COMMUNITY PARTICIPATION IN URBAN FOREST MANAGEMENT

A CASE STUDY OF NGONG ROAD FOREST

BY

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

To my family,

My wife Linet Atieno Opanga, my son John Roel Loka and daughter Agnetta Anita Wenwa.

Your patience and endurance kept me going especially when I became an absentee dad.

To my beloved late sister, Elizabeth “Besh” Opanga Okumu, who passed on a few days before I made the defense of this thesis. May her children Benjie, Johnie and Gabriel be inspired in her vision.

ABSTRACT

This research underlines challenges and opportunities for communities' participation in urban forestry in Kenya which has been conspicuously lacking from urban development initiatives despite the accelerated urbanization process taking place in Kenya.

The study looked at extent and nature of forest products and services managed and utilized by communities, perceptions, interactions and levels of participation among communities living adjacent to the Ngong Road Forest. Study recommendations and policy guidelines discussed were informed by the challenges, threats and opportunities in context of the international agreements, national policies, enabling legislations, including measures to form Community Forestry Associations (CFA).

Among the variables assessed to address the research questions were the frequency of use of forest products and services, income levels and distance traveled among community members. Hypothesis testing involved finding relationship between income levels and frequency of use of forest products and services and also the relationship between distance traveled and frequency of use of forest products and services.

A sampling intensity of 3% was undertaken in all the seven sub locations bordering Ngong road forest. A total of 106 households were interviewed, using random sampling in all the seven sub locations. Key informants from various actors or institutions involved in forest related activities were also interviewed and their view point integrated in developing a community based urban forest management for Ngong Road forest.

Key findings on hypothesis testing indicate no relationship between income levels and frequency of use of forest products and services and also there was no significant relationship between distance traveled and frequency of use of forest products and services. The forest products mainly utilized by adjacent communities was firewood at 59.4%, followed by herbal medicine at 26.4%, honey and fodder at 21.3% while the services included cooling, shading and wind reduction at response rate of 85%, followed by improves aesthetic at 50% and provision of wildlife habitat at 38.8%. Communities were involved more in functional participation and rarely in decision making structures. Participation, utilization and opportunities varied from one sub location to the other. Potential of the forest to provide ecotourism and recreational activities were recognized by communities in Karen, Waithaka and Ngando sublocations.

The research noted untapped opportunities under public private partnerships, Constituency Development Funds and the envisaged Forest Management and Conservation Fund (FMCF). Further research is required to ascertain why the catchment population within the 3 – 5 km radius is involved more in utilization of forest products and services as compared to the immediate catchment population within the 3 km radius.

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LIST OF ABBREVIATIONS AND ACRONYMS

CBD	-	Convention on Biological Diversity
CBO	-	Community Based Organization
CBS	-	Central Bureau of Statistics
CDM	-	Clean Development Mechanism
CDF	-	Constituency Development Fund
CFA	-	Community Forest Association
CSR	-	Corporate Social Responsibility
EMCA	-	Environmental Management Conservation Act
EIA	-	Environmental Impact Assessment
FAO	-	United Nations Food Agricultural Organization
FBO	-	Faith Based Organizations
FCC	-	Forest Conservation Committee
FD	-	Forest Department
FMCF	-	Forest Management and Conservation Fund
FMP	-	Forest Management Plans
FMU	-	Forest Management Units
GBM	-	Green Belt Movement
IEC	-	Information Educational and Communication materials
KFMP	-	Kenya Forestry Master Plan
KFS	-	Kenya Forest Service
KWS	-	Kenya Wildlife Service

LATF	-	Local Authority Transfer Fund
LDC	-	Less Developed Countries
NCC	-	Nairobi City Council
NEMA	-	National Environmental Management Authority
NGO	-	Non Governmental Organization
NTFP	-	Non Timber Forest Products
NWFP	-	Non Wood Forest Product
PFM	-	Participatory Forest Management
PRSP	-	Poverty Reduction Strategy Paper
PPP	-	Public Private Partnership
SFM	-	Sustainable Forest Management
SPSS	-	Statistical Package for Social Scientists
UF	-	Urban forestry
UNCED	-	United Nations Convention for Environment and Development
WWF	-	World Wide Fund for Nature

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1. CHAPTER ONE: INTRODUCTION

1.1 Introduction

Incorporating community participation in urban forestry requires a comprehensive and participatory approach. Communities are involved in planting and management of trees for production of forest goods and services. Their participation, degree and nature of involvement depend upon a number of factors including income levels, distance travelled to the forest resource and level of education among others.

Communities' involvement has been recognized in emerging natural resource management systems such as the participatory forest management in Kenya. Participatory forest management is an approach to the management of forestry resources which aims at reconciling key stakeholders' interests through development of mutually enforceable agreements and decision making that define their respective roles, rights, responsibilities and authority in the management of forestry resources. It aims at improving forest management and livelihoods of communities adjacent to forests.

Food Agriculture Organisation (FAO) report on Trees Outside Forests (2002) indicates that communities do not fully benefit from the initiatives such as urban forestry because they are neither well perceived nor well documented, and receive little attention in the formulation of national forestry policy and planning. Lack of awareness about the potential of urban forestry, of information exchange, and of strategic, coordinated action so far means that the full potential of community participation in urban forestry remains to be realized (Konijnendijk *et al.*, 2004). FAO has been among the first organizations taking up the challenge of promoting the concept of urban and peri-urban forestry as framework for action, with emphasis on the developing countries with economies in transition, and urban forestry's contribution to food security and poverty reduction (FAO, 2005). Trees and tree products could play a role in the household economy especially provision of labour (Carter, 1998).

Deneke (1993) describes urban forestry as the sustained planning, planting, protection, maintenance and care of trees, forests, green space and related resources in and around cities and communities for economic, environmental, social, and public health benefits. The definition

includes retaining trees and forest cover as urban populations expand into surrounding rural areas and restoring critical parts of the urban environment after construction.

Urban forestry embraces the management of trees as well as the associated biotic and abiotic components in cities as well as small communities and the interstitial areas.

Some of the benefits that urbanites derive from urban forests include sequestering of gaseous air pollutants and particulates (Smith 1990, Von Stulpnagel *et al.,* 1990, McPherson 1991,Nowak 1994, Klaus *et al.,*1998, Kenney *et al.,* 2001); energy conservation through transpiration cooling, shade and wind reduction (Akbari and Taha 1992,Mc Pherson 1994, Brown and Gillespie 1995); storm water attenuation (Sanders 1984, Xiao *et al.,* 1998); noise buffering (Huang *et al.,*1992, long-Sheng *et al,* 1993); provision of wildlife habitat (De Graaf 1985); increased property value (Petit *et al.,* 1995); improved aesthetics (Schroeder and Cannon 1987); and psychological well-being (Schroeder and Lewis 1991, Ulrich *et al.* 1991). Urban/peri-urban forestry offers various potential benefits, including providing the urban poor with forestry products, mitigating the ecological effects of urban sprawl, and improving the living environment in urban areas.

The urban population needs much of recreation due to the numerous problems associated with urbanization. Recreation sites in urban forests help manage stress levels that may also lead to higher productivity at work places.

In the light of recent amendments in environmental legislations, municipalities in Kenya are expected to plan and reserve land for development of urban forestry activities. It is expected that municipalities should have an urban forestry commitment within their official planning documents, and that a process should be developed to involve community groups in urban forestry planning and management.

Strategies for realizing benefits have to be developed and planning of urban forestry initiatives integrated into overall urban planning. For the city of Nairobi, the concept of peri urban and urban forestry needs to be recognized as a goal and planned for in both strategic and detailed policies.

Broad participation by the various stakeholders including communities in urban forestry management diminishes potential conflicts and helps generate the strong support needed to

initiate and maintain a viable program. It is on this premise that institutions charged with urban forestry draw fully on the capabilities and strengths of various actors including communities living adjacent to forest resource.

It has been noted that lack of well organized local groups to work with or the lack of strong administrative or managerial skills among existing groups has in cases made it difficult for the governments to coordinate urban forestry activities with communities. (Wells *et al*., 1992)

This proposed study offers` lessons towards involving communities in urban forestry activities and provide guidelines and recommendations which can be replicated by other actors when developing urban forestry and greening activities.

1.2 Problem statement

Community role in urban forestry in Kenya has been conspicuously absent from urban development cooperation initiatives despite the accelerated urbanization process taking place in Kenya.

There has been inadequate involvement of forest adjacent communities who are the primary users of the forest. Communities have increasingly been left out in the management of forest resources, especially the peripheral neighbours or adjacent communities. It is debatable whether it is the adjacent communities that participate in degradation, or the distantly or spatially placed further from the resource that degrades or overexploits the resource.

The enactment of the Environmental Management and Coordination Act (EMCA) of 1999 into law marked a significant step towards participation and involvement of people in environmental management in Kenya. The law acknowledges the important role that citizens need to play in environmental management and moves away from the previous position of centralizing environmental management in the hands of the state.

In the past, lack of provisions in forest legislation had been used as an excuse for failing to involve communities in forest management, but now the emerging Acts such as the Forest Act of 2007, Physical planning Act of 1996, and EMCA Act of 1997 allow for community participation, but no clear framework for planning and implementation with communities have been put in

place. It is on this premise that the proposed study on communities' participation in the urban forestry offers opportunity to share lessons and contribute to policy and strategy implementation of the emerging legislative frameworks.

The impacts of urban sprawl on the environment and the quality of life of urban residents in Nairobi are slowly being recognized as unsustainable. Approaches to land use planning require that natural environment and green space are incorporated as a vital component of healthy, sustainable communities. Any such renewed vision in Nairobi, need to incorporate community based urban forestry practices in managing urban woodlands such as Karura and Ngong Road Forests.

Whereas Urban forestry has the multi-faceted potential for stimulating urban growth and development, planning decisions have ignored community participation resulting to inequitable distribution of costs and benefits among actors. In addition various institutions or actors have been neglected in the process of planning. Lack of an inclusive planning framework that includes the communities has brought challenges of assigning responsibilities and roles to various actors and institutions.

1.3 Research questions

1. What is frequency of use of forest products and services as derived by communities in adjacent sub locations?

2. Does income and distance traveled among community members relate to the frequency of use of forest products and services?

3. What are opportunities and challenges for community participation in forest related activities?

1.4 Hypothesis

Relationship between income level and frequency of use of forest products and services.

Ho : There is no significant relationship between income level and the frequency of use of forest products and services.

H1 : There is significant relationship between income levels and the frequency of use of forest products and services.

Relationship between distance traveled and frequency of use of forest products and services

Ho**:** There is no significant relationship between distance traveled and the frequency of use of forest products and services.

H1: There is significant relationship between distance traveled and the frequency of use of forest products and services.

1.5 Study objectives

The study investigates the extent and perception of urban community in adjacent sub locations and its implication to utilization and management of the forest resources.

1.5.1 Specific objectives

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1. To determine types of forest (resources) products and services managed and utilized by communities living in adjacent sub locations to Ngong Road forest.
2. To examine perceptions, interactions, and levels of participation among communities living adjacent to the forest.
3. To investigate the challenges, threats and opportunities in planning and managing Ngong Road forest with adjacent communities.
4. To suggest recommendations and policy guidelines for community based urban forestry framework for Ngong Road forest.

1.5.2 Assumptions

Communities living adjacent to forest areas have an interest or stake in forest management and would want to participate in management of Ngong Road forest.

The sub locations bordering the forest will remain unchanged for a long period despite the frequent administrative border changes experienced in Kenya.

1.6 Justification of the study

This study involved understanding the perceptions of the communities living adjacent to forest resource, the nature and extent of which participation affects the management of the forest resources especially in an urban setup.

In the past, the government solely managed gazetted forests in Kenya while the communities living to the adjacent forests played a peripheral role. This resulted in forest degradation, alienation of communities and increase in conflicts. In response, this study provided guidelines that in the short and long run will be useful to forestry sector reform in implementing participatory forest management that is currently being piloted in several forest areas.

The study underscored efforts already in place under the emerging legislations such as the formation of Community Forestry Association (CFAs) as stipulated in Forest Act No. 7 of 2005. Several enactments in environmental legislations have of late been made to enhance participation of communities in environmental and natural resource management. There is now an increased need for community based institutions especially in Nairobi to move ahead and provide leadership in the area of community participation urban forestry.

Awareness about the potential of urban forestry in developing world remains to be realized by communities, (Konijnendijk *et al.,* 2004). Food and Agricultural Organization (FAO) has been among the first organizations taking up the challenge of promoting the concept of urban and peri-urban forestry as framework for action, with emphasis on the developing countries with economies in transition, and urban forestry's contribution to food security and poverty reduction. (FAO, 2005).

Whereas studies have been undertaken on participation elsewhere, results indicate there is still work to be done on the development of participatory tools for the planning of urban forestry (Van Herzele *et al.,* 2005).

Planning and management of urban forest resources is increasingly complex (Dwyer *et al.*, 2001), their outcomes are becoming more significant to people, and the number of individuals and groups involved in planning and management is growing.

The results of this study will assist policy and decision makers on the need to conserve, protect and expand green spaces in cities and eventually contribute to establishment of recreational facilities and draw lessons on intervention related to climate change and laying the foundations for Clean Development Mechanism (CDM) . Rising levels of atmospheric carbon are a major cause of global climate change and therefore land based ecosystems like urban forests play important roles, both positively by acting as a sink for carbon (sequestering carbon through photosynthesis), and negatively as a source of carbon (through deforestation, decomposition, soil erosion etc). Notably of particular importance to Kenya is the emergence of new opportunities for developing, and attracting foreign investment onto carbon mitigation projects. These opportunities are provided within the context of the Clean Development Mechanism (CDM) of the Kyoto protocol, the international agreement on climate change.

The Kenya Forest Policy outlines a number of measures directed towards enhancing conservation and management of local authority forests including urban forests by promoting close workings among local authorities, the Forest Service, regional authorities, local communities, NGOs and other stakeholders. It is in this regard that the study provided a basis for recommendations to the policy actors on how to strengthen community participation and on rationale use of forest resources.

This study offered an opportunity to identify challenges and potentials for Participatory Forest Management (PFM) as recently identified in the Forests Act 2005 where views of the community associations have been identified as crucial in developing Forest Management Plans and conserving forest resources.

1.7 The Scope and Limitation of the Study.

1.7.1 The Scope

The study covered the 7 sub locations adjacent to Ngong Road Forest: four in Kibera Division while the other three were in Dagoretti Division. The sub locations in Kibera are Karen, Bomas, Olympic and Gatwikira while those in Dagoretti are Ngando, Waithaka and Mutuini.

The study drew sample from the target population of 36000 households living in the adjacent 7 sub locations to Ngong Road forest.

The case study was chosen because Ngong Road forest is within urban jurisdiction and offers variety of forest products and services that are of interest to the urban community. Secondly the Ngong Road forest is in the process of forming its Community Forest Association (CFA) as stipulated by the Forests Act No 7 of 2005 to allow community participation under the new legislation.

The study examined frequency of utilization of forest products and services among the communities living adjacent to the forest resource.

The study further investigated how distance travelled, levels of education and income levels relate to community participation in urban forest management. Communities perception on forest related activities/ practices such tree planting, provision of security, environmental education among others were also assessed.

Perceptions and attitudes of Community Based Organizations, government institutions, Non Governmental Organizations were analyzed and assisted in drawing the proposed planning framework for community participation in management of Ngong Road Forest.

1.7.2 The Limitations of the Study

With a population of over 36,000 households adjacent to the forest, study limited itself to 3% sampling intensity in every sub location, due to resource and time constraint.

A lot of time was taken to get appointments to administer questionnaires especially to respondents who required prior notice; nevertheless they were interviewed at their appropriate time, including late in the evening.

1.8 Operational definition of concepts

- **Income**: the amount of money earned by the household head through salary and any other source per month.

- **Household**: it comprises a person, a group of persons, generally bound by ties of kinship, who live together under a single roof or within a single compound, and who share a community of life in that they are answerable to the same head and share a common source of food.

- **Participation:** is the active involvement of insiders and outsiders or the general public in all decision related to objectives and activities, as well as the activities themselves in forest management

- **Community**: is seen as a group of people who live in the same area, and often share common goals, common social rules and/or family ties.

- **Forest Management**: is the process of planning and implementing practices for the stewardship and use of forests and other wooded land aimed at achieving specific environmental, economic, social and cultural objectives.

- **Urban forestry:** The study adopted the definition of urban forestry developed by Miller (1997) as an integrated, city wide approach to the planting, care and management of trees to secure multiple environmental and social benefits for urban dwellers.

- **Participatory forest management:** refers to the improvement of livelihoods and the well being of people in forest management through full involvement and empowerment, as beneficiaries and active participants, at all stages of forest management.

- **Forest Products:** in this case study refers to all the products underlined under the Forest Act, cap 385 which include charcoal, firewood, fruit, gum, leaves, timber, trees, grass, seeds and such other things declared to be forest produce by the Minister.

- **Forest user group**: refers to any group of individuals formal or informal who; collects harvests or utilizes any part or product from a forest for subsistence or commercial purposes.

- **Ecosystem:** refers the dynamic complex of interaction among living organisms and their associated non living environment.

- **Frequency of use:** the number of times an individual accesses the forest to source the forest product or service.

1.9 Research methodology

The research involved data collection, analysis and data interpretation.

Data collection was conducted between November 2008 and February 2009 through the following methods:

1.9.1 Secondary data

Various government policies and legislations were reviewed, including those touching on environmental management, National Development plans, Vision 2030, Sessional policy papers, EMCA Act 1999, Forests Act no 7 of 2005, Water Act of 2002, among others.

In addition secondary review included annual forest reports from the Ngong Road Forest Station and the Provincial Forest Office, Ministry of Environment and Mineral Resources and Ministry of Forest and Wildlife Services.

Information on households and population density were collected from the Kenya National Bureau of Statistics reports.

International Conventions, Processes touching on Environmental planning were reviewed under secondary data.

1.9.2 Primary data

1.9.2.1 Administering questionnaire

Primary data was collected by administering questionnaires and semi structured interviews.

The questionnaires targeting the households adjacent to the forest and addressed issues on:

- Frequency of use of the forest products and services
- Community perception on level of participation in forest management
- Distance traveled to access forest products and services, in kilometers
- Regulation governing the community forest associations or forest user groups

Data on the use and frequency of access of forest resource by individuals or social groups is reportedly important in forming appropriate design and planning of urban and suburban green spaces (Germann-Chiari and Seeland, 2004).

Questions relating to age (with the categories 21-30, 31-40, 41-50, 51-60, above 60 years), educational background (primary, secondary, tertiary and university) and monthly income (below Kshs. 15,000, Kshs. 15,001-35,000, Kshs. 35,001-60,000, above Kshs. 60,001) were included in the questionnaire.

Information sourced from the questionnaire survey was used to estimate resource utilization pattern at the household level, and to determine the relationship between frequency of use of forest products and services and factors such as distance traveled and income earned.

1.9.2.2 Interviewing Key informants

Personal interviews and discussions were held with key informants from relevant institutions and authorities such provincial administration, Kenya Forest Service (KFS), Kenya Wildlife Service (KWS), City Council and social services.

Non probability sampling of snowballing was used to identify forest user groups such as women groups, self help groups which had benefited from the forest resources.

1.9.2.3 Focus Group discussion

Focus group discussion was held with forest user groups operating in the Ngong forest.

1.9.2.4 Participatory transect walk

Participatory transect walks for 3 days were undertaken to document threats and human activities in the forest.

Key information sourced from the personal interviews/ key informants /focus group discussions included:

- Identification of areas /zones with threats to forest management,
- Nature of threats and challenges affecting forest management,
- Implications of government policies and legislations, and
- Prospects and opportunities for community participation in forest management

1.9.2.5 Photography

Photographs were taken to document community based activities taking place in the forest.

Information sourced from the questionnaires, secondary sources and field observations and interviews were triangulated to ascertain reliability and validity.

1.9.2.6 Spatial data

To strengthen illustrations, visual aids such as maps and sketches were used to delineate boundaries and indicate constraints to forest products and services and key features within the forest boundary.

1.9.2.7 Time related data

Historical timelines on the excision of the forest and legal notice since independence were recorded to indicate the decreasing forest cover with time.

1.9.3 Population and sampling procedure of household survey along communities living adjacent to Ngong Road forest

Background Information on household survey was sourced from the Kenya National Bureau of Statistics (KNBS). Two divisions were found bordering the Ngong Road forest namely Kibera and Dagoretti Divisions.

Samples were selected from the sub locations bordering the forest within the identified divisions mentioned.

In Dagoretti division, samples were selected from each of the Ngando, Waithaka and Mutuini sublocations which are in Riruta, Waithaka and Mutuini locations respectively.

In Kibera Division, samples were selected in Karen sub location in Karen location; Bomas sub location in Mugumo location and , Olympic and Gatwikira sublocations in Serangombe location.

The table 1.9.3.1 shows the Household population in the seven sub-locations studied.

Table 1.9.3.1 Household population of the adjacent sub locations

Division	**Location**	**Sub location**	**Households**
Dagoretti	Riruta	Ngando	7,818
	Waithaka	Waithaka	5,795
	Mutuini	Mutuini	2,395
Kibera	Karen	Karen	2,416
	Mugumo	Bomas	2,820
	Serangombe	Olympic	6,818
	Serangombe	Gatwikira	8,028
TOTAL			**36,090**

Source: Field report, 2008

All the seven sub locations surveyed had urban status as indicated by the sampling frame sourced from the Kenya National Bureau of Statistics (KNBS).

A population of 36 090 households was found within the 7 sub-locations adjacent to Ngong Road forest. Households were sampled using random sampling. Sampling intensity of 3 % was applied in every sub-location. A total of 23, 17 and 7 households were sampled in Ngando, Waithaka and Mutuini sub locations respectively in Dagoretti Division. A total of 7, 8, 20 and 24 households were sampled in Karen, Bomas, Olympic and Gatwikira sub locations respectively in Kibera Division. In total 106 households were surveyed in the 7 sub-locations adjacent to Ngong Road forest.

Table 1.9.3.2 Sampling intensity of adjacent sub locations.

Sub location	**Population of Households**	**Sampling size**	**Sampling intensity**
Ngando	7,818	23	3%
Waithaka	5,795	17	3%
Mutuini	2,395	7	3%
Karen	2,416	7	3%
Bomas	2,820	8	3%
Olympic	6,818	20	3%
Gatwikira	8,028	24	3%
	36,090	**106**	**3%**

Source: Field report, 2008

1.9.4 Data Analysis

Closed-ended questions were coded initially before the survey while open-ended questions were coded after gathering the responses from the field.

1.9.4.1 Range

Range was important in assessing the history and period when community based organization were formed to participate in forest management.

1.9.4.2 Statistical package for Social Scientists (SPSS)

Statistical Package for Social Scientists (SPSS) was used to analyze quantitative data including frequency distributions among certain variables such as frequency of use of forest products and services among communities.

Bar charts/histogram, pie charts and percentages were applied in assessing variables related to education level, types of forest products and services.

Chi square statistic and regression cross tabulation were used to ascertain relationships among variables. Chi square statistic as a non parametric test was used to test the significance levels in the research hypothesis when analyzing frequency of use of forest products and services in relation to income level and distance traveled.

1.9.4.3 Likert scale

Likert type scale was used to rank level of importance of forest products and services from 1 to 5 where 1 represented very important, 2 important,3 less important , 4 not important and 5 not very important. This rating scale assisted in weighing perception of the communities in analyzing importance of forest in provision of forest products and services.

1.9.4.4 Charts and tables

Charts and tables were used to document qualitative data collected from key informants.

1.10 Organization of the Study

The research was organized in several chapters as follows:

Chapter 1: Introduces the study, states the problem, highlights on the research questions and states the hypothesis. The chapter further indicates the study objectives, assumptions and justification of the study; scope and organization of the study; operational definitions of concepts; research methodology and study limitations.

Chapter 2: Reviews various literature, policy documents and research related to the study. Reviewed in details are the international agreements, national policies and the existing legislations on community participation in natural resource management.

Chapter 3: Discusses the background to the study area including various land uses and institutions operating in the study area. Information on the forest sector in Kenya is also discussed here.

Chapter 4: Highlights on the socio economic analysis of the household surveys and interpretation of data after the hypothesis testing.

Chapter 5: Discusses the extent of community participation in forest management, frequency of use of forest products and services and framework for planning community participation in urban forestry.

Chapter 6: This chapter draws the conclusion from the findings, makes recommendations and suggests areas for further research.

CHAPTER TWO: LITERATURE AND CONCEPTUAL REVIEW

2.1 Introduction

The literature reviewed definitions of terms on community, participation and collated understanding on how various readers in the past have conceptualized around the term community participation.

In addition, literature reviewed concepts in forest management including sustained yields, participatory forest management and aftermath of "Rio Summit" on the concept of sustainable forest management.

In strengthening understanding on the aspect of urban forestry, the review captures principles and functions of urban forestry as understood by various scholars.
Cases of community participation internationally and locally are also reviewed.

Emphasis is given to the International instruments such as conventions, national policies and legislations on how they enhance opportunities for community participation in forestry management.

2.2 Community Concept

Community is understood to be a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings.

Community may be referred to in three contexts; spatial, socio-cultural and economic context.

- Spatial**:** Communities are considered to be groupings of people who physically live in the same place like the city of Nairobi or the Dida village community.
- Social and cultural: communities are considered to be groups of people limited by ties of kinship and marriage, including tribes and clans. In this case, they may or may not occupy the same area and use the same resources for their livelihoods.

- Economic**:** communities are considered to be a group of people that is composed of interest groups like the beekeeping, farming community or the pole cutters user-group.

Community can also be classified as communities of interest (e.g. belief, cultural background, football, golf, learning); communities of circumstance (race and ethnicity, disabilities, prison, orphanages); and communities of place(cities, villages, refugee camps).

The Forests Act No. 7 of 2005 defines forest community as a group of persons who (a) have a traditional association with a forest for purposes of livelihood, culture or religion; (b) are registered as a Forest Association or other organization engaged in forest conservation, while the same legislation defines Community Forest Association as a group of persons who are registered as an association under the Societies Act (cap 108) and who are resident in area close to the specified forest.

2.3 Participation concept as a method and a process

Literature on participation and participatory processes stems broadly from two major areas: first from political sciences with discussions around democracy and citizenship especially within the context of regional and local planning (Munro-Clark, 1990 and Davis, 1996) and secondly from development theory especially within the context of sustainable land use (Chambers,1997 and Rahman,1993 and Nelson and Wright,1995).

Participation is a continuous process of negotiation and decision making that occurs at various levels and with the groups that are affected by the decision (Jennings 2000). On practical terms it involves consulting different people, discussing openly in an environment of respect and collaboration, exploring the interrelations and acknowledging power inequalities and influential players. Participation also requires that information is communicated and disseminated on results and decisions to all groups.

According to D' Arcy (1990), participation is the active involvement of insiders and outsiders in all decision related to objectives and activities, as well as the activities themselves. The primary purpose of participation is to encourage community self-determination and thus foster sustainable development.

According to World Bank (2006) 'participation is the process through which stakeholders influence and share control over priority setting, policy-making, resource allocations and access to public goods and services'

Participation is an important element in any change process if it enhances equity, effectiveness and long-term management capacity of the stakeholders. It is an element that strives to ensure that all partners are informed, involved and supportive of the management or conservation goals.

People's participation means that the target beneficiaries of a project take part in all stages of the development process. That is, they participate actively in decision making for planning in the process of implementation, in sharing benefits of the project, and in monitoring and evaluation (Ingles *et al.*, 1999)

Participation can be both a means and an end. It is a means if it provides more effective development and better information. It is an end if it delivers empowerment.

2. 3. 1 Modes and levels of Participation

Malvicini and Sweetser (2003) identified four modes of participation. They are sharing information, consultation, partnership, and control.

I) From manipulative participation to self mobilization (Cornwall 1995 and Hobley,1996)

Cornwall (1995) and Hobley (1996) identified various typologies of participation and their characteristics as follows:

1. *Manipulative participation*

   This is participation in pretence where people's representative sit in official boards but unelected and having no power.

2. *Participation by Consultation*

   People participate by being consulted or by answering questions. External agents define problems and information gathering process, and so control analysis. Such a consultative process does not concede and share in decision-making, and professionals are under no obligation to take on board people's views.

3. Passive participation

People participate by being told what has been decided or has already happened. It involves unilateral announcements by an administration or project management without listening to people's responses. The information being shared belongs only to external professionals.

4. Participation by material incentives

People participate by contributing resources, for example labor, in return for food, cash, or other material incentives. Farmers may be paid or be given firewood/grass in return for participation, but are involved in neither experimentation nor the process of learning. This is commonly called participation, yet people have no stake in prolonging technologies or practices when the incentives end.

5. Functional Participation

Participation is seen by external agents as a means to achieve project goals, especially reduced costs. People may participate by forming groups like community forest associations to meet predetermined objectives/outputs related to the project. Such involvement may be interactive and involve shared decision making, but tends to arise only after major decisions have already been made by external agents like not being involved in deciding the benefit sharing process. At worst, local people may still only be co-opted to serve external goals.

6. Interactive participation

People participate in joint analysis, development of action plans and formation or strengthening of local institutions. Participation is seen as a right, not just the means to achieve project goals. The process involves inter disciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning process. As groups take control over decisions and determine how available resources are used, so they have a stake in maintaining structures or practices. Communities and facilitators develop joint proposals that involve agreeing on the activities to undertake.

7. Self Mobilization

People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. Self mobilization may or may not challenge existing distribution of wealth and power.

ii) From manipulation to citizen control (Arnstein,1969)

Arnstein in 1969 described eight levels of participation in the form of a ladder. The level move from manipulation to citizen control as indicated below.

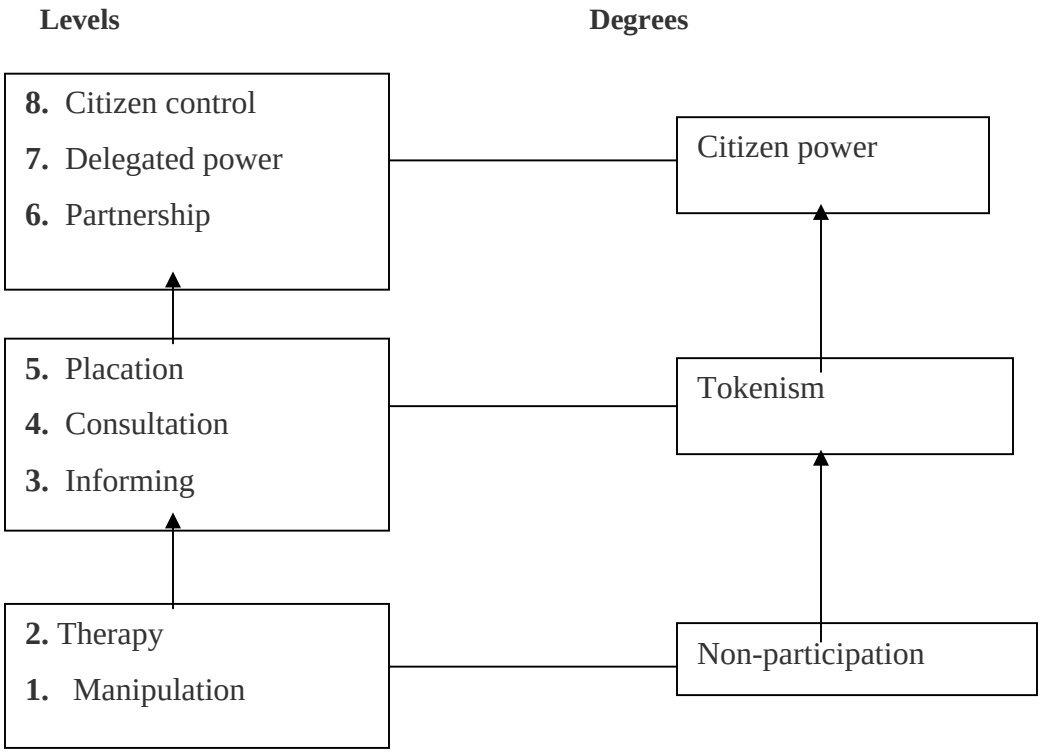

Fig 2.3.1: Levels of citizen participation (from Arnstein, 1969)

Arnstein identified 3 degrees starting from non participation to tokenism and finally to citizen control.

The role of power is central to participatory processes (Slocum *et al.*, 1995). It is one of the major reasons why people decide to get involved in forest management issues while at the same time forestry agencies are reluctant to relinquish their control over the resource (Snowdon and Slee, 1996). The nature and levels of participation in a policy or a development process are often measured in terms of power and roles that the different stakeholders have in the decision making process.

Notably along the scale of participation from 'cooption to collective action'(Cornwall,1995) or from 'manipulation to citizen control' (Arnestein,1969), from 'passive participation to self mobilization' (Pretty,1995) the greater the control by outsiders (e.g. those outside the local community, the professionals) the less local communities tend to be involved at critical decision making stages.

Although not a new concept, there is no doubt that participation as a management approach or methodology has grown considerably in the last decade and the growing bulk of literature especially from the development field testifies to the renewed interest. Davies (1996) thinks that the renewed spirit is because of increased access to information, a more intrusive media, alienation from traditional structures, protest movements and a new sophistication amongst interest and lobby groups.

Other reasons given for realization of this approach is that other approaches used in the recent past have failed to deliver especially in development literature where examples of failed development projects, misused resources and disillusioned communities abound (Chamber, 1997, Rahman,1993 and Warburton,1997).

2.4 Aspects of Forest Management Concepts

2.4.1 Introduction to forest management

Forestry is the art or skill of planting, tending and managing forests and trees for goods and services. Forest management is the process of planning and implementing practices for the stewardship and use of forests and other wooded land aimed at achieving specific environment, economic, social and or cultural objectives. Forest management **i**s also seen as the manipulation of trees and forests stands to meet landowners or institutional objectives.

2.4.2 Concept of sustained yield

In the 19th century, European foresters came up with principles and doctrines which guided forest management. These were the doctrine of supremacy of wood, doctrine of absolute standards, doctrine of long run and the widely practiced, and the doctrine of principle of sustained yield (Ochieng *et al.*, 2007).

Of all these doctrines, foresters considered sustained yield as synonymous with good forest resource management. This doctrine has guided objectives of most countries of the world including Kenya till around 1990.

Sustained yield is defined as the yield of wood or other produce from a forest which is managed in such a way as to permit the removal of approximately equal volume or quantity of wood or other forest produce annually or periodically in perpetuity.

The criterion for judging an ideal sustained yield forest was the concept of "normal forest" with the following important attributes; a normal series/distribution of age classes, normal increment, and normal growing stock. Such a forest was considered to correspond to the objectives of sustained yield management. However, over the years, sustained yield management has been criticized for assuming that wood production was either the primary product or indicator for other multiple products from the forest; and that rigid fixed supplies of forest produce do not necessarily meet the demands of a dynamic growing economy.

Social economic developments in the world between 1950 and the early 1990s evolved new values and roles of forests such as growing importance of forests for recreation, multiple uses of forests and the realization that not all forest uses are compatible, importance of biodiversity conservation, medicinal plants, forest plant foods, and in supporting community livelihoods and industrialization. In addition forests management has of late been affected by the growing awareness of the population on needs for environmental conservation.

2.4.3 Concept of Sustainable forest management

The concept of sustainable forest management came to the limelight at the United Nations Conference on Environment and Development (UNCED or Rio 1992), which culminated in Agenda 21 which specifically focused on forestry for economic development. In Agenda 21, the concept of sustained yield as the primary objective of forest management was replaced with sustainable forest management (SFM), and development of criteria and indicators was recognized as the most effective means of assessing sustainability.

A major distinction between managing forests for sustained yield and that of sustainable forest management is that sustained yield and its attribute, normal forest, is a measure that deals only with a specific end product, while sustainable forest management covers practices, rules and processes. Thus, while sustained yield and normal forests are physical and measurable concepts,

sustainable forest management is a process where criteria and indicators only measure its progress.

A definition of the present day understanding of the term sustainable forest management was developed by the Ministerial Conference on the Protection of Forests in Europe (MCPFE), and has since been adopted by the Food and Agriculture Organization (FAO). It defines sustainable forest management as:

> the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.

In simpler terms, the concept is described as the attainment of balance - between society's increasing demands for forest products and benefits, and the preservation of forest health and diversity. This balance is critical to the survival of forests, and to the prosperity of forest-dependent communities.

For forest managers, sustainable managing a particular forest tract means determining, in a tangible way, how to use it today to ensure similar benefits, health and productivity in the future. Forest managers must assess and integrate a wide array of sometimes conflicting factors - commercial and non-commercial values, environmental considerations, community needs, and even global impact - to produce sound forest plans. In most cases, forest managers develop their forest plans in consultation with citizens, businesses, organizations and other interested parties in and around the forest tract being managed.

Because forests and societies are in constant flux, the desired outcome of sustainable forest management is not a fixed one. What constitutes a sustainably managed forest will change over time as values held by the public change.

The idea of sustainable forest management is at best an evolving concept. It is not a fixed set of rules or principles that apply to all forests for all time. In practical terms, sustainability means different things in different forests, or even in different parts of the same forest. Sustainability is more a state of mind or an attitude than set of rules and regulations. Peter Murphy, forestry

professor in University of Alberta wrote in 1998, “Sustainable forest management is not so much a destination as it is a journey”.

2.4.4 Concept of Participatory Forest Management

It is an evolving or emerging concept, which deliberately involves the forest adjacent communities and other stakeholders in management of forests within a framework, which contributes to community’s livelihoods. It aims at reconciling key stakeholders interests through development of mutually enforceable agreements and decision making that define their respective roles, rights, responsibilities and authority in the management of defined forestry resources.

Communities are empowered in participatory decision making thus minimizing conflicts and maximizing equitable benefit sharing (Ostrom *et al.,*1999). Community participation does not have to be detrimental to other stakeholders; rather, including communities in decision making can create a win-win outcome where everyone benefits (Colfer and Bryon 2001).

2.4.5 Concept of Urban Forestry

The concept of urban forestry has been developed and implemented as a framework for integrated planning and management of urban (and peri urban .i.e. adjacent to urban areas) tree resources. The most widely used definition of urban forestry was developed by Miller (1997) who referred to it as an integrated, city wide approach to the planting, care and management of trees to secure multiple environmental and social benefits for urban dwellers. The areas of intervention of urban forestry in relation to the green structure and distribution include three areas: form design, functions and policies; technical aspects and management of both individual trees and urban woodlands. Traditionally, the forestry sector neglected the urban environment, paying more attention to rural areas. From the perspective of the Food and Agricultural Organization of the United Nations (FAO), urban and peri-urban forestry considers tree based systems at large in or adjacent to urban areas (Kotka 1996; FAO and CIRAD, 2002).

Urban forestry has been developed in response to the call for innovative, comprehensive concepts that promote the multiple benefits of urban green space. Sometimes named urban and peri-urban forestry, the concept encompasses the planning and management of forests and other tree

resources in and close to urban areas and thus integrates different parts of urban green structures (Konijnendijk, 2006).

2.4.5.1 Principles of Urban Forestry

During recent years, integrative and strategic concepts and field of activity have been developed and implemented across the globe to promote and develop tree-based resources catering to multiple urban demands. Urban forestry is one such promising concept, which in recent years has gained the capacity to cater to a wide range of urban needs and realities.

1. The concept of urban forestry has several main principles, which include **integrative and comprehensive**. The concept incorporates different green space elements into a whole (the "Urban Forest") and thus promotes a holistic view that combines forest, agricultural, natural conservation and recreational areas. (Mock 2004, Pauleit *et al.*, 2005)

2. Another principle includes **multifunctional nature** of urban forests. They cater for the needs of urban society by providing multiple benefits which include various economic, ecological and socio cultural goods and services (Mock 2004).

3. Urban forestry is **multi sectoral, multidisciplinary and aims at to become interdisciplinary**. It is built on involvement of experts and practitioners from a wide range of disciplines and professional backgrounds like social scientists, planners, economists, natural resource managers among others (Miller 1997, Nilsson *et al.*, 2005)

4. Urban forestry is also built on the **principles of social inclusiveness and strategic.** This emphasises the involvement of different segments of local communities in managing and using tree resource. It promotes decentralization, public participation, fair and equitable sharing of benefits and access to resources. Strategically it envisions development of long term policies and plans responding to the needs for tree resources and urbanization prospects, connecting to different sectors, agendas and programmes, and taking into account the continuous tendencies of expansion and densification of cities (Mock 2004). This is particularly when poverty, conflicts and natural disasters force the rural population to migrate into cities.

2.4.5.2 Functions of Urban forestry

Experience has shown that urban green spaces form more than just a "supplementary" urban infrastructure and can help provide livelihoods. The goods and services by forests and trees in close to urban centers can be grouped into three main value based categories. (Konijnendijk and Gauther,2006)

In the first category, they provide economic and livelihood values by providing attractive environments for business to settle in and people to live in. Generally have positive impacts of nearby well managed forests, green areas on real estates prices and business development. Several documentation has been undertaken, for instance through hedonic pricing studies (Wolf, 2004; Tyrvainen *et al.*, 2005).

In the second category urban forests are essential in provision of environmental and ecological values. In arid regions, forest belts around cities help combat desertification (FAO, 1999). Trees reduce storm water runoff and can assist with processing waste water. Urban forests also protect soils and moderates harsh climate, for example by cooling the air, reducing wind speeds and giving shade. Trees and other vegetation intercepts particles and gaseous pollutants and thus reduce air pollution as a study in Beijing, China has shown (Yang *et al.*, 2005) and in addition forests and trees in cities act as carbon sinks in the equations relevant within the context of global warming (Johnson and Gerhold 2003) and biodiversity conservation.

In the third category they provide social and cultural values. The recreational values of forests, parks, gardens and other urban green areas are well documented. They attract thousands of recreational visits per hectare per year (Konijnendijk 2003). The large majority of all recreational use of forests takes place in areas not more than 1-2 km from people's homes (Hornsten, 2000). Urban greens can have a positive impact on people's physical and mental health by providing settings for physical exercise, reducing ultraviolet radiation and air pollution, lowering stress levels (Grahn and Stigsdotter, 2003).

2.5 Cases of Community participation in forestry

Communities can participate in forest related activities in various ways. They include offering patrol or security for the resource, provision of labour, assisting in resource assessments, funding

of forest activities, development of livelihood support system such as beekeeping, and creation of by laws among others.

2.5.1 Cases of community participation in forestry from other regions

Community participation in urban forestry has been witnessed in Curitiba, in Brazil, where the municipal council encourages participation from low income residents, by providing weekend bus services from park to park and gives opportunity for the poor to appreciate natural resources and become more active in environmental programs. In addition, an environmental training center has been constructed to train citizens in ecology.

The Parks and Gardens department of Via del Mar, Chile works with neighbourhood associations, ecology groups and students to educate them on ecological issues and reduce vandalism of street trees.

Officials in Mexico City discovered that when the city provided seedlings, transportation, labour and agronomic inputs for tree plantings in wealthier neighbourhoods, the landowners did little to maintain the trees. Since the owners had not participated in the plantings, they did not value them and were indifferent to their care. Consequently, city officials now require landowners to become partners in any tree plantings on their property and to donate labour and other inputs to the program (Martnez and Chacalo 1994).

In Durban, South Africa, multinational parks have a component of slum improvement programmes where the parks are used for storm water catchments and waste water treatment, recreation and gardening (Konijnendijk and Gauther, 2006)

2.5.2 Aspects of community participation in Forest Management in Kenya

In Kenya, community participation in natural resource management is being advanced on the basis that communities' role is vital in all spheres of development. Therefore, sharing of powers and responsibilities to allow the co-management of forest resources is inevitable. Local community involvement is increasingly leading to shared management costs and responsibility, higher contribution to community livelihoods, sustainable resource use, synergy to rural development, better information sharing and understanding of the resource base, sustainability of

the initiative, ownership by local stakeholders, community empowerment bringing their level of knowledge to par with that of the technical stakeholders (Mbuvi *et al.,* 2005).

Notably the Manual on Preparation of Participatory Forest Management Plans (PFMPs) developed in 2007 by the Kenya Forest Service and Kenya Forests Working Group (KFWG) provides for community participation through forest user groups, communal land associations, Cooperative Societies, Farmers' groups and Non Governmental Organizations that draw membership from the local community. However it is expected that as the process continues and particularly when the signing of the management agreement is done, the community should register their association under the Society's Act (Cap108)

Communities' involvement has been recognized in emerging natural resource management systems such as the participatory forest management in Kenya. Through Participatory forest management, Kenya Forest Service aims at improving forest management and livelihoods of forest adjacent communities. In Kakamega and Arabuko Sokoke state forests, Community Based Organizations (CBOs) are involved in seedling production, ecotourism enterprises among others (Mbuvi *et al.,* 2006).

Local communities especially in the rural areas depend on forests for provision of wood, fuelwood, and non timber forest products for their livelihoods. Over 530,000 households living at a distance of five kilometres depend directly on forest cultivation, collection of fuelwood, herbal medicine and other economic gains (Kenya Forests Masters Plan, 1995).

Previous studies by Omondi (1992) assessed Karura and Ngong forests as part of the urban recreation or open spaces within the city of Nairobi. The study revealed that demand for recreation in Nairobi city was enormous, while the provision of recreational facilities was worsened by the failure of urban residents to meet the other requirements such as housing, health, and schools for the increasing population. The study recommended that appropriate policy guidelines and research work need to be undertaken to necessitate provision of adequate recreation from green areas such as the Ngong Road Forest.