweet potatoes and vegetables. During the rainy period (from November to May) for example, the city of Lubumbashi became a green belt. Everywhere in the city, except the city centre, vegetables, maize, beans, sweet potatoes, groundnuts were grown.

It can be said that urban agriculture was the dominant activity in Annexe ward and most parts of Katuba and Ruashi wards. The specificity of these wards was that they possessed enough open spaces. Almost each yard in Annexe ward had a garden which occupied in many cases three quarters of the yard. The campus of the University of Lubumbashi for example, was surrounded by farms. Students like other categories of people practiced urban agriculture. Along the railway separating Kamalondo and Kampemba wards, people grew maize, beans, groundnuts, vegetables and sweet potatoes. In Kamalondo police camp, a public road separating the camp from the rest of the ward served as land on which vegetables were grown.

The size of gardens and farms largely depended on the location. Thus, the size of farms at the periphery was larger than that of those within the city. Farms for commercial purpose were visible alongside the road linking Lubumbashi to Kasumbalesa in Katuba ward and some parts of Kampemba ward.

The predominance of backyard gardens led Bruneau and Bukome (1987) in their effort of identifying informal activities in the city of Lubumbashi to focus their attention only on this type of urban agriculture, ignoring other types of urban farming. It is worth pointing out that backyard gardens are just one type of urban agriculture among many practised in the city of Lubumbashi.

Due to land availability, it can be noticed that the yard and the periphery (semi-urban areas) of the city were the most common spaces where food crops were grown. It must be added that what the yard and periphery were to the cultivation of crops, the house was to the raising of animals and poultry. But in their search for much more available land, some farmers moved from the city to the surrounding villages, such as Kikanda, Kaponda, Kafubu, Kamakanga, etc).

Of course, urban farmers might cultivate at two different places, for example on the backyard and at the periphery of the city. The periphery in question was part of the Annexe ward. This means that people growing food crops in the Annexe ward were not necessarily from this ward, even though most of them were residents. People from other wards were attracted by the availability of land.

5.2.2 Main food crops cultivated and livestock raised

Answering the question about the main food crops cultivated and livestock reared in the city of Lubumbashi, farmers mentioned the following respectively: maize, sweet potatoes, beans, groundnuts and vegetables as crops as well as sheep, goat, pig, and poultry. Lubumbashi farmers were cultivating several kinds of food crops, mostly for household consumption, but also for commercial reasons. Maize and vegetables were the most commonly cultivated crops. The reason might be the fact that Lubumbashi residents had maize flour as their staple food. Vegetables also played a major role in Lubumbashi residents' diet, and generated income.

According to urban agriculture literature (Maxwell, 1994; Freeman, 1991; Mbiba, 1995; Moustier and David, 1997), staple food crops are the largely grown in many African cities: maize, cassava, sweet potatoes, beans, plantains, groundnuts, cocoyam, etc. Vegetable crops and fruit trees are also grown. Rare however are cash crops such as coffee. Besides food crops, urban producers keep livestock such as pigs, rabbits, goats, sheep, and small ruminants.

In-depth question consisted of knowing the reason behind the preference for those crops. Answers from this question revealed that maize, as one of the most cultivated crops, was grown for different reasons depending on the socioeconomic status of farmers. Most farmers living in Annexe and large parts of Katuba and Rwashi wards with enough available land cultivated maize primarily for home consumption. The quantity produced was generally small to meet the household food needs. Therefore, very few could sell part of their produce. Though this may be true for low-income groups, it may not be the case for those with high income. The latter cultivated maize for commercial reasons while the middle-income groups did so for both household consumption and income generation. This was pointed out by some participants:

Since Gécamines is dead, there are no more jobs in the city. Some people are working, but how much are they earning? That is the reason why in 1993 I decided to grow maize crop around Luano airport. Many of my neighbours were doing so and did not suffer a lot from famine like me. Since then, my maize farm helps me to feed my family (Interview 37, December 2004).

I started growing maize crop five years ago. I also cultivate sweet potatoes and groundnuts. But I have to admit that my maize farm is what brings me a lot of money (Interview 72, February 2005).

As a widow, all I do is farming. I grow maize in the University of Lubumbashi concession. I just reap two to three bags of maize because I don't use fertilizers by lack of money. It is enough for me and my eight children. Instead of begging, it is better to cultivate and feed my children (Interview 54, January 2005).

The economic crisis of the 1990s in the Democratic Republic of Congo due to Gécamines' collapse, lootings, civil wars, etc pushed thousands of Lubumbashi dwellers into food production to face the scarcity of food and high food prices. If household consumption was the central purpose for which the majority was engaged, economic purpose was the main reason for others.

By summing up several works, Mougeot (1994: 45) reached the following conclusion:

…urban farmers produce mostly or largely for household consumption.

Data gathered from different African cities confirm home consumption as the main purpose for which the majority of urban farmers were engaged in food production. In Nairobi, it is estimated that over 50 per cent urban farmers used almost the entire amount harvested to feed their families or dependents. About 26 per cent of Pointe-Noire's households or 33 per cent of the population supplied all or part of its own needs for

cassava (Vannetier, 1961:71-2). In Kampala, about 83 out of 150 producers provided 40 per cent or more and 32 per cent got 60 per cent or more of their household food from their own gardens (Maxwell and Zziwa, 1992: 49-50). Nearly 50 per cent of the intra-urban farmers in Dar es Salaam acknowledged that urban agriculture contributed 20 to 30 per cent or more of the household food supply (Sawio, 1994:309). Citing Egziabeher's (1994) work on Addis Ababa), Mougeot (1994: 45) agreed that in the capital city of Ethiopia, cooperative household's consumption of vegetables was 10 per cent higher than the urban average and this enabled them to save 10 to 20 per cent of their income.

In Lubumbashi as well as in many other African cities, maize and vegetable were largely crops grown. Maize and vegetables were the most prevalent and most important crops (in terms of frequency of plantings and overall area) grown. In Nairobi for example, maize was the dominant crop in almost 55 per cent of all urban *shambas* (word for farms in Kenya) (338 plots out of 617) (Freeman, 1991:89). According to this author, in East Africa, maize was the most important cereal crop and was a subsistence staple throughout much of the continent. In almost eighty per cent of all cases at the time of his survey, Mbiba (1995: 33) found that maize in Harare was the crop grown on the plots, along or in combination with some other crops. More than ten years before, Mazambani (1982:135) reported that maize was grown on 85 per cent of the 69 plots because it is a staple crop.

The growing of vegetables as one of the most cultivated crops was for two main purposes: home consumption and income generation. The fact that almost each farmer

grew vegetables made the Lubumbashi city self-sufficient in vegetables. The Director of FAO based in Lubumbashi acknowledged during the interview (2005) that Lubumbashi residents had become self-sufficient in vegetables. They no longer import vegetables from Zambia, except fresh tomatoes. According to this Director, vegetables are grown all over the year. This was one of the reasons why vegetables prices on the market were very low. During the rainy season for example, farmers cultivated potato leaves, cassava leaves, amaranth, marrow, and the local vegetable "ngaingai", while during the dry season they mostly cultivated cabbage and lettuce for commercial reasons even though some of the former were also cultivated in the dry period. The majority of farmers (87 per cent) no longer bought vegetables. Despite the smallness of their farms or gardens, these farmers were selling part of their produce.

Concerning vegetables in other African cities, Orchard *et al.,* (1998) found 14 leafy vegetables, 20 fruits and 6 vegetable fruits species in one site in Enugu (Nigeria), and up to 35 different vegetable species in other sites. It is in Bodo-Dioulasso where Bado and Yameogo (2001) observed 15 different types of vegetables in the plots with lettuce, brussels sprout, onion, mints, green beans and eggplant as the most important. According to Moustier and David (1997), the percentage of households engaged in the production of vegetables was between 10 to 50 per cent. In 1997 for example, the supply of vegetables reached 80 per cent in Brazzaville, 90 per cent in Bissau and Antananarivo, and 100 per cent in Bangui. In other words, these cities are self-sufficient in vegetables. Phororo's (1996) work is a description of crops grown in Maseru namely cabbage and leafy

vegetables. In Harare, vegetables are dominant crops though maize is also grown (Mbiba, 1995).

It must be noticed that the cultivation of maize crop is very demanding. It requires a lot of labour and large space of land, which is not always available in the city. Also, the type of Lubumbashi soil requires the use of fertilizers to increase the productivity that most of farming households cannot afford. In compensation, many other crops were grown, such as sweet potatoes, beans and groundnuts.

The cultivation of sweet potatoes was preferred by low-income farmers because of its possibility to link the shortage food period to the coming harvesting season. Farmers recognized that the period before the next harvest (November to May) was characterized by food scarcity, high food prices, and therefore food insecurity in farming households. Sweet potatoes were mostly consumed during this period. This crop might be sold for cash, but it was considered by many farmers as a strategic reserve food for the period of food shortage. One participant outlined the following advantages of cultivating sweet potatoes:

The period preceding the harvest is the most difficult period for us (farmers). I grow sweet potatoes to survive during that period. And if I have enough quantity of sweet potatoes, I also make money. Sweet potatoes can be kept in the ground for a long time (Interview 50, January 2005).

Despite the fact that sweet potatoes helped farmers to survive during the period of famine, this shows us that the quantity of maize produced by the majority of farming households was not enough to cover the whole year. Farmers had to develop other coping mechanisms

Groundnuts were grown particularly for income generation. Whatever the quantity of groundnuts harvested, farmers sold the whole produce in order to meet other needs. Groundnuts were freshly sold or dried before being sold. Farmers became themselves vendors on the street or on the market or they were sometimes followed in the farms by buyers. As stated by one participant:

By selling groundnuts, I am now able to buy soap, salt, cooking oil, and sometimes to buy food. The demand for groundnuts is growing each year in our city (Interview 29, December 2004).

Another food crop grown was beans. In Lubumbashi residents' diet, beans play a double role: as a main meal and an accompaniment. For that reason, the cultivation of beans was primarily for home consumption. But when there was a surplus, this was sold.

In addition, few Lubumbashi farmers raised livestock. About 37 per cent of the participants were raising poultry. However 55 per cent of participants declared not involved in raising livestock. Besides poultry was raised for commercial reasons, very few people (8 per cent) were raising pig (particularly in Kenya ward), sheep, and goats. Domestic animals such as pigs, sheeps, goats and chickens were kept in the house.

Finally, I constantly noticed the presence of at least one fruit tree in almost each yard. The mango tree was the most cultivated followed by the avocado tree and bananas. In the following excerpts, two participants outlined the importance of the fruit trees:

My mango tree has twice helped me to pay school fees for my children. I have six children and two nephews. Now I have decided to plant much more around the house (Interview 49, January 2005).

When we eat two or four mangoes, maize meal is eaten only later (around 20:00 in the evening) (Interview 25, December 2004).

5.2.3 Maize production

Instead of measuring the production of each crop grown, I only selected maize for two reasons: first it was the staple food for the majority of Lubumbashi residents, and second it was one of the most cultivated crops. Despite these reasons, the amount of maize harvested was generally small and varied according to the (i) space where cultivation occurred (small or large spaces), (ii) the reasons for which it was cultivated (home

consumption or income generation), and (iii) the category of farmers practicing it (low-, middle- or high-income groups).

Maize crop was grown alongside the roads, railways and under power lines, but also in some schools or University concession and on backyard for some households. But the majority of farmers who were engaged in maize production chose the outskirts of the city, such as Kilobelobe national TV concession, land surrounding Luano Airport, etc. Some NGOs such as World Vision International/Congo negotiated with some owners of land farm around the city in order to be used by agricultural associations they had been supporting.

The size of maize farm was smaller (50 m^2- 101 m^2) when it was cultivated within the city and became bigger (more than 150 m^2) when it was grown around and even outside the city. The hoe was the most common tool used. However, agro-industrial farmers were not included in the sample even though there were very few.

As an indication that the households were willing to increase their productivity, a move from backyard or around the house to the periphery of the city was observed. There, farmers found enough spaces to cultivate maize crop. Unfortunately, about 85 per cent of farmers were cultivating maize on a small surface of less than 101 m^2. And only 15 per cent of farmers had more. Farmers were either cultivating themselves or using workforce

depending on the size of the farm and their socio-economic category (low-income, middle-or high-income households). The reason for which they were involved in maize production also determined the size of the farm. The size was much bigger when economic reasons were pursued, and relatively smaller when home consumption was the primary reason of their engagement. As declared by some participants:

I cultivate maize alongside the Kipushi road. There is enough space to grow different kinds of crops. I like to grow maize because Lubumbashi population eats maize meal. So, I sell my maize very easily. (Interview 89, March 2005).

Since I have been growing maize, my children can no longer sleep empty stomach. They eat at least one maize meal a day (Interview 75, February 2005).

I like to cultivate maize because that is what the entire family eats. I have got twelve people to feed: three sons, four daughters and their children. None of them is working. My maize farm gives us food and sometimes money when I sell part of my produce (Interview 64, February 2005).

Table 5.6 Dimension of maize farms (2004-2005)

Size	Number of Respondents
Less than 50 m²	45
51-100 m²	26
101-150 m²	19
151-200 m²	6
Total	96

Source: Fieldwork 2004-2005

Despite the small size of farms, which implies a meagre harvest of maize, 96 per cent of farming households were still growing maize. Therefore, I probed to know the underlying reason for this. One farmer from Kimbembe area in Annexe ward pointed the reason out in the following terms:

M*aize farming may or may not give what is expected, it is better to cultivate maize if you want to be considered a farmer (Interview 78, February 2005).*

This answer reveals that Lubumbashi farmers attached status to maize farming. Change of perception came when in the 1990s famine hit the city of Lubumbashi. To combat it, municipal officials encouraged people to grow food crops. Since then, a farmer had become synonymous with an entrepreneurial person, who was able to produce and feed himself or herself and his or her household members. For a long time, mining workers, especially those who were working at Gécamines enjoyed an enviable status because of

all the facilities they were receiving from the company (free food, health care, children's education, etc). Also, farmers were encouraged to sell their produce on the market where they had to pay tax.

Taking into consideration the new status conferred to farmers, it was necessary to find out what farmers thought about the future of their activities. Three interviewees stated this:

Since I have been cultivating, my family has enough food. So, I cannot abandon growing sweet potatoes and maize. If I cannot do it myself, I will hire some people to do it for me (Interview 43, January 2005).

If I find a well remunerated job, I will take it. That will help me to hire people to cultivate for me (Interview 23, November 2004)

To get a wage labour is a good thing, but many employers don't pay well. I would continue to grow vegetables in the backyard and my wife will continue to grow maize alongside the Kipushi road (Interview 100, March 2005).

From the above responses, it can be said that Lubumbashi farmers were willing to keep urban agriculture as one of their strategies. Because of the famine of the 1990s, some Lubumbashi dwellers learned to eat "vimba", a type of maize flour reserved for animals. The vulnerability of the Congolese economy might in part explain why farming was regarded as a sort of safeguard.

5.2.4 Quantity of maize produced, consumed and sold (2004)

The small size of the majority of maize farms negatively affected the production of this crop. However, their size seemed to be compensated by the high number of people engaged in the production of maize. Table 5.7 below shows how insignificant was the quantity of maize produced in 2004.

Table 5.7 Quantity of maize produced (2004)

Quantity of maize (bag of 50kg)	Number of households
Less than 1 bag	23
1-10 bags	48
11-20 bags	10
21 and more	4
N/A	11
Missing	4

Source: Fieldwork 2004-2005

Of 100 farming households investigated, only 85 per cent grew maize crop in 2004. About 48 households produced less than 11 bags of maize, 10 per cent produced less than 20 bags and 4 per cent produced more than 21 bags. About 11 households started cultivating maize only during the year the research interviews were conducted (2004-2005). Therefore, they were not in a position to answer the question concerning the

quantity of maize produced the year before. The missing case was about households that cultivated food crops other than maize, for example vegetables.

With 71 households unable to produce more than 11 bags of maize per year, meaning less than one bag of maize per month, these households preferred home consumption. Of the 71 households, 23 households were producing less than one bag of maize a year. This reveals the level of poverty in which this category of farmers was living. Nevertheless, a full evaluation of urban agriculture must take into consideration the production of other types of crops. For example, while some farmers preferred maize, others preferred the production of vegetables.

Table.5.8 Quantity of maize monthly consumed in 2004

Quantity of maize (bag sac of 50kg)	Number of households
Less than 1 bag	44
1-5 bags	31
6-10 bags	6
11-15 bags	3
N/A	11
Missing	4

Source: Fieldwork 2004-2005

Table 5.8 related to the quantity of maize monthly consumed reveals that 44 per cent of households consumed less than one bag of maize flour per month regardless of their size. This is the consequence of the insignificant quantity of maize produced by the majority of farmers (71 per cent) (less than 11 bags of maize per year). Consequently, households were able to afford two or three meals a day only during the harvest period, which as already pointed out lasted three to four months (from June to September).

Table 5.9 Quantity of maize sold/2004

Quantity of maize (bag of 50kg)	Number of households
Less than 1 bag	3
1-5 bags	24
6-10 bags	7
11-15 bags	3
16 and more	3
N/A	11
Missing	44

Source: Fieldwork 2004-2005

By giving priority to home consumption, only 6 per cent of the selected households were able to sell more than 11 bags of maize in 2004. The missing cases (44 per cent) concern the households which were producing less than one bag of maize; therefore they

preferred other types of crops such as vegetables, sweet potatoes, and groundnuts. About 11 per cent of farmers did not cultivate maize in 2004. Therefore, I classified them in the category "not applicable" (N/A).

Despite the insignificance of their produce, 77 per cent of households declared feeding their members through urban agriculture. But only 56 per cent acknowledged improving their diet through urban agriculture. This reveals how crucial self-production is for the survival of this population. Even though farmers noticed a small improvement in their diet, this was in comparison with the 1990s, which was characterized by severe food insecurity. Most farmers remained nostalgic of the prosperous period of Gécamines. As one former Gécamines worker stated:

At the time of Gécamines, all Gécaminars[10] were eating like white people. I was receiving four bags of maize flour of 50 kg, meat, cooking oil, milk, and many other things. Every day my family had breakfast, lunch and dinner. We were bosses at that time (Interview 98, March 2005).

Considering the purposes for which people were engaged in food production, the size of their farms or gardens, and the types of crops grown, three types of urban agriculture emerge in Lubumbashi: survival urban agriculture, entrepreneurial urban agriculture and survival-entrepreneurial urban agriculture. The three types of urban agriculture will be discussed in chapter6 related to urban agriculture as a response to food insecurity.

[10] Gécaminars are Gécamines' employees

After summarizing the demographic characteristics of farmers and describing the practice of cultivation within and around the city of Lubumbashi, it is important to look at the income earned by farmers through UA or other sources, how much they spent on foodstuffs and what was their diet.

5.3 Income, Diet and expenditures on food

The first subsection gives an idea of how much income farmers earned from agricultural activities or other resources. The second looks at the diet and daily menu of farmers. The third subsection measures how much farmers spent on foodstuffs.

5.3.1 Farming households' income

Table 5.10 Income of households per month (US$1= FC 500)

Income earned	Percentage (%)
D/K	24
0-5000 FC	9
5001-10000 FC	9
10001-15000 FC	7
15001-20000 FC	9
20001-25000 FC	9
More than 25001 FC	33
Total	100

Source: Fieldwork 2004-2005

The above table reveals that 43 per cent of farmers earned a very small amount of money to survive (less than US$ 50 per month, meaning less than US$ 2 a day). About 24 per cent of farmers were unable to remember how much they earned per month as they lived on day-to-day basis. These must be added to the 43 per cent who struggled with less than US$ 2 per day. Only 33 per cent of the farmers earned more than US$ 50 per month, reaching sometimes US$ 2000 per month.

Because 67 per cent of the farmers interviewed earned less than US$ 2 per day, they fall below the poverty line. It can be deduced that Lubumbashi residents resorted to urban agriculture either to supplement the meagre income earned or to supply food and generate income. This was stated by the following interviewees:

My husband is not working. We don't have an income. We live by the grace of God. From our garden, we can get vegetables and sweet potatoes. Sometimes people come to buy some vegetables (Interview 31, December 2004).

If I have to count only on my husband's salary, our children will not study. I have decided to raise chickens. Now my family is able to pay school fees and to feed the rest of the household members (Interview 74, February 2005).

5.3.2 Farmers' Diet

Table5.11 Number of maize meals consumed in household per day

Number of meals per day	Number of farmers
1	56
2	39
3	5
Total	100

Source: Fieldwork 2004-2005

This Table (5.11) reveals that 56 per cent of farmers selected ate once a day. Only 5 per cent of respondents were able to have breakfast, lunch and dinner. The rest of farmers (39

per cent) ate twice a day. With more than a half of urban farmers of the sample ate only once a day, these data reveal the level of poverty that characterized people engaged in food production. This shows how important UA was for the survival of these categories of people. Faced with the lack of income or low salary, most farmers ate late (8 to 10 pm) as a strategy to wake up strong the following day.

The harvest period (from June to September) was the only period when most farmers could ate twice or three times a day. In Shindaika area located in Rwashi ward, one farmer stated: *"tunakuliaka muzuri mpaka wakati tukonavuna"* (Interview 55, February 2005) (we only eat well when we start harvesting, that is, from June to September). Crops grown during this period included maize, sweet potatoes, and groundnuts. Vegetables were grown throughout the year.

Participants were also asked to answer the question about food frequently consumed in their households. Ninety seven per cent of respondents affirmed eating pap of maize flour (ugali). Rice was also consumed. It was generally consumed during the festive season (Christmas, for example). Pap made from maize flour was often consumed with bitoyo (local salted fish) or ndakala (local small fish). The vegetables that were grown in or around the yard were generally consumed with bitoyo or ndakala.

In one interviewee's word, *"when maize meal is served with vegetables only, then poverty is in the house" (Interview 21, November 2004)*. In many households visited, maize meal was sometimes consumed without bitoyo or ndakala, but with only vegetables (potato leaves, cassava leaves, cabbage, and amaranth). Poverty obliged some households to exclude some meals from their diet, such as meat, rice, eggs, and potatoes. These had become special meals eaten at particular events, such as birthday, Christmas, and so on. This shows that poverty had reached such a level that people were even unable to buy local fish, which cost only FC 50 (US$ 0.1).

Emphasizing the importance of ugali (pap of maize flour) in Lubumbashi residents diet, one participant from Kimbembe area (in Annexe ward) stated: *"kama muntu yebado kula ugali ata anakula kintu kyengine, iko sawa hayakula bado"* (if somebody has not yet eaten maize pap, even though (s) he has eaten something else, it is like (s) he has not eaten yet) (Interview 10, November 2004).

The implication is that when farmers said they ate once a day, this means eating pap. They might have eaten something else such as sweet potatoes and beans but they considered this was not 'eating'. This is to say that the notion of 'eating' is relative. In some cases, when a farmer declared having not eaten this meant "having eaten some food other than the staple food (maize meal)". In another context, having not eaten meant literally "sleeping on empty stomachs."

5.3.3 Daily Expenditure on Food per household

Table 5.12 Food expenditure (US$1= FC 500)

Expenditure per day	Number of farmers
0-200 FC	1
401-600 FC	14
601-800 FC	17
801-1000 FC	29
1001-1200 FC	5
more than 1201 FC	34
Total	100

Source: Fieldwork 2004-2005

The table above suggests that only 34 households could spend more than US$ 2 per day on food. For the rest (66 per cent), the maximum amount of money spent on foodstuffs was less than US$ 2 per day. This shows that farmers were so poor that they spent their entire income on foodstuffs. One interviewee stated:

We work for food. The first thing I buy when I get money is to buy food for my family (Interview 97, March 2005).

With regard to the average size of a household (ten members) and the high number of respondents with less than FC 25,000 (US$ 50) as income per month, urban agriculture became a real source of food and income.

One secondary school teacher stated:

My salary is *FC 5000 (US$ 10). I am a married man with seven children. All my children are studying. To feed them and to pay their school fees I have to do something else. I have chosen to grow maize and sweet potatoes. Since I have been farming, I can say that we eat at least twice a day. It is not like when my wife was working at Gécamines. During that time, food was not a problem. Unfortunately, Gécamines is now dead (Inter view 13, November 2004).*

5.4 Habitation

Table 5.5 related to the distribution of farmers by area of residence indicates that 58 per cent of farmers lived in unplanned areas of Lubumbashi city. Of the 58 per cent, 33 per cent were owners of the houses and the other 25 per cent were tenants. With an average of ten members in each household, farmers in unplanned areas were confined in two bedrooms.

In the unplanned areas, the residents used candles instead of electricity, wells instead of water taps. With no regular maintenance of roads, access to these areas was rendered very difficult if not impossible. Despite the existence of the public transport in the city (bus, taxi) farmers in unplanned areas were not well served. Being unable to pay rent in planned or residential areas of the city, most farmers chose to live in the unplanned areas where rent was very low (US$ 5) with the possibility to build their own house in a large yard. With a house which averagely occupied one quarter of the yard, dwellers used the

rest of the yard (three quarters) to grow various types of crops (sweet potatoes, cassava, maize and various types of vegetables).

It is clear that the status of the farmer (tenant or owner) did not affect very much the practice of cultivation in the unplanned areas of the city. By contrast, the availability of land in or around the yard encouraged people to grow vegetables or other types of crops regardless of the status of the farmer.

5.5 Constraints

Cultivation in the city of Lubumbashi encountered some obstacles. The most cited constraints included theft of produce, lack of fertilizers and limited space. The interdiction of growing only vegetables instead of maize crop in Rwashi ward and the use of hoe as the common tool of production might be seen as constraints as well. As stated by one participant:

I am obliged to share what I produce with robbers. Sometimes, they come during the day and threaten me. I don't have a choice. I have to leave in order to protect myself. I have changed places twice, but robbers are everywhere (Interview 24, November 2004).

Theft of agricultural products was one of the means used by the poorest of the poor to feed themselves. By so doing, robbers discouraged farmers to increase their productivity.

To fight against the theft of their products, some farmers hired the service of local security companies, particularly during the harvest period.

Lubumbashi soil, as already said, required the use of fertilizers that most of the farmers could not afford (US$ 30 a bag of 30kgs in 2005). Some non-governmental organizations (WVI/Congo, SADRI) and organizations of the United Nations (FAO, UNDP) distributed fertilizers, seeds and sometimes tools, but there was a huge demand for fertilizers.

The scarcity of available land was another constraint for urban farmers. Since the restructuring of Gécamines in 2003, new mining companies such as Chemaf, Rwashi Mining, and Exaco were created and operated around the city. Their presence was a threat to agricultural activities around the city. Farmers had to move every time a new company encroached on their area of cultivation.

The house was the only place where animals and poultry were kept. Their production was limited to the size of the house. It is worth noting that the majority of these houses were too small (two bedrooms) to be shared with human beings and animals. Hygienically, the smell from animals and chickens infested the house. Keeping pigs was the specialty of Kenya's dwellers, especially those who lived at the periphery of the ward. Despite their location, municipal officials and non-farming households complained about the presence of these animals.

Chapter7 related to the sustainability of urban agriculture will give more details about the vulnerability of UA as it deals with the stresses and shocks.

5.6 Conclusion

The post-Gécamines era in the city of Lubumbashi was characterized by the expansion of the informal economic activities, with urban agriculture as one of the emergent activities. The emergent urban agriculture allowed the household to play a key role in food supply and income generation. But the crisis context in which this activity was practiced gave fewer margins to the household to reduce its vulnerability in food insecurity.

Urban agriculture was practiced by low-income households as well as middle-and high-income households. While the former were primarily engaged UA for household consumption, the latter were doing so for economic reasons. But this does not necessarily mean that there are only two types of urban agriculture: the survival and the entrepreneurial urban agriculture. These two types of urban agriculture were practiced by all farmers regardless of their category. A farmer of low-income category grew vegetables for home consumption while he kept chickens for commercial reasons. Similarly, a farmer from middle- and high-income category practiced commercial agriculture, but kept some of his produce for home consumption. With 60 per cent of selected farming households engaged in food production for food and income generation, the survival-entrepreneurial urban agriculture seems the most practiced urban agriculture in the city of Lubumbashi. This type of urban agriculture had the advantage of supplying food to the household while at the same time generating income to meet other needs.

Chapter 6 proceeds to look at urban agriculture as a response to food insecurity, while chapter 7 looks at the sustainability of urban agriculture and the types of urban agriculture.

CHAPTER 6

URBAN AGRICULTURE: A RESPONSE TO FOOD INSECURITY

Introduction

The aim of this chapter is to explore in which ways urban agriculture achieves food security keeping in mind that there are different categories of urban farmers. The attempt is to establish a relationship between urban agriculture as a source of food supply and income generation and food security at the household level. Maize production for example might not be economically viable while its contribution to the well-being of the households is significant by the reduction of expenditures on foodstuffs.

With about 80 per cent of Congolese living under conditions of extreme poverty (less than US$ 1 a day), 71 per cent suffering from food insecurity, 57 per cent having no access to safe drinking water, and 54 per cent not benefiting from basic health services (UNDP (2006:3), this chapter identifies beforehand push and pull factors leading to the rise of urban agriculture. Secondly, the chapter distinguishes three types of farming households which represent the one hundred households of the sample. The first household represents the case of households that practiced urban agriculture as a primary source of food and income, the second household represents the category of households where urban agriculture supplemented the main source of food and income, and the last household represents the category of households for whom agriculture was an opportunity of enrichment.

Second, the chapter summarizes the types of strategies used by individuals and households to address food insecurity in Lubumbashi as well as it examines the diet of Lubumbashi dwellers. Finally, a particular emphasis is put on the role of women in the household as caregivers and managers. The attention is drawn on the reinforcement of women's role in the household and the burden of that reinforcement.

6.1 Push and Pull factors

A number of factors explained the engagement of Lubumbashi dwellers into food production. I distinguish two groups: the push and pull factors. By push factors, I mean factors that act to drive urban dwellers away from the purely urban economic activities. In other words, a push factor is any adverse factor which causes people to move away from what they used to practice. And by pull factors, I understand factors that attract urban dwellers to practice urban agriculture.

6.1.1 Push factors

Among factors that pushed Lubumbashi dwellers to engage in food production and raising livestock include the 1970s economic crisis, the 1980s structural adjustment policies imposed by the World Bank and IMF, the collapse of Gécamines in the 1990s and recently the two civil wars (1976-1997) and (1998-2003). The combination of the above mentioned factors resulted in a high unemployment rate, an increase of urban poverty and a rapid population growth.

In addition, workers, particularly in public services (education, health, military, police service, etc.) and in parastatal institutions earned low salary, those for example in Railways Company, remained unpaid for a long period of time (more than one year) while food prices escalated. The search for new alternatives became a must.

6.1.2 Pull factors

The potential for agricultural activities within and around the city to provide food and income attracted poor, unemployed people, low-income earners and internally displaced people. While for the majority of individuals and households home consumption was the reason for which they engaged in food production even though they could also sell their surplus, others were motivated by income generation.

It must be acknowledged that the availability of land, support from some organizations such as NGOs, and the positive attitude of municipal authorities encouraged the emergence of urban agriculture. Table 5.13 below summarizes the principal factors that pushed Lubumbashi residents and those that pulled them into food production.

Table 6.1 Push and Pull factors in urban agriculture in Lubumbashi

Push factors	Pull factors
-The 1970s economic crisis -Structural adjustment policies in the 1980s -Gécamines'collapse in the 1990s) -Unemployment -Poverty (less than US$2 per day) -Food shortage (the 1990s) -Food high price (US$ 40/ a bag of maize flour of 50kgs) -Low salary - Malnutrition -Lack of salary	-Food supply -Income generation -Availability of land -Support from non-governmental organizations (NGOs) -Positive attitude of municipal authorities -Proximity to the market -Employment

Source: Fieldwork 2004-2005

From this table, it can be said that economic factors (oil crisis in the 1970s, followed by the structural adjustment policies in the 1980s, and the collapse of Gécamines in the 1990s) increased the number of unemployed people, resulting in malnutrition, urban

poverty, etc. These unemployed people, those with low-income and many others found a source of food, income and employment in agricultural activities within and around the city. The potential of urban agriculture coupled with the availability of land, the support from NGOs and the positive attitude of municipal officials encouraged Lubumbashi dwellers to resort to urban food production.

6.2 Categories of Lubumbashi farming households

Considering the level of their engagement in food production, the outputs and the strategies developed, three categories of Lubumbashi farming households may be distinguished: (i) households for whom urban agriculture was a primary source of food, (ii) those for whom this practice was a secondary source of food, and (iii) households where urban agriculture was a source of enrichment.

While the practice of food production did not stop the living conditions of the majority of farming households (Ngoy category) to decline, it however stabilized one-fifth of households (Kilambe category) and even moved out of poverty quarter of households (Kadony category).

6.2.1 The Kilambe household

Kilambe household represents 20 per cent of the sample: 3 per cent of households who, through urban agriculture, were able to feed their family members for the entire year, and 6 per cent who did so for only six months. It must be borne in mind that the majority of the households interviewed were food secure only for the harvest period (3 to 4 months).

Households falling into the Kilambe household category were those who practiced urban agriculture as the primary activity for food production and income generation. They however acknowledged that what was produced, particularly maize meal was not sufficient to feed all household members at all times.

Kashika Kilambe had been living in the city of Lubumbashi since 1970. She is a 55 year-old-woman. She is a married woman with seven children two were already married. Two of her husband's nephews and her own sisters lived with them. Her husband worked at TabaCongo, but had been retrenched in 1999. Since then, she had become the main food producer and breadwinner of the family. Like many other households, Kilambe explained the reason of her engagement in food production:

I decided to grow vegetables on the back of our yard in 1993. There was food shortage in the city, particularly maize flour. The scarcity of maize flour was coupled with the scarcity of money because of the monetary reform, which occurred that year. It became tough to feed our big family. I undertook to grow vegetables on the backyard to get fresh vegetables (sweet potatoes leaves and amaranth, marrow leaves) and, I even sold part of my vegetables (Interview 58, February 2005).

The growing of vegetables on backyard allowed the household to reduce the severity of food insecurity and, in the same time to reduce the expenditures on foodstuffs. But urban agriculture remained for this household a secondary source of food as long as Kilambe's husband was still working at TabaCongo. From 1999 when Kilambe's husband lost his

job, urban agriculture became the principal source of food for the household. The backyard garden's experience helped Kilambe to grow maize at the outskirts of the city. She stated:

A friend of mine who was growing maize alongside the Lubumbashi-Kipushi road encouraged me to start growing maize. I decided to do so. My experience in growing vegetables on the backyard was helpful for the growing of maize. In the first year I produced only 3bags of maize (50kg). The following year (2001) with the help of my husband and children, the production tripled. I realized (9 bags). Now I am able to produce 12 bags of maize (Interview 58, February 2005).

What started as a survival activity (on the backyard) became later a real economic activity which produced not only food but also income, and therefore involved many more members of the household (husband and children). Also, as more space was needed for the extension of the agricultural activities, the outskirts of the city offered the space needed for maize farm. While the main objective remained feeding the household members, the quantity of maize produced (12 bags of 50kgs) allowed Kilambe to sell part of her produce.

Of 12 bags of maize I produce annually, the family consumes 8 bags because the four others are sold in order to generate an income which helps to meet the rest of family needs. It is not enough but it is much better than nothing. My family members can afford two maize meals a day (Interview 58, February 2005).

Even though the farming of maize brought a lot of benefits in terms of food and money, the Kilambe household did not abandon cultivating vegetables. On the contrary, the household rotated different types of vegetables, such as amaranth, cassava, marrow and sweet potato leaves and cabbages. Diversification and rotation of crops allow poor households to get food through the year and to reduce risks of one crop production. As she acknowledged:

As you can see, I grow maize alongside the Kipushi road and vegetables on backyard. In rainy season I grow amaranth, sweet potatoes, marrow and cassava leaves and in dry season I cultivate cabbages (Interview 58, February 2005).

The expenditures on foodstuffs had been drastically reduced, which means that as the household allocated less money to buy foodstuffs, the surplus money from food selling could be allocated to other needs of the household.

My family does not buy maize flour and vegetables any more. Sometimes I don't know how much they cost on the market (Interview 58, February 2005).

Even though Kilambe recognized that her maize farm supplied basic food for the household, this was not enough to feed every member of the household at all times. Instead of three meals per day (breakfast, lunch and dinner), for example, Kilambe household members got two maize meals a day.

Also, the household reduced the consumption of some foods (meat, potatoes, rice and eggs), which were now eaten occasionally, especially at the events such as wedding, birth parties.

I wish to feed my children with three maize meals a day. But right now I can only give them two meals a day. You may be surprised if I tell you that my children eat meat, potatoes and rice only when there is a special event in the family, for example Christmas (Interview 58, February 2005).

In summary, Kilambe household grew food crops as strategy to fight against hunger. In order to increase the production, the household incorporated all members at a certain age, diversified and rotated crops. Food production in Kilambe household reduced the expenditures on foodstuffs, even though what was produced was not yet enough to cover all household needs. Though Kilambe household remained fragile, the practice of urban agriculture brought stability in terms of food security.

6.2.2 The Ngoy household

The Ngoy household represents the majority of farming households interviewed (75%) for which urban agriculture was a secondary activity. Therefore, food production became a supplement to the low income earned by the household. Urban poor practiced several activities for their survival. Therefore, urban agriculture was one among many others.

Married and father of six children, Ngoy was a 49-year-old man at the time of interview and was employed at a Chinese's store. His wife (Kakazi Ngoy) sold vegetables at the

market which were grown on the backyard garden. With US$ 15 earned per month, Ngoy complained that he was unable to feed his family:

I earn FC 7500 (US$ 15) per month. I have rent to pay. My two bedrooms cost me FC 2500 (US$ 5) every month. I cannot supply enough food to my family members. The rest of the money, I mean FC 5000 (US$ 10) can afford only five maize meals for my family within a month. (Interview 95, March 2005).

Low household income was one of the reasons stipulated by urban poor to explain their engagement in food production. To supplement the low salary earned and to reduce the severity of economic crisis, Ngoy encouraged his wife in 1993 to use the available land surrounding their yard in order to grow vegetables.

Our yard does not have enough space to grow vegetables. But around the yard, there is vacant land to be used for agricultural activities. So, I asked my wife to use it for the growing of some vegetables. Our neighbours have been doing so for a long time. She accepted it because it was the only way to survive (Interview 95, March 2005).

As it appears, low income households utilized any available land in the city to produce food. Since vegetables were grown around the yard, Ngoy household did not buy vegetables. By contrast, instead of buying *bitoyo* (local salted fishes) and *ndakala* (small local fish) as their main accompaniment in the household, Ngoy household adopted vegetables as the main accompaniment. By replacing fish by vegetables, the Ngoy

household living standard actually declined. Vegetables were generally consumed to accompany fish and not as a substitute.

Bitoyo and ndakala have become luxurious. Therefore, the family eats more vegetables than fish as accompaniment. My family eats local fishes (bitoyo and ndakala) two to three times a week (Interview 95, March 2005).

By alternating the growing of vegetables throughout the year, farming households aimed to secure their members from bad harvest due to climate change or bad harvest of one crop. Alternating crops is like diversifying crops on one garden or farm. Regarding the diversification of crops, this has "the advantage of reducing the risk of shortage as a downturn in one activity is offset to some extent by the continued production of others. Explaining the reason why his wife alternated the growing of vegetables on the same garden, Ngoy stated:

My wife grows amaranth, sweet potato leaves and marrow leaves in rain season primarily for home consumption, but those (cabbages) grown in dry season are primarily sold even though the family consumes part of the produce (Interview 95, March 2005).

Ngoy household as well as many other households in this category were self-sufficient in vegetables. They cultivated different kinds of vegetables. When there was a surplus of production, the surplus was sold.

My wife sells vegetables at the market. Sometimes people come to our house to buy vegetables. When she sells well, the family can afford two maize meals a day. Generally, we eat once a day (Interview 95, March 2005).

The growing of vegetables and their sale did not solve the problem of malnutrition. Instead of sleeping on empty stomachs, urban farming helped poor household members to get one or two more meals a day. Despite the contribution of vegetables in the household's diet, Ngoy acknowledged that his household's living conditions were not yet improved. He recalled the time he was working at Gécamines. He used to receive free maize flour, oil, sugar, salt, fish, meat, etc from his employer. Speaking about his present situation, he stated:

It is true that our garden helps us to get vegetables that we could not afford on the market. We also reduce our expenditures on food as we produce ourselves the essentials of our accompaniment, but we still buy maize flour. Maize flour is very expensive ($US 16). It costs more than my salary ($US 15).But when I was working at Gécamines, my family was able to get three meals a day, fish and meat did not miss (Interview 95, March 2005).

Ngoy household considered meat as a meal that only rich people could afford. Chicken was eaten at special occasions as already said, birthday parties, wedding, etc. By suppressing these meals from their diet or reducing the number of meals per day, households in this category were only surviving instead of stabilizing their living conditions.

Today, although my wife grows vegetables and sells at the market, the family is still not able to buy meat and chicken. For example, we eat chicken when there is a special event such as wedding. Only rich people can afford meat (Interview 95, March 2005).

In summary, households falling into Ngoy household's category undertook agricultural activities to supplement their low income by the use of various strategies, mainly reduction of expenditures on food, reduction of the quantity and quality of meals, suppression of some kinds of meals (meat, potatoes, rice, etc.) and increasing the number of meals during the harvest period. Unfortunately, the majority of these strategies were just survivalist.

6.2.3 The Kadony household

Kadony household is part of the very rare farming households primarily engaged in food cultivation for commercial reasons. This household is an example of success in the practice of cultivation which started in the city and extended later on in the rural areas. Unfortunately, the Kadony household represents only 5 per cent of the sample.

Kadony was a senior lecturer at the University of Lubumbashi at the time of interview. Married and father of several children, Kadony engaged in the growing of maize, groundnuts, cabbage, onions and sweet potatoes for several reasons; mainly to supplement the low salary earned, to supply food to his household, and to finance his doctoral research. As he stated:

I have been cultivating since 1989. I started growing maize and later on added groundnuts for home consumption. In 1989, I produced 8 bags of maize (Interview 52, January 2005).

Considering the high level of profitability of groundnuts, the Kadony household decided to increase their production. The result was far above his expectations.

From 1992 to 93, I produced 60 bags of groundnuts. After the sale, I was able to buy a return air ticket (Lubumbashi-Kinshasa) to meet with my supervisor for the follow-up on my thesis. The purchase of a return air ticket and my stay in Kinshasa cost almost $US 2000, while my salary at that time was less by tenfold (Interview 52, January 2005).

After the academic issue was solved, the Kadony household decided later on to buy a second hand car. The $US 3000 used to buy the car came from the sale of groundnuts. Since then, the household had not experienced a lack of food.

In the three sources of household expenditures envisaged in Friedmann (1992) model of household economy, the buying of a car is considered as a durable investment even though it is not directly related to commercial use. In a case of crisis, the car might be sold and helps the household to move out of the crisis. The acquisition of a second hand car increased the social status of the Kadony household.

In 1998, I bought a second hand car for commercial purpose. It also cost $US 3000. Since then, my salary has become a secondary source of income in the household. It may be paid or not, I always have enough food to feed my household members and enough money to cover other needs of the household (Interview 52, January 2005).

By buying a car for commercial purpose, the Kadony household, like many households in this category, increased the productivity of his farms by expanding the activities and hiring workers.

The food secured Kadony household shows that urban agriculture can move a household out of poverty, and more importantly, this activity can become a sustainable livelihood strategy. However, very few households might be included in the category of Kadony household.

Since then, Senior Lecturer Kadony had been expanding his agricultural activities outside the city. He added cassava and beans crops to the previous ones.

I have added cassava and beans for household consumption. As I produce more and more maize, I have expanded my agricultural activities outside the city. I am planning to keep animal and fish, and if possible to plant fruit trees. The provincial minister of agriculture is ready to grant me 10,000 hectares of land if I pay $US 500,000. I am convinced that if I get that piece of land my future is absolutely in agriculture (Interview 52, January 2005).

It can be deduced from the above statement that the sustainability of urban agriculture was mostly dependent on the availability of land as agricultural activities were

expanding, and also on material and financial support from government and non-governmental organizations.

6.3 Household strategies to food insecurity

Households responded to food insecurity by using various ways. These varied from incorporating household members into food production to reducing the quantity and quality of meals. The diversification of strategies reduced the impact of food insecurity on the household.

On a production level, farming households tended to use their members in order to increase the production. Therefore, the household was at the same time a unit of consumption and a unit of production. Kilambe for example, recognized that the involvement of her husband and children was helpful to triple the maize production from three bags of 50kg each in 2000 to nine bags in 2001. The increase allowed the household members to get two maize meals a day. Since then, the Kilambe household no longer spent money on maize flour.

In order to expand their activities, households often moved from backyard to the periphery of the city or used land in the surrounding villages. The size of a plot affected the production. The more space cultivated, the more the production was expected.

All households interviewed preferred the diversification of crops on their farms or gardens. Two or three crops were grown on one plot. Maize crop might be the main crop, but it was often associated with two other crops, such as beans, vegetables or groundnuts. Urban farmers practiced a rotation system. In rainy season for example, households grew specific types of vegetables such as amaranth, beans, cassava leaves and sweet potato leaves while in the dry season cabbages were the most cultivated.

Some food crops were cultivated for specific goals. A crop like groundnuts were specifically grown for commercial reasons, whatever the quantity produced. By contrast, vegetables were primarily grown for home consumption, but could also be sold. Maize was produced for both reasons: home consumption and income generation. Sweet potatoes played a major role in Lubumbashi residents' diet during the period of food shortage. The period before the next harvest (November, December, January and February) was generally characterized by scarcity of foods in the city, which was accompanied by high food prices. Sweet potatoes were the most consumed during that period and served as a food-bridge linking the dry and rainy seasons.

On the nutrition level, the number of maize meals consumed depended on the availability of food in the household. Because of the availability of food during harvest time, households were able to eat two to three maize meals a day. Three or four months later, only one maize meal was affordable by the majority of the households interviewed. When the household could not afford more than one meal a day, the time to eat the only one

meal was often late in the night (around 10pm). Eating late in the night gave the impression to the household members that they had eaten for two days at the same time (the ending and the coming day). This also means that household members might wake up with enough energy to start the new day. Also, maize meal could be replaced by sweet potatoes and beans.

The predominance of vegetables in Lubumbashi residents' diet as the principal accompaniment was also one of the strategies used to reduce the impact of food shortage and high food prices in the household. Some foods (meat, fish, chips and omelette) were eaten at special events (wedding and birthday parties). The elimination of these foods allowed poor households to survive.

While some household strategies were viable and therefore sustainable (incorporating all household members, diversifying crops), others on the contrary were just survival (food reduction, replacement of maize meal by other kinds of meals such as beans and sweet potatoes, and the predominance of vegetables as main meal, etc.). The following table summarises the emergent viable and survival strategies used by Lubumbashi farmers;

Table 6.2 Summary of household strategies to food insecurity

Viable strategies	Survival strategies
-Incorporating household members -Diversifying food crops -Rotating vegetable crops -Attributing specific role to each crop (food, income generation) -Eating sweet potatoes as food bridge	-Reducing the quantity and number of meals per day-Suppressing some types of meals (meat, rice) -Replacement of staple food (maize meal) by sweet potatoes -Making vegetables as main condiments -Elimination of some foods (meat, fish, etc) -Eating late in night

Source: fieldwork 2004-2005

6.3.1 Nutrition

In a country where 80 per cent of the population lives on less than US$1 a day, and 71 per cent suffers from food insecurity, the question of food becomes crucial. In early 2000, a team of researchers under the direction of Petit (2001) found out that about 62 per cent of monthly household expenditures in the city of Lubumbashi went to food. Sawio (1994) acknowledges that food costs in the rapidly urbanizing cities of the world are rising.

From the three dominant categories of households represented by Kilambe, Ngoy and Kadony households, it is clear that the main reason of their involvement in food production was to supply food to their household members. Almost each farmer became self-sufficient in vegetables. The production of food led few households to the accumulation of wealth as in the case of the Kadony household. Therefore, urban agriculture was practiced for both monetary and non-monetary reasons.

Concerning the Kilambe household for example, it emerged that the production of food was to supplement the low salary earned and to cope with the increasing food prices. But urban agriculture became the main source of food when the husband lost his job. The situation encountered by the husband's loss of job forced the wife to practice urban farming. From the second year (2001), the household was able to afford two to three maize meals a day, which was no longer possible.

In a country like the Democratic Republic of Congo, very few people can afford two to three maize meals a day. This is a privilege given to wealthy people. By providing this number of meals, even though the quality might not be guaranteed, urban agriculture becomes a response to food insecurity in this household. Food supply was guaranteed particularly during the harvest period, which lasted three to four months. This was the case of maize meal, the staple food for the majority of Lubumbashi residents. Through the use of various techniques (rotation, diversification, and so on), the majority of the households interviewed were self-sufficient in vegetables throughout the year.

Where the production of food generated an income to the household, like was the case of the Kilambe, Ngoy and Kadony households, urban agriculture became more than a source of food. Selling the surplus produce provided much money to those who were more engaged in maize production than to those who grew only vegetables. By selling four bags of maize (400kg) in 2001, Kilambe household gained US$ 160, four times the salary earned by the husband when he was working at TabaCongo. With that amount of money, this household was able to buy fish and sometimes meat. Though vegetables were consumed, they did not become the main accompaniment.

About the Ngoy household, the production of vegetables became the solution to cover the rest of the days that the salary earned could not. With a salary of US$ 15 and paying a rent of US$ 5 a month, this household's income could afford food for only five days. This household substituted local fish with vegetables. Even though the consumption of vegetables as main accompaniment reduced the expenditures on foodstuffs, the Ngoy household was an example of decline. Agricultural activities did not procure them with more than one maize meal. The ideal was one maize meal a day. But it was not guaranteed. The selling of vegetables was able to meet other types of needs, such as cooking oil, salt, etc.

Out of the 100 households selected, about 37 per cent were raising poultry (see list of main food crops and livestock raised in chapter 5). All they were doing so for commercial purpose. One poultry farmer stated as follows:

I sell at least three chickens a day. One chicken costs FC 2250 (US$ 4.5). Festive seasons are the best times to sell chickens. Ten even more chickens might be sold a day (Interview60, February 2005).

The case of the Kadony household is exceptional. While food security was also the main reason of food production, this allowed the producer not only to become food secured, but also to accumulate wealth. The cultivation of crops gave birth to other commercial activities, such as transportation. In return, the exploitation of the taxis helped the household to expand the agricultural activities. Therefore, more space was needed and more funds too. The acquisition of new land and funds are among many requirements for urban agriculture to become a sustainable livelihood strategy. This will be discussed in chapter7.

6.4 The predominance of women in food supply and income generation

In the context of economic crisis characterized by a high rate of unemployment and low income in public administration, the household plays a major role in the supply of food and income generation. The dominant presence of women in urban agriculture (table5.1) can be explained by the fact that women are often considered as caregivers and managers of households.

In the absence of salary or with a very little salary earned by their husbands (see Kilambe and Ngoy households), women are the ones supposed to generate money and provide

food to their households. They undertake, therefore, multiple tasks from planting food crops to selling agricultural products on the market. As stated by Van Esterik (1999), women's sense of self is based on their ability to feed their families. This implies that women loose their power and identity when they lack access to food.

Instead of losing their power and identity as caregivers and managers of the household, women are ready, in addition to their domestic chores, to undertake agricultural activities to supply food to their household members and to generate an income. Some of the participants said;

My husband has lost his job, the only source of income. What do you want me to do? I have to do something. If not, my children will die. I have to grow vegetables: beans, potatoes and marrow and sell part of the production (Interview 70, February 2005).

With only $US 10 my husband earns per month, I cannot feed my family. I have got 8 children. I also keep nephews at home. To supplement my husband's salary, I keep chickens and plant vegetables and maize (Interview 53, January 2005).

Most of the women interviewed recognized that their production was not enough to cover all food needs of their households. Nevertheless, in the situation of food shortage in the household, the one maize meal that a garden might supply is a high sacrifice made by a woman. Whatever the quality or quantity of food consumed in the household, a meal

means not only food, but also capacity for a woman to keep her family members alive and to prevent them from begging as one woman indicated;

We generally eat once a day. Sometimes twice a day, but I am proud because I am the one who provides the one meal in the household. I cannot allow my children to become beggars (Interview 30, December 2004).

By participating into the production of food in the household and becoming the central producer and breadwinner, the woman reinforces her status in the household. In the meantime, men have been losing their position as head of the household. Women tend to decide on the way production must be used.

I don't expect clothes from my husband. If he is not able to provide food to the family, you think he can be able to buy clothes. I buy clothes during the harvest time when I sell part of my maize (Interview 30, December 2004).

Women reinforce their status in the household not only by supplying food, but also by deciding on the allocation of the household income. As indicated before, the reinforcement of women's status in the household undermines men's status. Sometimes this brings conflict in the household where men like to keep their position as head of the household. Let us look at the excerpt that follows;

Since I have been cultivating, I manage the household income, but my husband accuses me of not consulting him as head of the family. He does not know my priorities. When I get money, I like to solve the most important problems in the household for example,

food, rent, and water and electricity bills. Sometimes he understands, sometimes he does not (Interview 30, December 2004).

Change of women's status in a context of patriarchal system is source of conflict. Since women are increasingly having more power to decide, men feel powerless and tend to leave all the burden of the household to their wives. They explain their behaviour by the fact that women want to rule the household, so they have to take all the responsibilities as seen below;

I am an unemployed man. How can I feed my family? My wife cultivates maize and vegetables and she is the one who feeds us, I mean my children and myself. As she feeds us, she has become arrogant. She wants to rule everybody, myself included. To avoid dispute, I told her to do whatever she wants, but she must accept to solve all problems in the household. Curiously, I am constantly accused of abandoning my responsibilities (Interview 17, November 2004).

I am a teacher. I earn $US 20 per month if I add the $US 10 I receive monthly as parents' contribution to school. I supply food to family just for one week. The family depends on my wife's activities. She grows vegetables and sells on the market. The problem is that she is the decision-maker in the household. I don't see my place anymore. She has even forgotten the period I supplied everything in the family, when I was working at Forrest Company (Interview 59, February 2005).

The significant contribution of women to reduce food insecurity at household level has the advantage reinforcing their status, but on the other hand it is a burden placed on women's shoulders. Loss of control over household income makes men powerless. As a consequence, family pressure is now directed more towards women than towards men. As one woman supported by World Vision Congo (NGO) declared:

From 8:00 am to 4:00 pm I am at my maize farm. When I come back home, I have to cook and clean the house. I don't have a house help. I do everything myself. That is the reason why I am always tired. The only days I have a rest are Saturday and Sunday (Interview 96, March 2005).

Urban farming has become so central for the survival of households that some women work extremely hard; they even sacrifice their own health. Petit's survey (2001) conducted in the city of Lubumbashi showed that women's contribution to the household income was very insignificant when the giant mining company (Gécamines) and other companies operating in its orbit were still viable. Unfortunately, the economic crisis deepened women's contribution to their household and this becomes a central survival strategy particularly in food supply and income generation.

The effort made by women to feed their household members is not always compensated by the food consumed. In addition, these women devote the rest of their time to housework and child care. As recognized by Folbre (1994:3), costs of social reproduction

are difficult to estimate. According to this author, these include direct expenditures on behalf of dependents such as children, the sick, the disabled, and the elderly as well as the time devoted to the care of these individuals and to the daily maintenance of adults.

Consequently, harvest is negatively affected when women fall sick. One woman from Shindaika area stated:

We have nothing to eat this year. You know what? I fell sick last year. My husband could not abandon his work at SNCC even though for six months there is no salary. And my children are still young. The only option was to hire a worker. But I did not have money to pay him. Today we are suffering (Interview 86, March 2005).

Urban agriculture practiced by the urban poor remains vulnerable. External factors may disturb the harvest unpredictably. This is to say that for urban agriculture to become a sustainable household strategy, some conditions must be met: availability of land, credit, fertilizers, seeds, etc., as will be shown in the following chapter.

6.5 Conclusion

In a context of a weak state and a failing economy, the household economy may constitute a response to food insecurity under certain conditions. The practice of cultivation has rendered almost all households selected self-sufficient in vegetables. By the use of diversification and rotation techniques, and by alternating various types of vegetables, farming households grow and consume vegetables all along the year.

Temporary food security concerning maize meal has been experienced by most of farmers interviewed particularly during the harvest period (three to four months), which has allowed some households to consume two to three maize meals a day. Through urban agriculture, it must be said that only very few households (as in the case of the Kadony household) have become food secure.

Apart from food supply, urban farming plays also the role of income generation. The selling of the surplus procures cash; it also reduces expenditures on food stuffs. In the majority of developing countries, more than half of household income is spent on foodstuffs.

Though urban agriculture supplies food and generates income, it generates some conflicts in some farming households. While on the one hand urban agriculture has reinforced the role played by women, on the other hand it has become a burden to women. The existence of conflicts in the farming household denotes the dynamics of this institution of the civil society. Though the reinforcement of women's role in decision-making has made significant inroads, it has not yet fully shaken the patriarchal system in Africa.

Therefore, urban agriculture can become a real response to food insecurity only when conditions such as land availability and financial assistance are met. The next chapter deals with the conditions for urban agriculture to become a sustainable livelihood

strategy. But it must be said that the possibility for urban agriculture to become a sustainable livelihood strategy exists. A case in point is the Kadony household.

CHAPTER 7

SUSTAINABILITY OF URBAN AGRICULTURE

Introduction

The argument in this chapter is that the sustainability of UA lies in its capacity of coping with and recovering from stresses and shocks, its capability to adapt to the dynamism of the city and the multiple functions it has to play in addition to food supply and income generation. Therefore, this chapter is structured as follow. First, the chapter attempts a typology of urban agriculture on the basis of the criteria drawn from the literature which have been confronted to the reality of Lubumbashi City. Three types of urban agriculture have been identified namely survival, entrepreneurial and survival-entrepreneurial urban agriculture. Second, the chapter distinguishes stresses and shocks from which urban agriculture in the city of Lubumbashi must recover. A particular attention is paid on land not as the only factor, but as the determinant one. Third, the focus is put on the multi-functionality of urban agriculture and its capacity to adapt to the dynamism of the city as conditions of sustainability. In addition to its economic and social dimension, urban agriculture has an environmental dimension.

7.1 Typology of urban agriculture

For the last 15 to 20 years, the survival discourse dominated the urban agriculture literature. Only the poor were considered as urban farmers. But the presence of the middle-and high-income groups in urban food production suggested that another type of

urban agriculture was practised (May and Rogerson (1995); Mbiba (1995); Sawio (1994), etc).

Webb (1996) and Hovorka (2004) denounced the dominant view which consisted of considering urban agriculture only as a survival strategy used by urban poor to reduce their vulnerability. According to these two authors, this way of seeing urban agriculture overshadowed the acknowledgement of the entrepreneurial urban agriculture. Instead of acknowledging the coexistence of these two types of urban agriculture, Hovorka (2004) privileged in her article, the entrepreneurial urban agricultural discourse to the detriment of the survival one. More importantly, neither Webb nor Hovorka envisaged the existence of another type of urban agriculture apart from the survival and entrepreneurial discourses. In view of this gap, I coin the term '*survival-entrepreneurial urban agriculture',* to capture a third category of urban agriculture.

7.1.1 Survival urban agriculture

The survival aspects of urban agriculture include (i) its origins (economic crisis), (ii) segments of individuals and households involved in (urban poor with female dominance), (iii) its purpose (home consumption), (iv) types of crops and livestock raised (food crops), and (v) size of plots (small-scale). This type of agriculture is defined in Hovorka's term (2004: 368) as a "household survival strategy born of urban crisis."

The economic decline in the majority of developing countries, especially in southern African countries is taken as a pre-condition for the emergence and expansion of urban agriculture (Drescher 1999; Sanyal 1987; Tricaud 1987; Lynch 1994, Nugent 2000). As a reaction to the economic decline, urban people grow food crops, raise livestock, and plant fruit trees, using open spaces all over the city for their survival.

As Table5.3 indicates, 82 per cent of farmers had been practicing urban agriculture since the 1990s. Only 14 per cent started cultivating in the 1970s and the beginning of the 1980s. Each period corresponds to a specific economic crisis that occurred in the country. The 1970s correspond to the rise of oil prices which coincided with the dropping of copper prices. The price of copper dropped from US$ 3,370 per metric ton in April 1974 to $US 1,350 in December 1974 and to US$ 1,280 in December 1975. This was followed by the closure of Banguela railroad linking Angola to DRC and the invasions of the Katanga Province which disrupted the copper mining production in 1977-78. The 1970s were followed in the 1980s by the implementation of the structural adjustment policies adopted by the Congolese government on recommendation of the International Monetary Fund (IMF) and the World Bank. The 1990s on the other hand were characterized by a devastating economic crisis with the collapse of Gécamines. Gécamines' production of copper dropped from 486,000 tons in 1986 to 150,000 tons in 1990, and from 150,000 tons in 1992 to 8,000 tons in 2003. As a result, several companies depending on Gécamines closed, pushing thousands of people to unemployment. As earlier on mentioned, about 54 per cent of former Gécamines workers resorted to agricultural activities as their substitute.

Literature on urban agriculture has also established a link between this practice and urban poverty. To demonstrate that poverty is the major feature of the segment of urban population involved in food production, the urban agriculture literature highlights the fact that most of urban farmers originate from low-income groups, meaning poor and are demographically dominated by women, and living in unplanned areas of the city. This was the conclusion reached by Tricaud in his works on urban agriculture in the West African cities of Ibadan and Freetown:

Among the lowest income groups, the percentage of cultivators is higher and this activity provides them with a substantial share of their income (Tricaud 1987: 10)

Besides the economic crisis, poverty was identified as one of the major reasons that pushed Lubumbashi population into food production. According to Table5.10 related to the households' income, 67 per cent of the sample was composed of farmers who were living with less that US$ 2. This means that they fall bellow the poverty line. That is the reason why they could not afford three maize meals a day. By contrast, they spent all their income on foodstuffs. The harvest period was the only period they could afford two to three maize meals a day.

The importance of urban agriculture in the relief of urban poor has been explored in many works (Rakodi 1988; Freeman 1991; Mougeot 1994; Smith 2004, etc).

Additionally, women are viewed in the development literature as the most vulnerable category of population. Therefore, their dominant presence in this economic sector implies that this is a preserve of the poor.

Because the majority of people involved in food production were poor, logically home consumption was the primary reason for their involvement and food crops were the dominant crops cultivated. Poor farmers might sell part of their produce just to meet other needs, such as sugar, kitchen oil, and soap.

Maize crop in Lubumbashi was cultivated on plots of small size (less than 101 m^2). Only 6 per cent of farmers did more. Consequently, 71 per cent of farmers produced less than 11 bags of maize a year. Even though home consumption was privileged, the quantity produced was so insufficient that it could not cover the households need in maize. The majority of Lubumbashi farmers became food secured for a very short period of time: one to two months for some and three to four months for others. Only 4 per cent of participants produced more than 21 bags of maize of 50kgs and sold more than 16 bags of maize a year. By preferring home consumption instead of commerce denotes the vulnerability of this category of urban population.

Answering the question about the main food crops cultivated and livestock reared in the city of Lubumbashi, farmers listed the following respectively: maize, sweet potatoes, beans, groundnuts and vegetables. They also raised sheep, goat, pig, and poultry. However, maize and vegetables were the most commonly cultivated crops. The reason might be the fact that Lubumbashi residents had maize flour as their food staple. Vegetables played a major role in Lubumbashi residents' diet while being a source of income.

In summary, survival urban agriculture was dominantly practiced by low-income households. Home consumption was preferred due the smallness of the quantity of food produced. Food crops were the dominant crops cultivated. However, some farmers were moving from the survival to the entrepreneurial type of urban agriculture by expanding their activities with support of non-governmental organizations. This leads us to the second type of urban agriculture: the entrepreneurial urban agriculture.

7.1.2 Entrepreneurial urban agriculture

The entrepreneurial urban agriculture is defined by Hovorka (2004: 140) in terms of a system of farming aimed primarily or exclusively at commerce and income generating. As any other commercial activity, the profit must be reinvested in the system of farming to produce further yield and expand outputs, employment opportunities, and fixed assets. The major characteristics of entrepreneurial urban agriculture include the engagement of the middle-and high-income households, income generation as the purpose pursued, with plots much bigger than those practiced in the survival urban agriculture.

Contrary to the survival urban agriculture which is dominated by urban poor, the entrepreneurial urban agriculture is dominated by the middle-and high-income groups. Sawio's (1994) findings on Dar es-Salaam, for example showed that about 10 per cent of his respondents in the sample were administrators and managers and another 16 per cent were professionals. People holding important government posts practiced urban agricultural activities in areas such as Masaki, Msasani, Oysterbay, and even in the Ada and Regent Estates (1994:43). Therefore, the author deduced that urban agriculture can

not be restricted to the urban poor or simple casual labourers. In another study conducted on Durban, May and Rogerson (1995) found seven different socio-economic categories of households involved in urban food production. The first three categories of households (marginalized, welfare-dependent and remittance-dependent) were the ones who deeply experienced poverty; but the last four categories of households (wage committed-average earning, wage committed-high earning, mixed income source-wages and mixed income sources-wages households) were less affected by the economic crisis. This is to say that the first group of households practiced a subsistence-oriented urban agriculture for their survival while the second group was practicing the entrepreneurial-oriented urban agriculture for income generation.

Farmers in this category could hire labour force, had access to good agricultural inputs, technical advice and credit. Consequently, the entrepreneurial urban farmers produced more than what was needed for their own consumption.

To sustain the idea that people engaged in the commercial urban agriculture are from the middle-and high-income groups, the urban agriculture literature locates these categories of population in the planned areas of the city. Sawio's (1994) findings showed that most of the urban farmers in Dar es-Salaam were living in the planned areas of that city:

I had expected that planned areas, such as Msasani, Oysterbay, Regent Estate, and parts of Mikocheni, would have few or no agricultural activities. On the contrary, much urban agriculture is taking place in these areas, not only in unplanned areas. Urban farmers living in unplanned areas are concentrated in the high-density zones.

Despite the fact that only 9 per cent of farmers in the sample lived in the planned and residential areas of Lubumbashi, this shows that Lubumbashi farmers were not all from the unplanned part of the city, meaning poor. Even the income earned (more than US$ 50 reaching US$ 2000 a month) confirmed their socio-economic category. Therefore, the reason of their engagement in urban agriculture was more for income generation than for food supply.

Taking into account the purpose pursued (income generation); the entrepreneurial urban agriculture was practiced on large spaces. For this reason, the peri-urban areas of the city and even the surrounding villages were the most appropriate places of cultivation. The more land under cultivation was larger; more likely higher was the production. The second reason was that whatever the price of urban land on which to grow crops, the middle- and or high-income households could afford it.

Concerning the localization of entrepreneurial agricultural activities in Lubumbashi, it was noticed that farming took place in large available land particularly in Katuba and Rwashi wards, and at the periphery of the city (Luapula, Congo, Kigoma, Bongonga, Tabacongo, etc). While the majority of urban farmers were practicing their activities in backyard or around the yard, the entrepreneurial urban agriculture was practiced at the periphery of Lubumbashi, mainly alongside the roads, railways and power lines, around Luano Airport, and even in the surrounding villages (Kaponda, Kafubu, Lumata, etc.)

The entrepreneurial urban agriculture in Greater Gaborone for instance occupied a formal space within the urban farm, covering 625 hectares (Hovorka 2004:382).

Although large farms were found in the peri-urban zones of the city, the biggest quantity of maize produced was 21 bags of 50kgs each. Only 4 per cent of households in the sample could reach this level of production. The plot size (more than 101 m^2) might be one of the reasons for the meager production, but lack of credit from government could not be ignored. Compared to the first category of farmers, the entrepreneurial farmers produced such a surplus of maize that they sold.

By perceiving urban agriculture as an entrepreneurial strategy used by the middle-and high-income households to accumulate money, this new conception of urban agriculture had changed the negative image of the African city. Instead of seeing crisis, poverty, unemployment, and food insecurity as major features of developing cities, the entrepreneurial agricultural discourse focuses on the dynamism of the city which offers opportunity to urban dwellers to generate income. City is therefore seen as an innovative, dynamic, integral and pivotal site of opportunity for urban dwellers (Hovorka 2004).

The binary categorization of urban agriculture (survival and entrepreneurial) poses problem when some characteristics of the survival agriculture can be found in the

entrepreneurial urban agriculture and vice versa. For that reason, I believe that there exists a third type of urban agriculture; the survival-entrepreneurial urban agriculture.

7.1.3 Survival-entrepreneurial urban agriculture

The survival-entrepreneurial urban agriculture is an intermediate urban agriculture. It comprises some characteristics of the survival and those of the entrepreneurial urban farming. In the western sense, survival-entrepreneurial urban agriculture is neither subsistence agriculture nor an entrepreneurial one. Actually, it draws on both. For instance, an urban farmer might practice yard gardens for home consumption and at the same time keeps chickens for income generation.

Table 7.1 Main reasons for households' engagement in food production

Benefits	Number of households
Food	33
Money	6
Food and money	60
Others	1
Total	100

Source: Fieldwork 2004-2005

Table (7.1) reveals that Lubumbashi farmers were growing food crops and raising livestock for two main reasons: food and money. The majority of farmers (60 per cent) pursued both food and income generation, while 33 per cent pursued only food and 6 per cent were engaged only for cash generation.

The number of people engaged in food production for both income generation and household consumption was so large that it contradicts any attempt of binary conception of urban agriculture (Hovorka, 2004; Webb 1996; Mbiba 1995): either urban agriculture was survival or entrepreneurial. By asserting that many poor people also sold some of their produce in order to be able to afford other basic needs, Obudho and Foeken (1999) implicitly acknowledged that a rigid line of separation between survival urban farming (for poor farmers) and entrepreneurial urban farming (for rich farmers) was too simplistic. While the poor farmers might sell part of their produce to meet other needs, the rich farmers kept some of their produce for their own consumption.

Some crops were primarily grown for home consumption while others were grown for commercial reasons. This was done regardless of the socio-economic category of the farmers. For example, the growing of groundnuts by the Lubumbashi poor farmers was done primarily for income generation. Also, the 37 per cent of farmers who were keeping poultry were doing so for economic reasons. They were not necessary from middle-or high-income groups.

This is to say that middle-and high-income earners were not necessarily more entrepreneurial than the majority of urban farmers. Similarly, low-income earners were not necessarily more of survivors than the middle-and high-income farmers. During my visits of farming households for example, the first thing I noticed was the yard gardens. It was during the informal conversations with some farming households that I found out

that some yard gardens were just a tree hiding a forest. For example, a police officer's wife who was growing vegetables for almost three years around the house was also cultivating maize in the periphery of the city (Kilobelobe). While vegetables were grown for home consumption, maize was grown for income generation.

In addition, the claim for more inputs and seeds from many Lubumbashi farmers supported by the Service d'Appui au Développement Régional Integral (SADRI), World Vision International (WVI) and Food and Agriculture Organization (FAO) indicated that many of the so-called survival farmers were also involved in the entrepreneurial urban agriculture activities. Therefore, it becomes practically difficult to pinpoint who was an entrepreneurial farmer' and who was not. It was also observed a tendency among urban farmers of moving from intra-urban agriculture to peri-urban agriculture surely in order to produce much more for both, home consumption and income generation.

Bruneau and Bukome (1987) like many other social researchers selected garden farmers only in their surveys. Therefore, they failed to recognize the existence of other categories of urban farmers.

7.2 Vulnerability of urban agriculture

The stresses and shocks that urban agriculture faces in the city of Lubumbashi from which it must cope and recover include limiting land, poverty that characterizes the majority of farmers, rapid population growth which increases the competition for land

use, and the dependency of rainfall as well as eviction from farmland, conflicts related to land use, and illness or death of the central food producer.

7.2.1 Stresses

The central factor in urban food production is land. Land in the city is not only limited, it is primarily designed for developmental purposes. Developers claim land to build infrastructure such as schools, hospitals, industries, roads, etc. In other words, infrastructure has priority over agricultural activities in urban areas.

Allocation of land around the city is done by the municipal officials who tend to ignore the existence of farmland within and around the city. This leads to the fact that the more construction there is around the city, the less land there is for agricultural purposes. As a consequence, farmland around the city diminishes every year. This raises the question of urban land tenure in the Democratic Republic of Congo (DRC).

Apart from few rich farmers who had tenure around the Lubumbashi city, the majority of farmers occupied available land without any granting of tenure. This category of farmers were the most vulnerable as they might be removed from their farmland any time.

Before the economic downturn (2009) which caused the closure of many mining companies particularly in the Katanga Province, The Democratic Republic of Congo had

been experiencing an economic boom in the mineral sector since 2003. Contrary to the majority of companies operating either in small cities or towns (Fungurume, Tenke, etc.), mining companies such as Chemaf and Rwashi Mining were extracting copper and cobalt in the periphery of the city of Lubumbashi. Their presence in the peri-urban areas constituted a real threat to the expansion of urban agricultural activities.

Relatively large spaces at the periphery were also claimed by middle-and high-income groups of the population for the construction of houses. The competition for land (between several stakeholders: developers, planners, farmers, etc) was so high that it was always in favour of non-agricultural purposes.

In addition, land in the city of Lubumbashi was unequally distributed. There was more available land in the peripheral wards namely Rwashi, Annexe, Katuba and part of Kampemba and Kenya than it was in downtown (Lubumbashi), Kamalondo, and the most industrialized part of Kampemba ward (Bel-air). Because of the small size of available land within the city, the growing of vegetables was the dominant type of crops cultivated (generally in and around the yards, alongside the roads and railways, and under the power lines). As already indicated, within the city, maize cultivation had not been allowed in some areas of Rwashi ward: Matoleo and Shindaika for fear of mosquitoes which cause malaria.

High competition for land use and the preference given to non-agricultural activities pushed some urban farmers to look at alternative options in the surrounding villages.

This was stated as follows by some farmers:

There is no more available land around us. To get a piece of land, I have to walk a long distance away from home. Instead of going there, my wife and I have decided to grow maize at Kafubu village. There is enough space and the soil is still fertile (Interview 16, November 2004).

I am now cultivating in Kaponda village. It is almost impossible to get 2 hectares of land around the city of Lubumbashi. My bicycle helps me to move a lot (Interview 45, January 2005).

Since I have been cultivating in Lumata (village), I have increased my production of maize. Lumata is far away from Lubumbashi, nearly 35 km. I have to do so to produce much more maize. But it costs a lot of money in transport (Interview 62, February 2005)

Despite the competition between stakeholders around peri-urban land, the city of Lubumbashi has been expanding in size by absorbing some villages, such as Kalebuka, Kabulamenshi, Kikalabwamba and many others. As part of the Lubumbashi city, the new areas were dominated by agricultural activities.

Despite the dominance of land as a central resource in food production and income generation, rainfall was crucially needed for non-declining food production and income

generation. From October to April for example, farmers depended on the rains to grow their crops. Any change of climate during the rainy season could bring disruption in the production of food and affects the household income. During the dry season on the other hand, farmers mostly used wells to water their gardens (cabbage for example).

Another threat to urban agriculture with regard to its impact on land is the rapid population growth. The increasing number of people in the city increased the competition for land use not only between developers or planners and farmers, but also between farmers themselves. Lubumbashi population estimated at 1.2 million inhabitants had been boosted by a massive arrival of victims of internally displacement due to recent civil wars. The majority of these internally displaced people practiced agricultural activities.

7.2.2 Shocks

The presence of the mining firms (Chemaf, Rwashi Mining, etc.) around the city of Lubumbashi was a real threat to agricultural activities. Some farmers in Rwashi and Annexe wards were evicted from their farmland. From the moment a farmland is declared the concession of a mining company, farmers had the obligation to leave. As two farmers in Rwashi and Annexe wards stated:

Last year when we were preparing land they told us to leave the area. Our land was occupied by Rwashi Mining Company. Why our municipal officials can not think about us? We have been working on this land since 1993. Now we don't know where to go (Interview 79, February 2005).

My maize farm near to Rwashi ward was destroyed by Chemaf staff. They claimed that that piece of land belonged to them. I moved from that place to Kafubu village (Interview 39, December 2004).

When the mining activities resulted in eviction and dislocation of agricultural activities, farmers were left without their livelihoods for almost one year. The compensation system between farmers (former occupants of land) and the mining companies (new owner) consisted of relocating crops producers to new areas of the city where agricultural activities were not necessarily guaranteed.

Besides the presence of the mining activities in the peri-urban areas of the city, farmers were also confronted with conflicts related to land use. Conflicts often occurred between stakeholders and farmers as well as between farmers themselves. One interviewee in Katuba ward acknowledged being in dispute with another farmer about a piece of land at Luano Airport. Their conflict resulted in physical violence and destruction of crops:

From 2000 to 2002, I grew maize, sweet potatoes and groundnuts around Luano Airport. In 2003, I did not cultivate due to health reasons. Now that I am back, I found another person using my land. After one month of persuading him to leave the place, I decided to destroy his crops. In return, I was beaten up by almost ten people. The matter has now been reported to the police office (Interview 18, November 2004).

Conflicts between farmers often emerged from the scarcity of farmland around the city, while the number of producers increased. More conflicts with much violence might be expected to happen.

Another type of shock to urban agriculture was the loss of capacity of production. This might be the case of death, abandonment, illness, or accident of the main producer. Also included in this category of shocks is failure of a small business (or an attack on it by municipal task force), unexpected family obligations such as funerals, and destruction of crops for public health reasons (Maxwell *et al.*, (2000).

The case of the Shindaika woman reported in chapter 6 is a case in point. The woman fell sick during the year and because of her sickness, her family lost her primary source of food supply and income generation the following year.

Theft is another factor that put urban agriculture under threat. Farmers lost part of their produce. Farmers were threatened by robbers. Therefore, theft discouraged some farmers to expand their activities.

Poverty must be included among factors that threaten urban agriculture. Poverty limits farmers to extend their activities. Farming households were willing to increase their

production. The presence of available land at the periphery of the city motivated farmers to expend their activities. Unfortunately, lack of financial capital limited their efforts. To enlarge farms, farmers needed to hire workers, to use agricultural inputs, such as fertilizers and improved seeds. The majority of farmers were unable to afford. Farmers were too poor to buy fertilizers and improved seeds. Land around the city of Lubumbashi was so overused that it required the use of agricultural inputs to continue producing. As stated by a researcher from the Food Industry Research Centre (Centre de Recherche Agro-Alimentaire-CRAA):

Lubumbashi soil has got too much acid because of the presence of copper and cobalt. This kind of soil is adapted to sweet potatoes than to maize crop. People who cultivate maize crop don't make good production unless they use fertilizers.

Instead of hiring farm workers for example, the majority of farmers resorted to their household members as workforce. Unfortunately, household members were not always well trained to undertake this kind of activities.

Lack of credit policy towards urban farmers in the Democratic Republic of Congo and the limited support that farmers benefited from NGOs constituted a constraint to the development of agricultural activities within and around the city. This point will be further discussed in chapter 8 relating to the institutional support for urban agriculture.

For urban agriculture to become an entrepreneurial activity in Great Gaborone, the government of Botswana removed colonial legislation in commerce, and provided credit and extension services to local business persons and farmers through a number of institutional initiatives. Hovorka (2004) pointed out that a total of P 5 007 069 was distributed to these enterprises through small-scale, as well as medium-scale grants.

7.3 Sustainability of Urban Agriculture

For urban agriculture to become sustainable, this practice has not only to be able to cope with and recover from stresses and shocks, but also to adapt to the dynamism of the city and to play multiple functions (economic, social and environmental). This section shows how Lubumbashi farmers diversified crops to respond to their own needs and to those of other urbanites, and how they were able to move from one area to another in search of more space or in case of eviction.

Urban agriculture, by playing different functions, meets the needs of individuals, households and the city at the same time. While at the household level, urban agriculture might be considered a source of food supply and income generation, at the city level urban agriculture might be a source of environment management (Van der Veenhuizen and Danso, 2007; Fleury and Ba, 2005).

7.3.1 Adaptability of urban agriculture

The adaptability of urban agriculture to the urban dynamism might take two forms: diversification of crops grown and animals raised, and change of location. Food crops were mainly grown depending on the farming household needs. To fight hunger, Lubumbashi households grew crops such as maize, sweet potatoes, groundnuts, and vegetables. As previously said, maize meal was the food staple for the majority of Lubumbashi dwellers. In addition to maize, vegetables (amaranths, sweet potato leaves, and cassava leaves) were directly associated with the diet of the Lubumbashi population. However, Lubumbashi farmers also kept chickens, goats, pigs, etc. generally to generate an income.

Therefore, the food crops grown and livestock kept responded to the needs of farmers as well as to needs of the rest of Lubumbashi populations. Despite the small quantity of maize produced, fresh maize was highly demanded by Lubumbashi inhabitants. It was the same for some vegetables such amaranth, marrow, cabbage and sweet potatoes as well as groundnuts.

The Kadony household, as reported in chapter 6, commercialized groundnuts and made a lot of money from it. This is to say that as long as urban agriculture continues to adapt to the needs of various categories of urban population, its sustainability might be ensured.

On the other hand, because of the high demand of land in the city, urban agriculture had to change its location all the time. When Rwashi and Annexe farmers were evicted from their farmland because of the mining activities, farmers moved to Kilobelobe while others used Kipushi roadsides to grow maize, sweet potatoes and vegetables. Land shortage in the city of Lubumbashi had pushed some farmers to seek land in Kaponda, Kamakanga and Kafubu villages. The expansion of Lubumbashi was engulfing villages. Therefore, it can be deduced that as long as surrounding villages are to be absorbed and become part of the city, the new semi-urban areas have many chance to be dominated by agricultural activities.

7.3.2 Multi-functionality of urban agriculture

Food supply and income generation are the two dominant functions of urban agriculture in developing countries. However, urban agriculture can maintain landscape and biodiversity (environment management). Therefore, the social, economic and environmental functions are those to be analysed in the following sections.

Social function consists of growing food crops and keeping livestock for home consumption. The majority of farmers interviewed were poor. They were unable to afford three maize meals per day. Their average salary was US$ 10 while a maize flavour bag of 50 kgs cost US$ 40. Fifty-eight per cent of farmers were living in unplanned areas where poverty was rampant. Some meals such as meat, rice, eggs, etc. were classified among luxurious meals. Therefore, they were excluded from the majority of Lubumbashi

residents' diet. Even though more than 50 per cent of household income was spent on foodstuffs, what was consumed was quantitatively and qualitatively poor.

The practice of urban agriculture alone or combined with other activities constituted the main source of food. Households were able to afford two to three maize meals per day particularly during the harvest period which lasted three to four months. Therefore, households' expenditures on foodstuffs were reduced. The surplus of production was sold to meet other needs.

As an activity that included all members of the household (directly or indirectly), urban agriculture played a role of social integration. Each member of the household contributed to the production of food and income generation. Women particularly as the main producers reinforced their position in the household in decision-making.

As it was noticed in Table 5.3, the 12 Lubumbashi farmers with a University degree were engaged in food production by lack of job on the market place. Thus, they produced food and became useful to their household.

Therefore, the social function of urban agriculture shows that this activity might be a strategy of social inclusion as well as a strategy of poverty alleviation.

Economic function consists of practicing urban agriculture for commercial purposes because of its profitability. Urban farming responds to the effects of urbanization (urban poverty, food insecurity/malnutrition) not only by producing food for home consumption, but also for income generation.

Activities were undertaken by low-income households, middle- and high-income households. While the majority of high-income farmers pursued enrichment as the main objective, poor farmers distinguished between cash crops and food crops. Even though food crops could be sold, they were mainly grown for food supply. On the contrary, cash crops such as groundnuts were used for income generation. However, livestock in all the categories of farmers were kept for commercial purposes.

Only 5 per cent of the sample used urban agriculture as a strategy of enrichment. Through the practice of cultivation, these households became food secure by moving out of poverty. Since then, their main objective had become money not be spent immediately, but to be re-invested in order to produce much more. The Kadony household as a case in point in this category of farmers needed US$ 500,000 to acquire 10,000 hectares of land in order to expand its activities.

Therefore, it may be deduced that urban agriculture can lead to food security and causes profitability. However to reach this status, urban agriculture must first provide food

security to the producer and later on become a strategy of enrichment by ensuring a continual production. In addition to the above functions, sustainable urban agriculture includes environmental management and recreational services.

Environmental function of urban agriculture implies the management of environment or maintaining landscape and biodiversity. Urban agriculture constitutes a green belt around the city of Lubumbashi from October to May. During this period, the majority of roads (Kasapa, Kipushi, Likasi, and Kasumbalesa roads) were often invaded by wild grass. Agricultural activities that took place alongside these roads cleaned them.

Also, waste disposal has become a serious problem for most developing cities. Urban agriculture has become a solution to the accumulation of waste that municipal authorities are unable to transport out of the city. By turning wastes into a productive resource, urban agriculture could contribute to making the city clean.

The presence of fruit trees in almost each yard was noticed during the visits of farming households. Although trees were primarily planted to produce fruits (to supply food and to generate income), they constituted at the same time a solution to soil erosion in the city. However, while fruit trees continued to be planted in many yards, non-fruit trees around the city were disappearing.

Recreational function of urban agriculture was not yet in use in the city of Lubumbashi. Urban agriculture as a leisure activity has to be developed in the second largest city of the Democratic Republic of Congo (DRC).

7.4 Conclusion

This chapter has discussed about the sustainability of agriculture in and around the city of Lubumbashi. The argument was that to become sustainable, urban agriculture must, in addition to coping with and recovering from stresses and shocks, adapt to the urban dynamism of the city by diversifying its activities and playing multiple functions.

A number of stresses threatened the practice of urban agriculture in the city of Lubumbashi. These include the competition for limited land between multiple stakeholders, poverty among farmers, making them unable to afford fertilizers, and rapid population growth which increases the competition for urban land. Besides these stresses, some shocks occurred to Lubumbashi farmers. These include conflict between farmers, eviction from farmland, theft of crops, and illness of the main producer.

Despite the existence of the above limiting factors, Lubumbashi farmers adapted their activities to their environment by diversifying food crops and livestock and by moving from one place to another, as well as by extending their activities into the surrounding villages while the city itself was engulfing them and by greening the city and transforming waste into a productive resource.

Because the sustainable livelihood approach recognises that policies, institutions, and processes condition the environment within which people operate (macro and meso) and the importance between these levels, Chapter8 deals with the support that Lubumbashi farmers benefited from some non-governmental organizations and development agencies of the United Nations.

CHAPTER 8

Micro to Macro: INSTITUTIONAL SUPPORT FOR URBAN AGRICULTURE

Introduction

The sustainable livelihood approach states that people's livelihoods depend on their assets, but also on the external environment they face. The two key components of external environment include vulnerability and range of policies, institutions, and processes.

In chapter7, I identified factors that threatened the sustainability of urban agriculture and how Lubumbashi farmers coped with and recovered from their vulnerabilities. This chapter focuses on the support that Lubumbashi farmers benefited from state and non-state institutions.

Therefore, this chapter adopts a framework provided by Khanya Institute[11] in the analysis of institutional support to poor's livelihoods. First, the chapter identifies different levels of support and action. These include local, district, meso- and macro levels. Thereafter, different types of organization are distinguished from government (state) to parastatal,

[11] Khanya-African Institute for Community-Driven Development

private sector, NGOs, etc. Finally, two policy issues are addressed. These comprise poverty and urban development issues.

8.1 Levels of support and action

8.1.1 Are urban people active and involved in managing their own development?

In all seven wards of Lubumbashi, individuals and households were very active in farming. They grew food crops, planted fruit trees and raised livestock. However, agricultural activities were widely spread in the outskirts of the city than in the inner city.

Industrial economic activities dominated the residential and planned areas of the city. Because of the presence of the industrial activities, the inner city lacked land for agriculture use. Though agricultural activities seemed less visible, some residents practiced them in the urban-rural areas where land was available.

In contrast, agricultural activities increasingly emerged in the unplanned areas of the city. Open spaces (University, hospital, schools' concessions, roadsides, etc.) were used to grow food crops such as sweet potatoes, groundnuts, vegetables, maize, etc. Agricultural activities were so high in Annexe ward that each yard was farmed. In average, third-quarters of a yard were used for agricultural purposes.

The spread of these activities in the outskirts of the city drew the attention of churches, development agencies of the United Nations and non-governmental organizations. Unfortunately, government agencies had a very little role to play while people's expectations were huge. Government was unable to provide agricultural inputs to support local action. As a consequence, the link between farmers and the district, traditional structures and local government was missing. Although the presence of some structures of the national agricultural department at ward, district, and province levels, farmers didn't receive any help from these government institutions. As a result, food producers resorted to institutions and organizations such as churches, NGOs and the United Nations development agencies.

A strong local area-district links are a prerequisite for effective micro-macro links and for progress in building district capacity actually resulting in improved livelihoods at micro level (Khanya, 2000a:1).

8.1.2 Is there a dispersed and active network of local service providers?

At the lower level of the city (*quartier*), veterinary, agricultural input services were missing. They were only envisaged at ward, district, provincial and national level. The lack of institutional presence at the local level contrasted with a range of agricultural departments which included the veterinary laboratory of Lubumbashi, national seed departments, national rice programme, national department of agricultural popularization, national department for fertilizers, national department for agricultural statistics, etc. Apart from the department of agricultural statistics, the rest of departments were not

functioning at the time of interview. From 1980 to 1992, the department of agricultural statistics suspended the publication of agricultural statistics in the Katanga Province because the Provincial Agricultural Conference which was held during that period of time was supposed to do so (Provincial Agricultural Department Report, 2003-2004).

The veterinary and agricultural input services were not only missing, they were even ignored by the majority of farmers. Therefore, their impact was very little. The lack of support and advice at local level, the limited budget related to agricultural input services could not encourage the expansion of agricultural activities within and around the city. As a consequence, urban farmers did not escape from poverty.

However, some private sector traders were present. But the majority of farmers could not afford the price of agricultural inputs.

8.1.3 Are district services effective, coordinated and responsive?

In Congolese cities, local government is based at the ward level. A decentralization process is underway in the Democratic Republic of Congo. Since the 2006 elections at the national and provincial levels, the country has been struggling to organize local elections. In the Congolese legislation, district services such as veterinary and agricultural inputs, marketing and agricultural finance are the extension of the province services.

Since the installation of the Provincial Government (2006), the autonomy of ward has been admistratively and financially undermined. Local officials' actions depend too much on the directives from the provincial authorities.

As a district level does not exist in the city, private sector, NGOs and parastatal operators were those that provided many of the key services at the local level. International non-governmental organizations such as World Vision International, Action Against Hunger, and others were very important and provided many basic services (distribution of seeds, technical advice, etc.). The major problem was the coordination of all the non-government operators with the Government plan. In the absence of a district level, it is the provincial level at which national policy making can interact with people's aspirations.

8.1.4 Is the province (upper meso-level) supportive and supervising the ward?

The upper meso-level is an intermediary level between service delivery and policy-making. At the provincial level, there is a Government with a significant administrative and financial autonomy. The Provincial Government supervised and supported districts and local Government and implemented national policies and programs.

To ensure the effectiveness of local delivery, the upper meso-level may play the following roles:

-Some form of regional planning, to plan for large scale initiatives, and to ensure consistency between lower level plans;

-Technical support for service delivery, as the centre is too far to provide support, or where economies of scale dictate that plant cannot be located at district level (although this could also be contracted out);

-Coordination (Goldman, 2000: 8)

The Katanga agricultural conference held in 2008 can be taken as a case in point in that it shows how the Provincial Government can plan a crucial initiative and provides technical support for service delivery.

Given the situation of food shortage in the Katanga Province, the Provincial Government organized an Agricultural Conference from 16 to 19 June 2008, to evaluate the situation of Food Security. The conference report states that (i) only 10 percent of 152 680 km² (15,268,000 ha) of arable soil in the province are cultivated, (ii) while the population need for maize was estimated at 988,156.33 tons. But only 500,854 tons of maize were produced in 2006. To cover a deficit of 487,302.33 tons, the province imported maize particularly from Zambia, Tanzania and South Africa.

Participants at the Katanga Agricultural Conference identified a number of factors that were estimated to be at the origin of low agricultural production. These include a weak

exploitation of arable soil (10%), use of rudimentary tools (hoe), lack of roads and bridge for the evacuation of products, low prices of agricultural products, and the dominant presence of mining companies. Low productivity of maize was explained by the lack of inputs and credit, climate change, and conflicts.

To achieve the self-sufficiency of maize in the Katanga Province, the conference recommended (i) an increase in the surface of arable soil cultivated; and (ii) an increase in the productivity of various crops, such as maize, rice, groundnuts, cassava and others.

A number of strategies were adopted to achieve food security in the province. The first strategy consisted in subsidizing agriculture with improved seeds, fertilizers, tools, etc. The second strategy was related to the organization of farmers into cooperatives or associations. The third and last one was about the involvement of private sector and NGOs in the supply of inputs and trade of products.

The central role the Provincial Government envisaged to play consisted firstly of forming agricultural associations and secondly in providing them with tractors. About 220 tractors were bought by the Katanga Provincial Government to be distributed to territories. Also, provincial authorities promised to train members of agricultural associations to ensure a good maintenance of their means of production. In return, agricultural associations had

the obligation to pay back all subsidies received from the Provincial Government or the private sector.

Without assuming the efficiency of the above strategies, however it can be noticed that provincial authorities recognized the importance of credit, improved seeds, and fertilizers supply to boost the agricultural productivity. It must be mentioned however that urban agriculture was ignored in the provincial strategies for food security.

Although urban agriculture was not explicitly mentioned in the provincial policies for food security, the provincial agricultural department continued to establish figures about the different food crops grown. In addition, the Provincial Minister of Agriculture encouraged mining operators to undertake agricultural activities in addition to their main activities.

8.1.5 Is the centre providing strategic direction and redistribution and oversight?

The national and provincial levels constitute the centre, according to the 2006 Constitution. This means that the Provincial Government shares some competence with the National Government in areas such as health, education, welfare and agriculture. These areas have direct impact on people's living conditions.

The Government of the Democratic Republic of Congo which was elected in November 2006 adopted the Poverty Reduction Strategy Paper elaborated in July 2006, called Poverty Reduction and Growth Strategy Paper (PRGSP). The PRGSP sets an ambitious development policy agenda to be implemented at the national and local levels. Five pillars of actions are highlighted:

(i) Promoting good governance and peace-building;

(ii) Consolidating macroeconomic stability and economic growth;

(iii) Improving access to social services and reducing vulnerability;

(iv) Combating HIV/AIDS; and

(v) Promoting community dynamics (PRGSP, 2006-8)

More interesting, the PRGSP includes a strategy for urban poverty reduction. To achieve this, the Congolese Government decided to pursue three strategic areas summarized as follows: (i) improving the living conditions of city dwellers by ensuring: (ii) improved urban management and increased accountability and transparency, with particular emphasis on (iii) rectifying the shortage and poor quality of housing.

Though the strategy for urban poverty reduction did not explicitly list urban agriculture among the actions to be undertaken in order to improve the living conditions of the urban population and town planning, it retained evacuation and treatment of solid and liquid

waste and the organization and supervision of the informal sector among them. At this level, urban agriculture as source of food supply, income generation and environment management can play a significant role.

The implementation, monitoring and evaluation plans for the poverty reduction strategy has yet to be defined as recommended by a team of the World Bank. If at the national level, it is envisaged five ministers, an inter-ministerial commission, and a national coordination unit to perform supervisory and coordinating functions, at the provincial and local levels, these structures are missing.

However, the paper states that the Central Government intends to put in place participatory implementation, monitoring and evaluation mechanisms, but their modalities and the role of non-governmental entities have yet to be determined (World Bank Report, 2007). The constitutional arrangement that recommends 40 per cent of Government Revenue collected in a province to being retained at the province and an additional 10 per cent transferred to finance an equalization fund for investment purposes has never been implemented.

In addition, the PRGSP is too dependent on external aid. More than half of the Congolese national budget has been financed since the transition period (2003-06) up to date by the international community and the financial institutions, namely the World Bank and IMF.

8.2 Types of organization

The three types of organization include government, two non-governmental organizations and one development agency of the United Nations, FAO.

8.2.1 Government

Despite the weakness of the state and the collapse of the market economy, Congolese people still see the state as a provider rather than a facilitator or a state in partnership. After governance reforms and structural adjustments initiated in the 1980s to reduce the role of the state, the World Bank now recognizes the need for state-led intervention to eradicate poverty. If the Government is to adopt a facilitation role, a number of skills are required: (i) setting the rules of the game through policies and incentives; (ii) increasing the skills of public servants to operate in facilitation roles with their clients (Khanya, 2000: vii).

By arguing that alternative development may begin locally, but it cannot end there, Friedmann (1992) sees the major role that only the state can play. Local empowering action requires strong state institutions. But the strong state must be accountable to citizens and responsive to their claims.

By considering the high competition for the use of urban land, urban farmers need a state that is strong enough to protect their farmland around the city. It was declared by some

farmers in Rwashi ward that mining companies such as Rwashi Mining evicted them without any compensation. In this case, only a strong state with a working judiciary system can defend the rights of the citizens.

Even though some NGOs granted some farming households improved seeds, fertilizers, and technical training; their quantity was insufficient compared with their needs. The Government at the provincial or the national levels may play a major role by establishing a credit system, subsidizing agriculture, and by assisting farmers financially, as did the government of Botswana which promoted urban agriculture at the level of an entrepreneurial activity (Hovorka, 2004). The initiative of the Provincial Government to allocate 220 tractors to the 22 territories of the Katanga Province should be extended to urban areas to support urban farming. However, this shows that the Government is not necessarily opposed to the local development.

In the case of the Democratic Republic of Congo, the protection of citizens from warlords is a crucial task. Only a strong state with an organized and disciplined army can play this role. Whatever the support from NGOs, there are functions they cannot fulfil. Financially, the majority of NGOs are limited. They rely too much on funds from the Western development agencies, which attach conditions to their funds and grants.

8.2.2 Private sector

Agricultural activities might be less visible in Lubumbashi, Kamalondo and Kenya wards partly due to lack of sufficient available land, but remained the most practiced activities in highly populated wards such as Annexe, Rwashi, Katuba and Kampemba. The private sector supplied agricultural inputs, mainly improved seeds, fertilizers, and veterinary services. The majority of urban farmers being poor, they could not afford the prices of agricultural inputs. For example, a bag of fertilizers of 50kgs cost US$ 30 in 2004-05 while the average income of the majority of farmers was less than US$ 50 per month.

The National Department of Fertilizers and Inputs (Service National des Fertilisants et Intrants Connexes-SENAFIC) ceased to deliver fertilizers and inputs due to lack of funds. The National Department of Seeds (Service National de Semences-SENASEM), specialized in delivery of improved seeds to farmers was in the same situation. As agriculture was liberalized, the private sector provided household with commercial inputs.

8.2.3 NGOs and Development Agency

There were over 22 non-governmental organizations (NGOs) operating in the city of Lubumbashi and its surroundings. However very few NGOs were financially able to support people growing food crops. That is the reason why I selected two NGOs and one development agency of the United Nations (FAO). All three organizations were financially viable and promoting urban agriculture. I particularly chose one local

confessional NGO: Support-Service to Integral Regional Development (Service d'Appui au Développement Régional Integral-SADRI), one international NGO: World Vision International (WVI), and Food and Agriculture Organization (FAO) a specialized agency of the United Nations.

SADRI is a Christian NGO of the Church of Christ in Congo (CCC). Its target is those often considered poor and vulnerable especially women and children. This NGO operates in four areas of development namely (i) search for food security, (ii) promotion of community health, (iii) civic education, (iv) and sustenance of community organizations. To achieve its first goal (food security), SADRI encouraged urban population to cultivate food crops. Most of the actions took place in the city of Lubumbashi and its surroundings. People benefiting from SADRI support grew food crops for home consumption as well as for income generation.

World Vision International is a Christian NGO partnering with the communities. This NGO addresses the causes and consequences of poverty through transformational development, disaster relief and advocating for social justice to achieve sustainability. Child sponsorship is the method commonly used by World Vision to provide basic needs namely food, shelter, clothing, medical care and education to children who were born in poverty. Since 1999, World Vision Congo has also undertaken to distribute agriculture inputs.

FAO is an organization of the United Nations in charge of agriculture. In the city of Lubumbashi, this organization distributed tools and inputs to sustain small-scale farms.

Given the levels of poverty for the majority of people involved in urban farming, SADRI, World Vision and FAO distributed tools such as hoes, watering cans, and long knives as well as agricultural inputs (seeds, fertilizers (NPK and urea)), but in limited quantity. In addition to tools and agriculture inputs, SADRI and the World Food Program sometimes supplied urban farmers with maize flour in time of food shortage, generally during the period before harvest. In addition, World Vision provided technical training to farmers. Farmers learnt among many other things how, where, and when to sow seeds.

Commonly, the three agencies requested farmers to be organized into associations (farming development associations). Structures of this kind make follow-up easy. Each association included men and women. Contrary to FAO and SADRI which distributed seeds and inputs to urban farmers' associations without claiming reimbursement, World Vision initiated a payback system. The beneficiaries were required to pay back about 750kgs/ha of maize bags at harvest time. Additionally, farmers' associations got a monitor and an agronomist for technical advices on field.

In response to the question about the true beneficiary of their material and technical support, the three agencies indicated that the poor, especially women and children, were

the target of their actions, especially people living in the peri-urban areas of the city. This includes Annexe ward and large parts of Rwashi, Katuba, Kenya, and Kampemba wards.

With the support of the world Food Program in 2002-03, SADRI distributed 220 tons of food to 2250 farming households to encourage urban farmers in their actions. During the same period, World Vision (Kampemba ADP) allocated agricultural credits to 475 Lubumbashi farming households in form of maize seeds and fertilizers. With an average of eight people per household, it can be deduced that SADRI and World Vision supported a total of 21,800 people in 2002-03. The number of associations supported by World Vision in 2004 increased from 19 to 25, meaning 250 more households than the previous year.

The impact of the three agencies' actions can be evaluated in terms of (i) the number of beneficiaries, (ii) the quantity of agricultural inputs bought and distributed to farmers, and (iii) the production of food crops realized by urban farmers. When the interview was conducted, World Vision Congo, particularly the Kampemba ADP assisted materially 25 farming development associations while in 2003-04 there were only 19 associations representing 464 farming households. The 25 associations comprised 625 farming households. With an average of 8 people per household, this means that about 5000 people were assisted with seeds and fertilizers by World Vision/ADP Kampemba. In addition to the agronomist, 60 monitors were trained by World Vision in order to supply technical assistance to farmers.

During the same period, SADRI distributed inputs to 26 associations. These associations represented 315 farming households, meaning 2520 people assisted. It is important to note that these two NGOs had been assisting urban farmers for more than four years.

As earlier on stated, the material support consisted of distributing tools and agricultural inputs. World Vision (Kampemba ADP) distributed to its six associations (1999-2000) 20,400 tons of NPK, 6,500 tons of urea, and 1,950 tons of maize seeds, 360kg of soya beans and 560kg of groundnuts. Total areas under maize production were 60ha, 7ha under groundnuts and 6ha under soya beans. One hundred and forty-five households benefited from the inputs and technical assistance. Plans for monitoring and evaluation and other activities were also laid out. Two years later (2002-03), 19 associations benefited from the same kind of inputs, and in 2003-04, 25 associations were constituted and benefited from material and technical support (WV Congo/ ADP Kampemba Report, 2004).

Among all associations supported by WVCongo/ADP Kampemba, Lumata association was the most well known success story. In 2004 for example, Lumata members generated income from the sale of maize stored in the cereal bank built up by World Vision International/Congo. Consequently, the association increased the size of their farm from 20 hectares to 40 hectares.

The visits of some agricultural associations in Bongonga, Kafubu, Kamakanga and Kikanda gave an idea on farmers' opinions about the above mentioned organizations.

The first thing that urban farmers expected from NGOs and development agency of the United Nations was land. Famers recognized that land issue was the most crucial problem in urban areas. All wanted the intervention of World Vision to obtain land from traditional leaders and/or owners of land around the city of Lubumbashi. To acquire 5 to 10 ha of land around the city for each association of farmers was not an easy task. However, farmers were encouraged to seek land in the surrounding villages. Arrangements were made with owners of land around the city who currently were not working on it. The arrangements were done either between World Vision and owners, or between owners and members of association. Often a pay back system bound them.

The second most important thing was agricultural inputs and tools. Farmers indicated that they could not afford to purchase agricultural inputs (seeds, NPK and urea). One bag of fertilizer (25 kg of NPK or urea) cost 30 American dollars in 2004-05. World Vision Congo, particularly the Kampemba ADP spent 97,860 American dollars in buying maize seeds, inputs, training monitors, and in constructing a cereal bank (World Vision, Kampemba ADP Annual Report 2004).

It must be acknowledged that World Vision was not always able to cover financially all agricultural input needs of associations. There were complaints among farmers because of (i) the insufficiency of inputs distributed, (ii) the quality of the material distributed, or

(iii) the late distribution of inputs. One woman farmer in Bongonga expressed her disappointment in the following terms:

"At the end of the last season, World Vision promised us to double the quantity of NPK and urea we received. Therefore, I decided to increase the size of my maize farm from 50 square meters to one hectare. But I was disappointed when I received the same quantity of inputs like last year. As you can see (showing her farm), the difference between the area where I used NPK and urea and that where I did not is noticeable" (Interview 36, December 2004).

The third importance of support from NGOs was expressed in terms of food supply in between harvest periods, particularly for the poorest of the poor. During the agricultural season, farmers were busy working on the association's farm. Therefore, they could not at the same time undertake other generating-activities. That is the reason why some farmers (poorest of the poor) claimed food assistance during the period of food shortage (November to May), which was characterized by rising food prices.

Highlighting the difficulty he encountered to feed his household, a farmer declared: *"Siye tulisha zoweya kutumika makazi ya kwachana achana. Kutuambia tulime tu mashamba bila kufanya makazi ingine, nikutuwa. Tutaishi jee? Tunapenda Vision Mondiale anze kutukabulia chakula wakati tukonalima"* (*We are used to undertake several survival activities. To ask us to only cultivate, how are we going to survive? We propose that World Vision distributes food while we are busy growing food crops*) (Interview 28, December 2004).

By keeping farmers busy working on the association farm was considered by NGOs as a way for farmers to produce the quantity of maize required, and for which they received inputs.

Sustainable livelihood literature argues that rural and especially urban households depend on a diversity of activities. In sub-Saharan Africa, for example, studies have shown that 30 to 50 percent of rural household income is derived from non-farm sources (Carney, 1998: 53).

With the support of Non-Governmental Organizations in terms of seeds, fertilizers and technical training, some Lubumbashi farmers organized into agricultural associations had increased their productivity and succeeded to recover from hunger. As the major providers of these agricultural inputs, NGOs become substitute in service delivery. They can provide services that are much more appropriate to local communities. Sometimes, they are able to react more quickly to local demands (Willis, 2005).

Large amounts of multinational and bilateral aid are now channelled through NGOs. This is partly the result of policies adopted by the World Bank and the International Monetary Fund (IMF), which continues to undermine the role of the state in Africa and other developing countries because of the so-called "inability of the state to manage the economy and to promote growth".

As most of NGOs (local and international) depend financially on developed countries, they have to apply the policies of their donors. In other words, these donors control the state and the non-governmental organizations. Because donors are those who impose the policies to be implemented on in the fields, there is little evidence of their record in helping to change policy (macro) and so their impact on sustainable livelihoods is primarily as a provider (Khanya, 2000: viii). This is to say that NGOs as many organizations of civil society are not as neutral as they might appear.

Locally, the majority of NGOs highly recommended the cultivation of maize as a requirement to get financial assistance. Where farmers might prefer a combination of several crops on the same piece of land, World Vision generally discouraged this kind of technique, preferring single-crop farming. NGOs promote farmers without distinguishing between poor and the poorest and the poor. By so doing, NGOs put the poorest of the poor in a position that they had to choose between to abandon farming and to continue doing so as they could not wait until the next harvest to feed members of their households.

8.2.4 Policy issues

Apart from the Poverty Reduction and Growth Strategy Paper (PRGSP) in which a strategy for urban poverty reduction has been elaborated, the Ministry of Rural Development through the National Support Department for Urban and Peri-Urban Horticulture (SENAHUP) promotes urban and peri-urban agriculture

The mandate of SENAHUP is to promote urban horticulture by coordinating farming and fruit-growing activities, and to provide extension services and business development services to farmers associations, though it might be ignored by urban farmers. In Kinshasa however, according to Mayeko (2008), this structure is operational. Unfortunately, the impact of this national service for the promotion of urban agriculture is almost non-existent at the provincial and the local levels. That is why the majority of Lubumbashi farmers resorted to the services of NGOs and development agencies of the United Nations to obtain agricultural inputs, finance and technical advice.

Since 2007, the Congolese Government implements a programme consistent with the pillars of the PRGSP, which may be summarized as follows: (i) infrastructure; (ii) employment; (iii) education; (iv) water and electricity, and (v) health. The first phase of this program consisted of building and rehabilitating roads in rural and urban areas. Almost US$ 6 billion were borrowed from China to finance road works and the rest of the program. However, the Government needs to develop a working plan with specific actions, budgets, timing, and definition of the entity in charge at least for the first years.

8.3 Conclusion

The sustainability of urban agriculture in the city of Lubumbashi depends, in addition to its capacity to recover from stresses and shocks, adaptability to the dynamism of the city and multi-functionality, on the institutional support which may be local, provincial or national.

As it has been seen, Lubumbashi dwellers were very active in growing food crops and raising livestock and poultry for food supply and income generation. However, for this activity to become a sustainable livelihood strategy, the above mentioned conditions must to be met.

In spite the existence at the provincial and the national levels of services, programmes and policies for the promotion of urban agriculture, a failed state and a collapsed economy rend the effort ineffective. It is in this context that NGOs and some development agency of the United Nations have become the substitute of the Government at the local level by delivering services such as seeds, tools, fertilizers, and technical training. A micro-macro coordination of actions is needed between NGOs and the Government.

CHAPTER 9

CONCLUSION: HOUSEHOLD, NGOs AND STATE

Introduction

The study has focused on household livelihoods in the city of Lubumbashi, in the Democratic Republic of Congo. Urban agriculture as the emergent livelihood in the city has been chosen and analyzed because of its potentiality in food supply and income generation. The research sought to answer the following questions: (i) what are the socio-economic and demographic characteristics of urban farmers; (ii) what are the push and pull factors behind the rise of urban agriculture in the city; (iii) in what ways agriculture within and around the city of Lubumbashi is a response to food insecurity; and (iv) is urban agriculture sustainable?

The working hypothesis of the study was that urban agriculture was a result of a combination of several push and pull factors in the post-Gécamines era characterized by acute economic crisis, at a time of rapid population growth and increasing urban poverty. In such context, urban agriculture becomes an adequate response to food insecurity if it is economically viable, socially adaptive to urban dynamics, and capable of recovering from stresses and shocks.

9.1 Household as a refuge for the poor

The economic crisis that started in the 1970s when oil prices quadrupled and coincided with the dropping of copper and cobalt prices at the international market (principal export commodities of the DRC) deepened in the 1990s with the collapse of Gécamines. At the same time, lootings took place in many Congolese cities and towns, which forced many companies to close down. Economic infrastructure was destroyed, throwing many thousands of people into unemployment.

The household therefore became the only place where people found refuge by developing various survival strategies, such as growing food crops in and around the city, street trade, smuggling minerals, and so on. This confirms Burawoy's (2000: 5) assertion that "on the one side the market in the postmodern world has impelled the degeneration of the manufacturing sector while on the other hand it has driven the vast majority of the population back on their own resources, intensifying household production".

The shift from the market economy to the household economy has led some researchers to counterpose the household (civil society) to the state. With regard to the state (national level) and society (local level), a new paradigm in the study of African politics emerged in the 1980s. The new paradigm regards the state with scepticism, at the same time that civil society (with its institutions and organizations) is characterized (Ferguson, 2006: 96) as a vigorous, dynamic, emerging, bustling assemblage of progressive civic organizations

that could bring about democracy and development if only the state would get out of the way. While the state appears as an obstacle to development, civil society is presented as the solution to it.

However, by contrasting the state to civil society, the new paradigm fails to recognize the importance of the state. As Friedman (1992) acknowledged, development may start at local level, but it cannot end there. For development to move from local level to the macro level of the society, the state has a major role to play. To establish a link between the micro- and macro-level of society, state and non-state institutions have a role to play.

9.2 NGOs

The move away from the state and the market economy as major players in development has been associated with the proliferation of Non-Governmental Organizations. Because African governments have been seen as unable to manage the economy and promote growth, multilateral and bilateral aid has been channelled since the 1980s through NGOs. In the mid-1990s for example, at least US$ 1 billion of official development assistance went straight to NGOs rather than to Southern governments (OECD figures quoted in Willis, 2005: 99).

Since then, NGOs have been regarded as the solution to the perceived limitations on the state's or market's ability to facilitate development. Similarly, the creation of NGOs was justified by their ability to alleviate the poverty of people at the grass-roots level. Instead

of directing aid to poor people through a corrupt, despotic and predatory state, this has been channelled through NGOs. Their involvement in local initiatives to fight hunger, poverty, and so on, is taken as an argument to justify the preference given to them. It is argued for example that NGOs provide services that meet the needs of local communities. Chabal and Daloz (1999: 23) enumerate a number of objectives pursued by NGOs, which are often referred to as their specificities: defence of the poor, child protection, the safeguarding of the environment, the promotion of integrated development, etc. However, the activities of NGOs alone cannot realize development.

Non-governmental organizations such as World Vision International and SADRI, as previously noted, supplied fertilizers, improved seeds, technical training, and tools to urban farmers that very few farmers could afford. Far from having a greater say in their activities, farmers were forced to cultivate maize crop if they wanted to receive any assistance from World Vision International. The practice of diversification of crops on the same plot was prohibited in the agricultural associations supported by World Vision International. Only single-crop farming was encouraged. The reason was that single-crop farming was more profitable than multiple-crops farming.

Also, I noticed that when the poorest of the poor struggled to find food during the planting season because of shortages, NGOs prohibited any activities other than food production in the association. This discouraged poor farmers from engaging with agricultural associations.

While locally NGOs tend to assist poor households through their activities, at the national level they reduce the role of the state at the same time. As Ferguson (2006: 102) argues, NGOs help Western development agencies to get around uncooperative national governments by eroding their power (and usurping their sovereignty). In other words, Western countries not only deprive African countries of resources through structural adjustment programmes, but through NGOs, they also take over the most basic functions and powers of the state, such as health care, school, roads, etc. This is to say that either the state or the NGO operate under the direction of Western countries through their corporations and international financial institutions. Therefore, the type of development that NGOs might generate is not necessarily intrinsically theirs but that of Western countries.

9.3 The state

The rise in importance of the household economy in the context of economic crisis should not mean the disappearance of the state. In other words, households must not be counterposed to the state. By saying that, I am not trying to ignore what has been happening in Africa.

Debates about the nature of African states still occur. Precisely, the debate is about the role of the African state in the modernization of African society. Researchers seek to know if the modern state on the continent can promote development or not. Many studies carried out show that the African state is weak (Bayart, Ellis and Hibou, 1997; Chabal

and Daloz, 1999; Ferguson, 2006). Its weakness has rendered it unable to promote economic growth, without which there is no development.

The economic and financial crisis of the 1970s is taken as a turning point in the weakening of states in sub-Saharan Africa. The major attempt to address the economic crisis was structural-adjustment programmes in the 1980s, imposed by international lenders on African states. The objective pursued was stabilization and economic growth. It meant that beneficiary countries had to devaluate their currencies, deregulate the market (including agricultural markets), reduce state bureaucracies, and privatize state and parastatal industries. Based on Ferguson (2006: 11), instead of economic recovery, the structural-adjustment era has seen the lowest rates of economic growth ever recorded in Africa (actually negative, in many cases), along with increasing inequality and marginalization. The state was deprived of its means to function, and the government was unable to provide basic public services such as roads, schools, and health care.

Under internal and international pressure, some African countries such as the Democratic Republic of Congo engaged in democratic reforms in 1989-91. Though multiparty system was allowed to function, the Mobutu regime through a combination of corruption, co-optation of opponents and intimidation remained in power until the 1996-97 civil war pushed him into exile. At that time international aid was suspended. This resulted in the worsening of living conditions and quality of life for the people.

According to Lumumba-Kasongo (2002), in the 25-year period of 1972 to 1997 the number of electoral democracies in the world has more than doubled. The number of electoral African democracies rose to 34, meaning an increase of 18 countries even though some countries such as Sierra Leone, Cote d'Ivoire and Liberia reversed because of civil wars.

Bayart, Ellis and Hibou (1997) count debt as one of the mechanisms of dependence used by Western countries to exercise their influence on African governments. Donor countries and international financial institutions (World Bank, IMF) link their loans to some conditions in the formulation of public policies. The total African external debt at the end of the 1998 was estimated at US$ 324.6 billion (see Lumumba-Kasongo, 2002).

In addition to the above, armed conflicts in some Africans countries such as the DRC, Somalia, Sudan, and Cote d'Ivoire have become endemic. Since the civil wars in 1996-97 and 1998-2003, the DRC is constantly destabilized either internally by the presence of multiple warlords or externally by the neighbouring countries (principally Rwanda and Uganda). As a result, thousands of peasants have left their villages and gone to settle in urban areas, and many others including urbanites have fled the country and found refuge in different African countries and even on other continents.

9.4 Key theoretical findings

The study has adopted a livelihood approach. Instead of seeking to identify all urban livelihood strategies in post-Gécamines era, this study has focused on urban agriculture because of its dominance among livelihood activities and because of its potentiality in food supply and income generation. The analysis of urban agriculture has shown that, contrary to the livelihood approach which neglects natural resources in urban areas, land is the crucial resource for the category of urbanites engaged in food production.

Therefore, the livelihood approach has facilitated the identification of trends and shocks that can put urban agriculture under threat. Urban agriculture becomes sustainable when it is able to recover from trends and shocks. Among these are limited available land, rapid population growth and urban poverty. Shocks include eviction from farmland, conflicts between developers and farmers or among the farmers themselves, loss of productive capital, illness or death of the main producer.

Analyzing the size of urban land under cultivation, the quantity of maize produced and the impact it has at household level, urban agriculture is not economically viable for the majority of Lubumbashi farmers. For the majority of Lubumbashi farmers, food is available and accessible for three to four months only during the harvest period. To reach this partial food security, individuals and households use various means such as diversification of crops, change of location, rotation system, etc.

The sustainability of urban agriculture lies in the diversification of crops and adaptation of this activity to the dynamism of the city. In addition to the viability of urban agriculture which is feasible when access to credit and investment opportunities exist and plot size increases, urban agriculture must diversify its functions and crops selected in order to meet the diverse needs of urban farmers.

Despite the fact that urban agriculture is dominated by its economic function (food supply and income generation), a global perspective foregrounded other functions of this activity. Urban agriculture for example contributes to recycling waste that the municipality is not always able to transport far from the city. The greening of Lubumbashi city from November to May is another mechanism to avoid the invasion of wild grass. Also, the planting of fruit trees in almost each yard contributes to combating soil erosion resulting from the deforestation around the city.

Also, households address eviction from farmland and conflicts due to competition for land by moving from one space to another, even from land around the city to surrounding villages. This adaptability of urban agriculture to the dynamism of the city contributes to the sustainability of this activity.

The sustainability of urban agriculture is also linked to the support it receives from state and non-state institutions. While support from the state was altogether absent or very

limited (despite the existence of services, policies and programmes at provincial and national levels), farmers organized into associations enjoyed support from NGOs.

9.5 Conclusion

The emergence of an activity of a rural nature in an urban area, as an alternative to employment by the mining company Gécamines, due to its potential in food supply and income generation, has led to the analysis of its impact at the household level and the conditions of its possibility. While most studies are focused on the identification of urban livelihoods, this study has the advantage of undertaking an in-depth analysis of the emergent urban agriculture.

This study combined economic analysis with a holistic perspective which points to other functions of urban agriculture. The dominant function of urban agriculture (food supply and income generation) should not overshadow other functions such as environmental management and recreational services. In fact, the sustainability of urban agriculture lies in its multi-functionality and adaptability to urban dynamics.

It must be acknowledged that while the study gains in-depth analysis by focusing on one livelihood strategy (urban agriculture), it is limited by the global view of urban livelihoods. Although a sample of 100 households gives a picture of farming households in the post-Gécamines era, more research is needed to enable broader generalizations.

Future studies on urban agriculture should be focused on a comparison between farming households and non-farming households.

Nevertheless, this study has managed to reveal the types of urban agriculture practiced, types of food crops grown and livestock kept, categories of people engaged in food production, the various strategies adopted to achieve food security, the division of labour within the household, and the nature of support from development agencies to promote urban agriculture.

More importantly, the study has demonstrated that urban agriculture is not solely a survival strategy, even though this function is the most dominant. The Kadony household has shown that the practice of cultivation can move individuals and households out of poverty. Unfortunately, very few farmers can be located in this category. Also, the sustainability of urban agriculture is possible when farmers expand their activities, diversify them and are able to recover from stresses and shocks.

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Appendices

Appendix 1

Semi-Structured Interview

This semi-structured interview for farming households in the city of Lubumbashi is designed to gather information related to their living conditions, diet habit, habitat, status and social networks, relationship within the household and the division of labour.

The private life of interviewees is protected.

1. Living Conditions

1. What is the main source of income in the household?

2. What is the monthly value of your household income?

3. What kinds of strategies are used by your household members to increase their income?

4. Does your household practice farming among the strategies to increase income?

5. What does your household cultivate?

6. What quantity your household has produced last year?

7. How much has been consumed?

8. How much has been sold?

9. How much has been kept?

10. What kinds of benefits does your household yield from farming?

11. What kinds of problems does your household have?

12. In which way agriculture is important to your household?

13. Can your household stop farming?

14. What kinds of jobs can your household members do instead of farming?

2. Diet habit

1. What is your staple food?

2. How many times do your household members eat per day?

3. What are the components of your household meal?

4. What is the favorite meal of the household?

5. Is your household self-sufficient in food?

6. How do your household members consider their nutrition today?

3. Habitat

1. Does your household rent or own?

2. How long have you been living here?

3. Where have you been before coming here?

4. Is there any advantage of living here?

5. What kinds of problems do you experience here?

4. Status

1. Is any member of your household working?

2. How long have you been farming?

3. Is farming providing food to all household members?

4. Is farming solving the problem of children education?

5. Is farming improving the living conditions of your household?

5. Social Networks, Relationship within the household and labour division

1. Is your household receiving assistance?

2. What kind of assistance?

3. How worthy is it?

4. What is the regularity of that assistance?

5. Who is/are the main producer(s)?

6. What kinds of roles are played by other household members?

7. Who often does decide about the allocation of the produce?

8. Who does benefit from farming?

Appendix2

Questionnaire on Demographic Characteristics of Respondents

1. Residence:……..

2. Number of household members:……

3. Main Professional activities:…….

4. Monthly or annual income:……

5. Level of education:……

6. Age of the main producer:……

7. Religion of the head of household:……

8. Number of children:……

9. Main assets of the household:……

Appendix3

Questionnaire on Food Production

1. Surface area cultivated:…….

2. Location:……

3. Period of cultivation:…….

4. List of food crops grown:…….

5. List of livestock kept:…….

6. Household members involved in food production:……

7. Last year maize production:……...

8. Quantity of maize kept for seed:…….

9. Quantity of maize consumed:……..

10. Quantity of maize sold:……...

11. List of fruit trees in the yard:……...

12. Tools used for production:……..

13. Expenditures on foodstuffs……

14. Number of meal per day:……