



CITY OF NDOLA

**Summary Of Key Issues
And Recommendations
On Urban Agriculture**

June 2008

Abbreviations and Acronyms

CSO	Central Statistics Office
MACO	Ministry of Agriculture and Cooperatives
OVCs	Orphaned and Vulnerable Children
PUSH	Peri-Urban Self Help Program
UA	Urban agriculture
UPA	Urban and peri-urban agriculture
ZESCO	Zambia Electricity Supply Corporation

Executive Summary

Urban agriculture is the growing of plants and raising of animals for food and other uses within urban and peri urban areas, and related activities such as processing and marketing of the products. Urban agriculture practices have been undertaken to improve urban food security and nutrition. Alleviation of the poverty in the urban poor has also been the main thrust of the activity. Urban farming in low income areas such as Chifubu, Chipulukusu, Main and Mine Masala, Ndeke, Twapia takes place in open spaces with a few households growing crops around the house. Urban agriculture is also practised by schools (primary, basic and high), colleges and prisons as well as the Ndola City Council. Households in high income areas of Itawa, Kansenshi and Pamodzi grow their crops in backyard gardens. In both low and high income areas, some residents own small farming plots in peri-urban areas of Ndola. Farming residents of Fatima, Kaniki and Kaloko own small holdings where crop and livestock production takes place. An estimated 26.8% of residents of Ndola are farmers by occupation.

Different types of agriculture include crop growing, animal rearing and processing of products. Dairy farming, poultry, piggery and horticulture are prominent activities that take place. As a result of unprecedented increased demand for agricultural land, activities of urban agriculture happen in some areas which are not normally planned for and authorized, such as reserve forests, under electricity pylons, on stream and river banks. A lot of urban poor take full participation in urban agriculture in their quest to reduce poverty, improve their food security as well as nutrition. Mostly, they engage in staple food growing.

Ndola city has immensely benefited from urban agricultural activities. Coming from a back ground of total economic collapse, a number of residents have had their livelihood upped due to these activities. Loss of jobs in the defunct industry left many without any resources for food. Urban agriculture has bridged this gap by providing food security. The urban poor are able to access enough and quality foods due to the agricultural activities taking place. Over the period people have learnt to grow more, with improved production techniques, meaning they have more than they need for consumption. Excess is sold off leading to relief of their poverty.

The problems faced by urban farmers include shortage and high cost of fertilizers; high cost of seed and farming tools and equipment; lack of knowledge on pests & diseases for crops and livestock; cost and availability of water; cost of labour; no security of tenure; expensive animal feed; high costs of marketing farm produce (transportation and competition); unfavourable municipal bye-laws restricting the practice of urban agriculture; and inadequate knowledge, skills and finances to handle pests and diseases for crops and livestock.

The key issues to be addressed to ensure the institutionalisation of urban agriculture in Ndola include (a) improved access and ownership of land through streamlining of land allocation procedure, clear definition of procedures for acquiring land and mainstreaming gender issues; (b) review policy guidelines to eliminate conflicts between of legislation; (c) formulate strategies that will improve access to adequate and reliable water sources for crop and livestock production; (d) improve market access to small-scale producers and facilitate the creation of residential markets that are centrally located in every residential area; (e) develop strategies to provide capacity building and extension services for urban agricultural activities to improve crop and livestock production practices, leadership and organization, crop and animal choices, information on market opportunities, water and soil conservation farming strategies, crop storage, crop processing, advocacy and lobbying and packaging; (f) Ndola City Council should show commitment to UA by including it in its annual budgets, the city can thereafter source additional funding from partners, and consider some tax incentives for those who fund UA projects in the city.

Table of Contents

Abbreviations and Acronyms.....	ii
Executive Summary.....	iii
Table of Contents.....	iv
1.0. Background.....	1
1.1. Definition of Urban Agriculture.....	2
1.2. District statistics.....	2
1.2.1. Socio-economic Characteristics of the Ndola UPA.....	2
1.2.2. Crop and livestock production and markets.....	3
1.2.2.1 Crop and livestock production.....	3
1.2.2.2 Markets for crops and livestock from urban agriculture.....	3
1.2.2.3 Land issues in urban agriculture policy formulation.....	4
2.0 Issues arising from the situation analysis.....	5
2.1 Need for UA policy.....	5
2.2 Land tenure systems	5
2.3 Unavailability of water.....	6
2.4 Land use planning in relation to UA.....	6
2.5 Gender dimensions.....	6
2.6 Farmer support services and financing is inadequate.....	6
2.7 Stakeholder engagement.....	6
3.0 Benefits of urban agriculture, Relevance and Challenges.....	8
4.0 Problems faced by farmers.....	9
5.0 Key issues of urban agriculture.....	9
5.1 Availability and accessibility to land.....	9
5.2 Reviewing of policy and legislation.....	10
5.3 Water.....	10
5.4 Crop diversity and marketing.....	11
5.5 Training, Capacity building and information.....	11
5.6 Finance.....	11
6.0 Expected potentials of urban agriculture for various policy and legislation goals.....	12
6.1 National policy on environment.....	12
6.2 National agricultural policy.....	12
6.3 National forestry policy.....	13
6.4 Public health Act and the Water and sanitation Act.....	13
6.5 Ndola city By-laws.....	13
6.5.1 Social economic.....	13
6.5.2 Environment	13
6.5.3 Health.....	14
7.0 Issues key to Successful Adoption of UPA as a Legitimate Land Use in Ndola	115
7.1. Land Ownership of Land.....	115
7.2. Access to land.....	115
7.3. Provision of infrastructure necessary for successful UA.....	115
7.4. Incorporation of UA in municipal organization structure.....	116
7.5. Municipal policy to establish guidelines on urban agriculture land usage.	16

7.5.1	Infrastructure.....	16
7.5.2	Environmental management issues.....	16
7.5.3	Livestock.....	16
7.5.4	Infrastructure	16
7.6	Water issues.....	17
Conclusion.....		18

1.0. Background

Urban agriculture in the city of Ndola is as old as the city itself. The activities such as growing of maize have been going on for so long a time. People in different social and economic groups have been engaging in urban agriculture for various purposes such as subsistence, economic, as well as pass time. Commercial urban agriculture is undertaken in authorized small holder plots.

Ndola was predominantly an industrial city whose activities centred mainly on manufacturing and commerce. Following the privatization of companies and liberalization of the economy, there was an unexpected slump in the economic performance which led to most companies winding up resulting into most employees ending up on the streets. Restructuring of the new “destitute lives”, saw most of the retrenches falling for agriculture as an alternative means of livelihood.

Farming in low income areas such as Chifubu, Chipulukusu, Main and Mine Masala, Ndeke, Twapia takes place in open spaces with a few households growing crops around the house. Urban agriculture is also practised by schools (primary, basic and high), colleges and prisons as well as the Ndola City Council. Households in high income areas of Itawa, Kansenshi and Pamodzi grow their crops in backyard gardens. In both low and high income areas, some residents own small farming plots in peri-urban areas of Ndola. Farming residents of Fatima, Kaniki and Kaloko own small holdings where crop and livestock production takes place. An estimated 26.8% of residents of Ndola are farmers by occupation.

Different types of agriculture include crop growing, animal rearing and processing of products. Dairy farming, poultry, piggery and horticulture are also prominent activities that take place. As a result of unprecedented increased demand for agricultural land, activities of urban agriculture happen in some areas which are not normally planned for and authorized, such as reserve forests, under electricity pylon, on stream and river banks.

A lot of urban poor take full participation in urban agriculture in their quest to reduce poverty, improve their food security as well as nutrition. Mostly, they engage in staple food growing. However, investment potential has been realized and another group of people are seriously undertaking enterprises with a view to make profits.

1.1. Definition of Urban Agriculture.

Urban agriculture is generally described as “the growing of plants and raising of animals for food and other uses within urban and peri urban areas, and related activities such as processing and marketing of the products”. Urban agriculture practices have been undertaken to improve urban food security and nutrition. Alleviation of the poverty in the urban poor has also been the main thrust of the activity.

As mentioned earlier, urban agriculture is as old as the city of Ndola. Activities have been going on in the residential areas both low density and high density. It is a common feature to find back yard gardens in most residential compounds. Other areas include along banks of streams and rivers. Most unutilized institutional plots and forest reserves have not been spared for this purpose. Council has though made allocation of small holder plots for those that have wanted to go commercial. Kaniki, Misundu, Fatima, Kafubu resettlement and Chichele are such designated small holder areas. Agricultural activities include growing of crops, horticulture, floriculture, poultry, dairy and fisheries. The most grown crops include maize, vegetables, cassava, potatoes, tomatoes, onions.

1.2. District statistics

The city of Ndola has covers 110,300 hectares of land with a total population of 374,757 people (CSO, 2000). The city has an annual growth rate of 1.1. Its fertility rate stands at 4.9. The land use of Ndola’s total land is as follows: Agriculture 41,418ha, Forestry and plantations 43,387ha, Mining 2,051, Built up 6,172ha and other uses totalling 17,267ha. The city is grappling with poverty estimated at between 60% and 70% (CSO, 2000) and the HIV/AIDS Stands at 26%.The district receives rainfall in excess of 1200mm.

1.2.1. Socio-economic Characteristics of the Ndola UPA

Urban farmers in Ndola are aged from 20 years and above. Sixty one percent (61%) of the farmers are females amongst whom 37% are heads of households and 62.8 percent are married. Single women, who are either widowed or single constitute 35% compared to 15% of the male population. The youngest and oldest farming group are females whose age ranges from 20 to 78 years compared to that of males of 23 to 75 years. The fact that more than a third of the female farmers are single and support an average of five dependents per household shows that urban agriculture is a source of livelihood for the 37% of female

headed households. The female urban farming group made up of residents whose occupations include accountants, catering instructors, agriculture college graduates, farmers, housewives, marketers, miners, nurses, office administrators, primary and high school teachers, retirees, the unemployed and weavers. Male farmer occupations include bricklayers, drivers, engineers, farmers, fashion designers, librarians, marketing specialists, machine operators, priests, salesmen, security guards, primary and high school teachers, traditional medical practitioners and welders. The wide specializations amongst urban farmers indicate that farming is not restricted to the unemployed and thus its contribution to the household food basket cuts across educational backgrounds. The fact even college graduates are involved in urban agriculture in backyard gardens, gardens in open city spaces (Madimbasi) and in peri-urban areas may be indicative of its benefits to households. Farmers make up 95% of the population of peri-urban areas of Fatima, 54% in Kaniki and 25% in New Kaloko. Chipulukusu, Kansenshi and Masala have 29, 18 and 19 percent respectively of the residents that are fulltime farmers. The proportion of residents who are fulltime farmers in intra-urban areas indicates how important farming is to local livelihoods.

An estimated 46% of the urban farmers earn more than K10 million annually from urban and peri-urban farming with income earning cycles of 5 to 8 times per year. Intra-city farmers have a high income earning frequency of up to 8 times compared to peri-urban farmers.

1.2.2. Crop and livestock production and markets

1.2.2.1. Crop and livestock production

A range of crops are produced in urban farming systems which include beans, cassava, fruits, groundnuts, leaches, maize, onions, potatoes, pumpkins, soya beans, sugar canes, tomatoes and leafy vegetables. Livestock produced in the Ndola urban system systems include cattle, chickens, goats, pigeons, pigs and rabbits.

1.2.2.2. Markets for crops and livestock from UA

Markets for agricultural crops from Ndola UPA cover the whole city and crops crisscross the city in search of markets. Middlemen purchase the crop and livestock from homes, gardens or from a central place in the formal market. Farmers owning backyards or plots in an open space sell their crop from the home or where the crop is produced. It is only farmers in peri-urban farming areas who have the means to access the formal market by transporting the produce to the point of sale. The markets range from the

home where the client purchases the crop for consumption or re-sale, formal markets such as Masala, restaurants to roadside markets.

The more high value products such as livestock are not sold from the roadside but in formal markets. Other markets for livestock and leafy vegetables from peri-urban areas include markets in Mufulira. The sale of leafy vegetables in Mufulira markets has a three dimensional perspective in terms of either the abundance of the farm product affecting product price, the location of the production point and the volume of the product from a single farmer. Either of the three can influence the choice of the market. The fact that Ndola exports food to another town is a sign of surplus and may go to show that Ndola is self-sufficient in food production.

1.2.2.3. Land Issues in UA Policy Formulation

Ndola city has not included urban agriculture in its traditional land use planning. The practice has been considered insignificant and to some degree met with hostility hence the failure to fully integrate it in the city's development and policy plans. However, urban agriculture has the potential to help alleviate poverty and ensure sustainable livelihoods if fully integrated into all municipal plans. The integration of UPA will facilitate and enhance agricultural production in the city and ensure that Ndola is self sustainable in terms of food. Most of the urban agriculture is unplanned and is not environmental friendly as people till any open space in close proximity to their house. The city also has a vibrant urban agriculture practice on the ground as discussed above. This includes backyard gardens, livestock rearing, and seasonal maize and vegetable production.

Challenges

The strategy for the revised policy should be that; urban agriculture is to be recognized as a legitimate urban land use. For this to be achieved it should be included in statutory instruments, policy documents, planning documents and land use plans.

2.0. Issues arising from the Situation Analysis

2.1. Need for Urban Agriculture Policy

The city of Ndola has no written policy on urban agriculture and its development. If its development has to be coordinated then well laid down policies should be put in place for stakeholders to buy in.

2.2. Land Tenure Systems

Critical in the land tenure systems is that the owners of the land where urban agriculture is practiced are usually not known. The cumbersome procedure that people are supposed to go through usually demotivates them as they pursue legal ownership of the land. During identification of land in most cases there is no advertisement of the agricultural land being available. Issues of there being no transparency also arise.

An estimated 18.8-68.8% of the residents in the city use backyard and front yard gardens for intra-urban farming. In the peri-urban area of New Kaloko, about 8.6% of residents have backyard gardens in new Kaloko which is a peri-urban area. Sizes of backyard gardens range from 0.1 to 0.9 hectares. The sizes vary on the basis of how much space is available as well as the resources available and crops desired.

Farming in open spaces is restricted to low income and high density areas where 7.1-56% of the residents use open spaces. The low number compared to backyard gardens is attributable to the available space compared to backyard gardens where each home owner or tenant can have a garden within the boundaries of a property. The area available for farming is larger in open spaces where farm plots range from 0.1 to 3 hectares. The size of farmland in peri-urban farming ranges from 0.1 ha to 21 ha compared to backyard gardens (0.1 to 0.9 ha) and Madimba (0.1 to 3 ha). The mean hectarage farmed per resident of peri-urban areas of Ndola such as Fatima is on average 9.3 hectares.

In almost all the areas where backyard gardening is practiced, 14% of the residents have legal ownership of the property and 86% do not. For Itawa and Kansenshi, it can be assumed that the respondents rent the properties where backyard gardening takes place. In the low income areas of Twapia and the two Masalas, it is possible that the owners have not yet obtained title deeds for the properties. Only 16.7% of the residents of Main Masala indicated that they have title to the Madimba in the open spaces, otherwise about 84% do not have legal ownership of the open space where farming takes place. In Mine Masala, 18.8% of

the residents and 100% in Fatima own a farming area in a peri-urban area of Ndola district. The suburb of residence of an individual is not a restriction in the choice of the location where farming activities are to be conducted. Examples include residents of Mine Masala that farm as far as the Ndola-Mufulira road as well as Bwana Mkubwa.

2.3. *Unavailability of water*

Most parts of the city are dry with farmers engaging in activities only during the rainy season. The rest of year there is inactivity resulting into income losses. Water from utility companies is very expensive.

2.4. *Land use planning in relation to urban agriculture*

Though urban agriculture is practiced in Ndola, urban agriculture is not considered as a legitimate land use.

2.5. *Gender dimension.*

There is need to consider the issue of gender during allocations of land. The city council can decide on what percentage can be alienated to women.

2.6. *Farmer support services and financing is inadequate*

Urban agriculture farmers usually get very little extension support due to them being located in illegal areas. Access to finance is also difficult due to lack of collateral.

2.7. *Stakeholders Engagement*

Ndola has quite a good number of stakeholders for urban agriculture. A number of government departments, Ndola municipal departments, non-governmental organisations, faith based organisations, credit institutions and private enterprises have a stake in urban agriculture. There are 72 stakeholder institutions that have a stake in urban agriculture as listed in the table below.

Characterisation of urban agriculture stakeholders in Ndola

Category of Institution	Name of Stakeholder	Stake
Financial institutions	<ul style="list-style-type: none"> • Standard Chartered Bank • Finance Bank • Indo Bank • National Savings and Credit Bank • Barclays Bank • Zambia National Commercial Bank • Stanbic Bank 	Financing of urban agriculture
Faith based organisations	<ul style="list-style-type: none"> • Teen Missions • Catholic Diocese 	Providing social support networks & religious satisfaction
Tertiary Education & Training	Copperbelt & Northrise Universities	Farmer training & education
Non-governmental organisations	<ul style="list-style-type: none"> • Care International • Hope Humana • Heifer International • Ndola Nutrition Group • Peri- Urban Self Help Project (PUSH) • Caritas Zambia 	Integrating livelihood issues with developmental support to UA including more productive farming methods
Insurance institutions	<ul style="list-style-type: none"> • Zambia State Insurance Corporation • Madison Insurance 	Provision of insurance cover to some UA practitioners
Government ministries & departments	<ul style="list-style-type: none"> • National Vocational Rehabilitation Centre • Prisons • Ministry of Education • Social Welfare • Community Development • Environmental Council of Zambia • Environmental Council of Zambia • District Commissioner's Office • District Health Management Team • Forestry Department • MACO • Ministry of Lands 	Social support, extension services, land issues and other technical services
Municipality	Ndola City Council	Promoting sustainable development of Ndola city
Water utilities	Kafubu Water & Sewerage	Supply of water
Milling Companies	<ul style="list-style-type: none"> • Olympic Milling • Chimanga Changa 	Purchase & consumption of maize from UA
Hospitality	<ul style="list-style-type: none"> • Mukuba Hotel; Royal Hotel; Savoy Hotel 	Purchase & consumption of UA products
Retail & Trading	<ul style="list-style-type: none"> • Shoprite Checkers • Micmar • Quick Save 	Purchase & consumption of UA products; Supply UA inputs
Seed Company	<ul style="list-style-type: none"> • Pannar 	Supply of quality seed
Energy	<ul style="list-style-type: none"> • Indeni Oil Refinery • ZESCO 	Supply of electricity & petroleum products
Communication	<ul style="list-style-type: none"> • MTN Zambia • Celtel Zambia 	Communication services

	<ul style="list-style-type: none"> •Zambia Telecommunications Company 	
Manufacturing	<ul style="list-style-type: none"> •Patterson’s Bakery •National Breweries •Lafarge Cement •Ndola Lime •Zambian Breweries 	Supply of bakery products, beverages, Purchase of produce cement and lime
Advertising	G. Rutherford Outdoor Advertising	Advertising various services related to UA

Regrettably, despite the big number, engagement of these stakeholders is very low.

3.0. Benefits of Urban Agriculture, Relevance and Challenges

The city of Ndola has immensely benefited from urban agricultural activities. Coming from a back ground of total economic collapse, a number of residents have had their livelihood upped due to these activities. Loss of jobs in the defunct industry left many without resources for food. Urban agriculture has bridged this gap by providing food security. The urban poor are able to access adequate and quality foods due to agricultural activities taking place. Over time people have learnt to grow more, with improved production techniques, meaning they have more than they need for consumption. Excess is sold off leading to relief of their poverty.

Because these activities are done within the urban setting, the cost of moving the produce to the market is reduced or none at all. In addition, the produce reaches the consumer very fresh. Diversification into more economically rewarding forms of urban agriculture has seen a number of workers being recruited in these enterprises. This has contributed to reducing unemployment. Due to increased production, there is more to sell on the market ultimately giving the local authority more revenue in terms of levies.

Despite the benefits that we are seeing today, the practice of urban agriculture has failed to develop significantly due to a number of factors including land tenure issues, prohibitive legislation and policies and inadequate water and other resources. Farmers in Ndola use a range of inputs that are universally common in similar farming systems. Inputs include fertilizers for food crops, insecticides and fungicides, feed for livestock, seeds and capital inputs among others. Low cost inputs are associated with backyard gardens and open spaces’ production systems whereas low cost together with high cost inputs are associated with peri-urban farming.

4.0. Problems Faced by Farmers

Problems experienced by farmers in the different UPA system for Ndola range from security of land tenure and cost of inputs to knowledge and skills for handling urban agriculture related problems (Table below).

Constraints in food crop and livestock production in urban agriculture

Farming System	Constraints
Backyard gardens	Shortage & cost of fertilizers; cost of seed; lack of knowledge on pests & diseases for crops and livestock; cost & availability of water
Open spaces	Cost and access to subsidized fertilizer; cost of labour; farming tools such as hoes are not so efficient due to sticky soils; security of tenure; distance to the farm
Peri-urban	Too much rain destroys crops; scarcity and cost of fertilizers; animal feed is expensive; poor rains result in loses; marketing of produce (transportation & competition) is expensive; labour is expensive
Policy and legal framework	Unfavourable municipal bye-laws restricting the practice of urban agriculture
Institutional	Inadequate skills, knowledge & finances to handle pests & diseases for crops and livestock; drought; cost of fertilizers; cost of all farm inputs

5.0. Key Issues for Urban Agriculture.

The city of Ndola needs to address the following key issues in order to have a guided urban agriculture development.

5.1. Availability and Accessibility to Land

Accessibility to land is not easy due to the fact that the land allocation procedure is not transparent and not well structured. There are no clearly defined procedures for acquisition of land for urban agriculture. There is no address of the gender in considering allocation of agricultural land. Land ownership in most case is not there as activities happen on other peoples land. Title to land is not granted due to the fact that procedure was not followed to acquire the same land.

Proposals to the raised issue include the authority's indulgence in;

- Taking audit of the available land for urban agriculture.
- Plan and include in the city development for urban agriculture activities.
- Draw procedures for the alienation with consideration of gender and transparency.

5.2. *Reviewing of Policy and Legislation*

Currently there are no clear guiding policies on urban agriculture. There are conflicting pieces of legislation across sectors which need to be harmonized if development of urban agriculture is to be enhanced. An outline of what activities can be undertaken and where needs to drawn. Stakeholder participation become easy if they are guided properly.

5.3. *Water*

Despite Ndola having abundant sources of water, water has become scarce and costly to meet the needs of residences. Ndola needs to implement strategies that will allow access to reliable water supply for crop and livestock production. For example, stakeholders can encourage water reticulation firms to separate the water irrigation system from the drinking and cooking water system. This innovative design will allow the water utility firm to pump untreated water into households for irrigation and a separate system for drinking and cooking. The demand for treated water will decline as residents will use the appropriate water for irrigation instead of using treated water for irrigation and washing cars for example. To improve food security and create more income earning opportunities in urban agriculture, a UA policy for the city needs to reinforce the perception that untreated water is a resource that can promote use in UA.

Prior to the establishment of such a water reticulation system, Kafubu Water and Sewerage should be encouraged to supply water of the right quantity and quality to ensure that city wide plant production or animal husbandry are maintained.

Water harvesting is very important for urban agriculture given the high rainfall in Ndola. Some of the options which have been found to be practical and useful in other major cities in Southern Africa include:

- Rainwater can be harvested from rooftops which act as catchments
- Grey water from the sinks, baths etc should be separated from the main sewer lines.
- Reclaimed water from the main sewer systems need to be utilized for urban agriculture.
- Boreholes, sand abstraction from the peri-urban rivers and dams.

Despite the strategies enumerated above, there is a need to look at water saving technologies for urban agriculture such as drip irrigation systems, water recycling methods and other water conservation approaches which should be regulated by the municipality. Stringent water resources management for UA and regulations on permit application on water abstraction should also be put in place with the assistance of sub-catchment councils.

5.4. Crop Diversity and Marketing

Until very recently mono cropping has been the order of agriculture. Now we have a variety of crops being grown including; Vegetables, fruits, Tomatoes, etc. Marketing of most of this produce is done without value addition. The Ndola municipality can facilitate the creation of residential markets that are centrally located in every residential area. The strategy will remove transport costs.

5.5. Training, Capacity Building and Information

Despite the numerous agricultural activities that go on, this seems to be done haphazardly. There is great need to build peoples capacity in executing agricultural activities. There is also great need to disseminate programme tailored information to empower the urban farmers. Capacity building and extension services for farmers has the potential to provide training opportunities for farmers to improve crop and livestock production practices, leadership and organization, crop and animal choices, information on market opportunities, water and soil conservation farming strategies, crop storage, crop processing, advocacy and lobbying and packaging among others. The city council can work closely with MACO to improve extension services that can improve crop and livestock production techniques. Other skills that will benefit UA in Ndola are those that will facilitate access to processing equipment to enhance value addition in product processing. UA has a high potential for organic farming which already enjoys a wide global market.

5.6. Finance.

Most urban farmers are resource poor. They can not afford to borrow even because they have no collateral or security against which they could. Exorbitant lending rates also prohibit them from getting loans. Ndola City Council should show commitment to UA by including it in its annual budgets. The city can thereafter source additional funding from partners, donors, government, financial institutions to augment its own resources for urban agriculture. It is also important to consider some incentives for those who fund UA

projects in the city. These may be in the form of tax concessions and paying reduced rates. Such incentives will result in other stakeholders coming on board to fund UA activities. The policy should also consider levying some charges for lease agreements for UA activities and funds raised should be used to better provide services to the urban farmers. Even though these measures may be viewed as a loss in immediate income to the city, the increased food and livestock production will result in intra-city food security and the increased household income is likely to lead to high exposable income which is good for business houses.

6.0. Expected Potentials of Urban Agriculture for Various Policy and Legislation Goals

Urban agriculture is not entirely unknown in the Ndola municipal legal system even though it is not called urban agriculture. Globally, urban agriculture has gained acceptance and recognition over the years and has thus attracted a lot of attention at political and national policy levels. This attention that UA has created has compelled different stakeholders to look at UA differently. From a legal perspective, there has been a need to examine the various legal provisions and their relationship to UA. There have also been calls to ensure that the law is revisited to ensure that its spirit unambiguously provides for issues related to UA.

6.1. National Policy on Environment

- i. Prevent or minimize the environmental impact of intra-city crop and livestock production on environmentally fragile lands (steep slopes, ‘dambos’ swamps as these areas are susceptible to flooding) through improved agricultural production.
- ii. Carry out intensive education, extension and mass awareness programmes and promote crop and livestock production that incorporate soil conservation measures and integrate land use systems in all parts of the city.

6.2. National Agricultural Policy

Supportive of urban agriculture

6.3. National Forestry Policy

- i. Avoid illegal settlements in catchment forests and encourage the growing of agricultural and tree crops on the same piece of land (agroforestry) to encourage tree planting and maintain biodiversity.

6.4. Public Health Act and the Water and Sanitation Act

UA in Ndola will adopt land husbandry practices that are in conformity with the Public Health Act. Practices such as the use of raw sewage will be criminalised and discouraged through public awareness campaigns.

6.5. Ndola City By-laws

Some of the existing laws were written as far back as 1965 and have never been repealed or amended at all such that they have been overtaken by events since they are no longer serving the interests of the people. The development of a UPA policy and consequently repealing the restrictive laws will help the residents of the city by providing a regulatory framework and guidelines for the practice of UA in Ndola.

6.5.1. Socio-economic

When an UPA policy is developed it will give rise to the following socio-economic aspects:

- A lot of women and OVCs in the city will be empowered to practice Urban Agriculture
- The community will be empowered as they will have a sustainable source of income which can supplement their requirements or indeed as a mainstay for non-working citizens.
- Because of the high food turn over it would give rise to processing plants being opened up.
- The city will acquire a state of food security within its boundaries.

6.5.2. Environment

- Land degradation will be lessened since agriculture has been identified as one of the sustainable land uses
- The open bare land within the city will be put to good use.

- The city image will be improved by the greeneries.

6.5.3. Health

- Community members will have access to affordable and fresh and nutritious foods
- The nutrition values in the community will be improved to also cater for people affected with HIV/AIDS.
- Community members will be exposed to other types of crops including herbs which are good for improving the immunity

7. Issues key to Successful Adoption of UPA as a Legitimate Land Use in Ndola

7.1. Land Ownership of Land

- i. Security of tenure issues should be addressed at development planning and policy levels
- ii. Inventory of land should be conducted to assess how much land is available

The land available for UA in the city can be divided into three categories: council owned (open spaces, vacant stand, undeveloped layouts, municipal farms), privately owned in residential areas, and farm holdings), and government owned land classified as forest reserves.

7.2. Access to land

Procedures for accessing land for UA should be elaborated at policy level. The following should be considered and clarified

- i. Gender segregation in accessing land.
- ii. Municipal policy to make a provision for vulnerable people (HIV/AIDS, youths, widows, and the elderly).
- iii. Municipal policy should have an in built mechanism for transparency and accountability.

7.3. Provision of infrastructure necessary for successful UA

- i. Boreholes
- ii. Waste water usage
- iii. Rain water harvesting
- iv. Roads
- v. Mini processing plants
- vi. Sanitation
- vii. Marketing

7.4. Incorporation of UA in municipal organization structure

Municipal policy should stipulate the establishment of a UA office or department within the Ndola City Council which should receive equal treatment for funding and staffing.

7.5. Municipal policy to establish guidelines on UA land usage

7.5.1. Infrastructure

- i. Cultivation on municipal land to be legalized through a tenure system.
- ii. Cultivation on areas reserved for parks to be prohibited or restricted to floriculture
- iii. Stream bank cultivation should take into account other existing laws.
- iv. Roadside cultivation to be restricted to dwarf plants and runners e.g. legumes and potatoes (all types of potatoes). Knee length and above need to be avoided at all costs.

7.5.2. Environmental Management Issues

- i. Environmental management measures should be included in the policy to guide UA e.g. no to indiscriminate cutting down of trees even on forest reserves and other valuable plants as this can cause degradation and deforestation.
- ii. Conservation and management of sloppy land to be stipulated.

7.5.3. Livestock

- i. Restriction of big animal production such as cattle to be restricted to large plots and peri urban areas.
- ii. Establish open space grazing zones and sales pens in markets in which livestock such as goats are to be sold. Livestock to sell in restricted markets to cut costs of maintenance of sales pens unless these are managed by marketer associations.
- iii. Review and formulate new regulations related to the rearing of poultry.

7.5.4. Infrastructure

Infrastructure necessary for successful UA practice should be provided by the city in partnership with the donor community, the private sector and the farmers. A key element

is availability and accessibility to reliable water sources. Backyard gardening has become inhibited due to inadequate availability of water forcing residents to resort to seasonal cropping.

7.6. Water Issues

- i. Despite Ndola having abundant sources of water, water has become scarce and costly to meet the needs of residents. Ndola needs to implement strategies that will allow access to reliable water supply for crop and livestock production. For example, stakeholders can encourage water reticulation firms to separate the water irrigation system from the drinking and cooking water system. This innovative design will allow the water utility firm to pump untreated water into households for irrigation and a separate system for drinking and cooking. The demand for treated water will decline as residents will use the appropriate water for irrigation instead of using treated water for irrigation and washing cars for example. To improve food security and create more income earning opportunities in urban agriculture, a UA policy for the city needs to reinforce the perception that untreated water is a resource that can promote use in UA.

Prior to the establishment of such a water reticulation system, the water utility firm should be encouraged to supply water of the right quantity and quality to ensure that city wide plant production or animal husbandry are maintained.

- ii. Water harvesting is very important for urban agriculture given the high rainfall in Ndola. Some of the options which have been found to be practical and useful in other major cities in Southern Africa include:
 - Rainwater can be harvested i.e. from rooftops which act as catchments
 - Grey water from the sinks, baths etc should be separated from the main sewer lines.
 - Reclaimed water from the main sewer systems need to be utilized for urban agriculture.
 - Boreholes, sand abstraction from the peri-urban rivers and dams.

Despite the strategies enumerated above, there is a need to look at water saving technologies for urban agriculture such as drip irrigation systems, water recycling methods and other water conservation

approaches which should be regulated by the municipality. Stringent water resources management for UA and regulations on permit application on water abstraction should also be put in place with the assistance of sub-catchment councils.

Conclusion

Urban Agriculture is a viable concept which should be supported by all stakeholders. The existence of urban agriculture dates back to the beginning of the human settlements. In spite of some restrictions through certain clauses of our by- Laws as well as some policies, urban agriculture is practiced all the same and at a very large scale. However urban agriculture has never been seen in our District or even or Nation at large as a concept that can be developed, coordinated and even facilitated in order to get the best benefits out of it.

The city has benefited and will continue to benefit from the activities of urban agriculture if only concerted efforts are made to improve its development. Its relevance is attributed to its contribution to Poverty alleviation, food security and improved nutrition. The strengths that the city has are the abundant stakeholder presence, availability of land which if planned for properly will provide the resource, ready markets for the products and though unknown, its great contribution to the Gross domestic Product.