COMMUNITY FOREST MANAGEMENTANDPOLICYIMPLICATIONSFORTHE BIOSPHERÉ RÉSERVE OFLUKI, DEMOCRATIC REPUBLIC OFCONGO



BosazeRufingaShange

Thesis submitted for M.Sc. degree in Forest Ecology and Tropical silviculture Faculty of Agriculture and Forestry/Department of Forest Sciences Viikki Tropical Resources Institute (VITRI) the University of Helsinki,

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FacultyofAgricultureandForestry	Department of forest Science; Viikki Tropical Resource Institute(VITRI)	
Author	BosazeRufingaShange	
Title; Community Forest Management and Policy implication for the Biosphere Reserve of Luki, Democratic Republic of Congo		
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Abstract

This research focused on sustainable community forest management and policy implications for the biosphere reserve of *Luki* in the DR- Congo. The purpose of this research was to find out opportunities and options to develop sustainable community forest management at the biosphere reserve of *Luki*. The research was conducted in the biosphere reserve of *Luki* located in the southwest of DR- Congo. The human activities threat the biosphere reserve of Luki to be under significant pressure of unsustainable management. The research revealed a number of options and opportunities to establish sustainable community forest management and policies needed to sustain forest ecosystem in the biosphere of Luki.

The research uses a qualitative research methods, both primary and secondary data were collected during field work in 2010 through interviews and other various participatory methods. The interviewee includes different local forestry authorities and local community. The results of the research showed that, sustainable community forest management cannot be established in an environment where no effective policy instruments or law enforcement being in place.

The results show that, due to political conditions in DR- Congo, the government has not been able to put certain measure to resolve tenure rights. This has remained a difficult issue and challenge that the government has not been able to find an immediate solution. The research recommends the need to develop a sustainable community forest management at the biosphere reserve of *Luki*. The government needs to clarify the forest code by clearly stating what government wants to do with its vast forest resources, especially in regard to the forest dependent people. A policy framework should be put in place as soon as possible in order for forest institutions to be able to function. The management strategy should be an inclusive process in order to promote equity and multiple use of forest resource at local community level.

Keywords; Sustainable, property right, participation, forest dependent people, governance

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The biosphere reserve of *Luki* has significant importance on forest biodiversity and for support local livelihood. However, little research has been done to unveil issues related to community forest management.This was the main reason for motivation ofresearcher.

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TABLE OFCONTENTS

Contents

CHAPTER I 8

1. THE BACKGROUND OF THE RESEARCH 8

1.1 The land tenure system in DR-Congo 10

1.2 INTRODUCTION 13

1.2.1 The forest of DR- Congo and its importance to nature 13

1.2.2 Characteristic of Democratic Republic of Congo forest 13

1.3 Research statement and justification 14

1.3.1 Political environment and forests in the DR- Congo 15

1.3.2 The general objective of study 17

1.3.3 The specific objectives of this study were: 17

1.3.4 The Research Questions 17

1.3.5 The focus of this study 17

CHAPTER II 18

2. LITERATURE REVIEW 18

2.1 General description of Community Forest Management 18

2.2 The concept and significance of Community Forest 19

2.3 The local community with forest at the biosphere reserve of Luki 20

2.4 Framework of Forest Policy 22

2.4.1 Components of Policy development 22

2.4.2 Property Rights as concept for public policy 24

2.5 Socio - economic importance of forest resources in DR- Congo 27

2.6 Traditional ecological knowledge 28

2.6.1 Perspective on theories behind community forest management 29

2.6.2 Ecological knowledge focusing on local community in forest management 30

2.6.3 Observation on ecological literacy of local Communities at Luki 32

2.9 Criteria and indicators for sustainable community forest management 34

CHAPTER III 36

3. MATERIAL AND METHODS 36

3.1 Democratic Republic of Congo and study site 36

3.1. The location of study area at Biosphere reserve of Luki on the map of DR- Congo 37

Scanné avec CamScanner

..... 37
3.1.2 The map of biosphere reserve of Luki within Mayumbe forest in DR- Congo 38
3.2 Description and geographic location of the study areas..... 39
3.3 Climatic condition and territorial administration..... 40
3.3.1 Economic activities..... 41
3.3.2 Populations at Biosphere reserve of *Luki*..... 41
3.4 Methodology..... 41
3.4.1 Data collection methodology..... 42
3.4.2 Primary data collection..... 42
3.4.3 Participatory Rural Appraisal..... 42
3.5 Dialogue with group participants..... 43
3.5.1 Transect walk around Villages..... 43
3.5.2 Semi-structured interviews..... 44
3.5.3 Discussion with Focus Group..... 44
3.5.4 Secondary data..... 44
3.5.5 Table1 1..... 45
The table presents the main methodology approached used in this research..... 45
CHAPTER IV..... 47
4. RESULTS AND DISCUSSION..... 47
4. 1 Field work results analysis of local community perception on community forest management and their practices..... 47
4.2 Field results analysis related to policy implication at biosphere reserve of Luki..... 51
4.3 The result analysis of the national forestry policy..... 52
4.4 Discussion..... 53
4.4.1 Congo with property rights arrangement..... 54
4.4.2 Opportunity to develop SCFM at biosphere reserve of Luki..... 55
4.4.3 Local community access to Forest at the Biosphere Reserve of Luki..... 56
4.5 Community forest utilization rights and Obligation of Congo Government..... 57
4.6 Local communities at Luki and their perceptions on community forest management..... 59
CHAPTER V..... 61
5. CONCLUSION AND RECOMMANDATION..... 61
5.1 Main questions and challenges in community forest and policy implications..... 61
5.2 Development of sustainable community forest management system..... 62

Scanné avec CamScanner

5.3 Recognition of traditional rights for empowering local communities 63
5.3.1 Improving collaboration in forest resource management 64
5.3.2 The implication of ecological states to forest sector in DR- Congo 65
5.3.3 Justification of forest circumstance of the past in DR – Congo and why the implication of ecological states is important 66
5.4 The role of ecological states in the DR- Congo 69
5.5 Recommendations to develop community forest at the biosphere reserve of Luki 71
5.6 Recommendation on policy implications 73
5.7 Concluding remarks 76
5.8 References; 77

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ACRONYMS AND ABBREVIATION

BRL	Biosphere Reserve of the Luki
CIFO	Centre for International Forestry Research
CFM	Community Forest Management
CIRAD	Centre International de Recherché Agriculture ET du Development
CBFF	Congo Basin Forest Fund
DRC	Democratic Republic of Congo
FAO	Food and Agriculture Organization
CI	Criteria and Indicators
IUCN	International Union for Conservation of Nature
UNCED	United Nations Conference on Environment and Development
RDFN	Rural Development Forestry Network
PFD	Permanent Forest Domain
UNECA	United Nations Economic Commission for Africa
NGO	Non-Governmental Organization

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UNESCO	United Nations Educational, Scientific and Cultural Organization
MAB	Man and the Biosphere
NTFP	Non Timber Forest Product
INEAC	Institute National de Étude Agronomic du Congolais
INERA	Institute National de Etude Agronomic ET Research
PRA	Participatory Rural Appraisal
MNR	Management of Natural Resources
DFID	Department for International Development
CFND	Community Forest Networks Development

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CHAPTER I

1. THE BACKGROUND OF THE RESEARCH

Community Forest Management (CFM) implies to those forest activities at the community level aimed towards the sustainable use of forest resources. The concept related to community forest management has been used for many decades, but yet has not found a clear definitionFAO (1978). It is basically due to various forms and contexts that CFM is originated.According to (Poffenberger, 1996), for community forest to succeed it requires adequate knowledge and active involvement of community in the decision-making process. Maintaining forest ecosystem is important to both local communities and the environment, despite differences in opinion over the terms of management established by varieties of socio – economic, political and ecological institutions (Poffenbergeret al, McGean1996).

To achieve the benefits that forest provides to people and the environment, the overall management system requires adequate socio – economic and political adjustments. Such arrangements are required for both community and policy makers for forest management to materialize. Sustainable forest management is determined by the methods used. Any suggested methods to be used for community forest management (CFM) should include community people in decision making process. Much practical scientific evidence and theories have discussed this issue by stipulating that natural resources governance is often incompetent for controlling overexploitation of natural resources (Gordon1954).However, more and more studies argue that common property can be a feasible form to natural resources management. Therefore, managing common property should include a feasible affiliation between policymakers and all identified stakeholders in forest management. Good relationship between stakeholders and policy makers are important for establishment of sustainable forest management (Hardin 1968).

Community forest management is now given serious consideration globallyand indicates those forest activities that community people can do at the village level. The community participatory approach has already been seen by scientists as a way to empower communities to understand how to make collective decisions and carryout management activities on communal forestland. This is a place where local people can have opportunity

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and option to participate in the planning and establish a management system for forest related activities. It is also a place where local communities can retain their socio-economic and ecological benefits derived from forest ecosystems (Martel et al; Whyte1992).

As challenges arise from many parts of the forests world, especially those countries in tropic and subtropics, experts say, forest in the tropic are not yet managed based on the principle adopted by United Nations Conference on Environment and Development (UNCED1997). Some of this mismanagement is caused by many factors which include lack of good governance, poor policies in place, insufficient cooperation amongst forest stakeholders, lack of tenure rights, and lack of incentives in order to promote sustainable community forest management. Finally, mismanagement has also occurred due to lack of adequate mechanisms that will ensure that a participatory approach is sustainably implemented.

Sustainable community forest management seems to be the practice that continues to assists the international community to meet the challenge posed by climate challenge. Therefore, sustainable practice of community forest management assists in delivering intended benefits derived from forest ecosystem. Based on these facts, policy instruments need adjustment in order to better the practical framework and relationship between forest ecosystem and communities living in poverty. The local forest practice was considered as the main priority by IUCN at the4^{the}World Conservation Congress in Barcelona IUCN 2009 (FAO 2008).

Among other objectives, community forest management is meant to guarantee that goods and services forests provide meet the current and future ecological challenges; including the needs of forest dependent people. The concept of community forest management is an important concept that has already put number of tools to help managing the natural resources at local level. Certain tools are already in place, for example administrative, legal, technical, economic, social and environmental tools to help manage forest resources. In order for these to materialize, serious commitment is required and collaboration of all stakeholders is needed for sustainable management of forest resources. This means that to set a range of effective plans of actions aimed to secure and maintain abundances and diversity of forest ecosystems. These plans should consider socio-economic, culture and

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ecological values derived from forest. Keeping these aspects active will definitely improve sustainable production of goods and services of forest ecosystem (FAO 2008).

1.1 The land tenure system in DR-Congo

The transition parliament of 2002 in the Democratic republic of Congo, agreed to have passed the forest law No 011/2002 resulted in the forest code of 2002 which provides a number of principles for forest governance. The forest code of the DR- Congo is set as a structure that provides balance in forest management rights. Community forest management is stipulated in the forest code of 2002, chapter, II, article 71 – 76 and it provided rights of local community to forests.

In chapter III: The utilization of community forest, article 111, 112and 123 recognized all traditional user rights including those rights of indigenous people (Forest code 2002). The code distinguishes between short to medium agreements as well as long term agreements. This arrangement of land tenure practice makes it difficult to clarify tenure rights in DR-Congo. The change in land tenure policy is an important step that should help sustainable development of the community forest sector. (Bruce1999).

In this case of Democratic Republic of Congo, community forest management and policy implication is a fundamental aspect to understand rights related to land tenure. The goods and services that forest resources provide to both environment and people´s livelihood are feasible when property rights arrangements are clear. However, mutual understanding and clarity in the landownership policy is most significant. This is considered as a permanent aspect of the culture and identity. In many parts of the world land represents life of the people, both physically and spiritually. This means that, if people do not have access to land and do not own any land they have no roots, identity or authority over natural resource (Bonnemaison, 1984).

The Democratic Republic of Congo is rich in natural resources but has experienced various internal conflicts since gaining independence in 1960. The relatively young democratic government is trying to do what it can but more focus is on security and economic stability. This means that reform on land tenure is not an interesting agenda right now for the DR-

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Congo government. However, there are already some discussions at the higher level and at community level on land reform.

Poverty in communities has forced many Congolese people from various communities to spread to other part of the country leaving their place of origin. An existing security and economic vacuum has even allowed neighbouring countries to take advantage by exploiting DR- Congo natural resources. Currently in Congo there is no available information that can clarify land tenure in order to make feasible policy. The recent forest law of 2002 does not provide sufficient information and it also shows that land officially belongs to Congolese government.

The legislation of DR - Congo since1960 has not recognized traditional tenure rights. Between 1969 and 1973 some reform were made on land tenure which stated that, "all land title and customary tenure rights were abolished". The reform of the 1979 constitution clarified that there were no longer private property rights. In the land code of 1983 (law 52/83) was stipulated that land is the property of the government. Whereby, the administration and institutions of land since 1983 was governed by land code, which has been transformed to forest law in 2002. Up to now little information is known about land related legislation and policy to local community people. There are two types of land tenure recognised by law in DR- Congo. One is government owned land and the other is communal lands which are controlled by village chief (Bruce1993).

The demand to address issues relating to property rights in DR- Congo is increasing and not necessarily from forest sector but also from local community. The increase is based on growing attention for forest development and reform on property rights in natural resource management by stakeholders. In this, analysis of policy implication is a critical component for economic development and social stability in DR- Congo. Insecure tenure rights are causing improper functioning of policies and institutional arrangements in DR- Congo. A social circumstance of the country is now failing to correspond to socio-economic, political and ecological reality.

The facts mentioned above are causing unsustainable practices on forest operation. Social conflicts on property rights have become a serious problem to solve in DR- Congo. For instance in 2007, problems related to land tenure occurred in different provinces of the DR-

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Congo including the communities at the biosphere reserve of the Luki. Most of these conflicts occurred because forest dependent people in the DR- Congo are continuously excluded from forest decision making or from participating in forest management scheme(Greenpeace 2010).

The case of DR- Congo reform of land tenure is very important case due to increase in timber demand and increase of socio-economic dependence on the forest by local communities. Although, constraints with regards to reform in land tenure are many, reform is very important for Democratic Republic of Congo.

The reform on land tenure is to help the government of DR- Congo to exercise tenure rights on forest resource management. Even though, the government of DR- Congo has little human resources capacity and weak institutional capability to cope with challenges related to tenure rights. Due to absence of tenure rights the governance of property rights has failed to guarantee a sustainable management of vast forest resources in DR- Congo.

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1.2 INTRODUCTION

1.2.1 The forest of DR- Congo and its importance to nature

The former Zaire, now known as Democratic republic of Congo has roughly 135 million hectares of forest resources, which covers ten per cent of the global rainforest resource. The democratic republic of Congo forest is also the second most leading moist rainforest in the world. The forest is very significant in terms of biodiversity richness and plays a significant role in saving millions of people's lives (IES 2012).The forest types of DR - Congo consists of lowland forests, mountain forests, transition forests, and savannah and mangroves forests (FAO 2002).

The rainforest of DR- Congo provide shelter for human beings and those who shelter in the forest are dependent on it to sustain their lives. Also, a larger number of the communities in DR- Congo depend on the forest ecosystem for different purposes, for example for food, medicine, hunting, cultural and for small scale trade. The forest of Democratic republic of Congo is also important for the role that plays as carbon sinker (Rainforest 1995).

These forests are also vitals whereby two thirds of its population depend on forest to attain different basic needs. Additionally socio – economic and environment values of this forest have significant importance that can be used for improving economic development at community level (IES 2012). Despite this, the Congolese people are still known as most the poorest people in the world. The poverty situation in the DR- Congo continues to affect mostly those local people who still depend on forest resources for their livelihood (Greenpeace 2010).

1.2.2Characteristic of Democratic Republic of Congo forest

The DR- Congo is known to be the home of 2100 species of amphibians, birds, mammals, and reptile. Among these 6.6 % species are endemic, which exist only in DR- Congo, of which 3, 5 % are endangered species. The DR- Congo has a total surface area of 2, 3 million$km^2$of forest, which play important role in sequestering carbon. The western part of

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DR- Congo is so far the most extensive region covered with forest ecosystem known as "Western *Congolian* Forest-Savannah Mosaic" (Nature and Fauna magazine 2011).

The DR- Congo is also known to have forest which provides a refuge for vascular plant species; about 10 % of them are endemic. The DR- Congo forest hosts more than 10000 species of plants. The species include birds, mammals and vascular plants (FAO2008). The DR- Congo is an important country in African continent for biodiversity conservation. It has a vast number of forest species which are spectacular endemic species for example Okapi, Grauer's gorilla, Bonobo and Congo peacock and all type of organism exception on plans species. The DR-Congo possesses over 50 per cent of African tropical forest, this include dense forest and woodland, which cover half of the entire country (Nature and Fauna magazine 2011).

So far is reported that approximately133, 610,000 Million hectares of land is covered by forest, equivalent to 58.9 %. Nevertheless, during the year 1990 up to 2000, the DR- Congo has lost an average of 532,400 hectares of forest. The rate of deforestation annually is up to average of 0, 38 % from 2000 up to 2005. In this case from 1990 and 2005 the DR- Congo has lost in total 4, 9 per cent of its precious forest cover, equivalent to 6,921,000 million hectares. Therefore, based on the measure of total in conversion habitat rate "(is explained as transformation in forest area plus transformation in woodland area minus net expansion of plantation)" for this period between 1990– 2005 the DR- Congo has lost 3.1 % of its forest and woodland environment (Mangobay 2011).

1.3Research statement and justification

Interest in community forest management in the democratic republic of Congo is now growing and more attention is being paid at the national level to change the ways used to perceive on community forests. In 2002, the World Bank supported Congo government in reforming the forest sector. As part of that support, the forest law and forest code were promulgated to ensure good governance in forest resources.

Despite the reform forest governance and institutional capacity still remains a serious challenge for the government of DR- Congo. After many years of civil unrest, the democratic republic of Congo government is trying to regain its judicial authority on forest resources by giving more power to forest dependent people.

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In the DR –Congo it is very important to understand how the relationship between local communities and national policymakers works. Understanding this relationship can assist to determine the best policy approach DR-Congo government is using to manage community forest at the biosphere reserve of *Luki*.

The government of DR- Congo has allocated 345 hectares for community people nearby the biosphere reserve of *Luki* to practice community forest management. But policy means and management system to support community forest management and activities are still weak with unclear tenure rights. As a result, local communities at the biosphere reserve of *Luki* have raised many concerns regarding the management of allocated land.

The information obtained from the local community's perception on community forest management and policy implications at biosphere reserve of *Luki* were used to determine community forest governance system in DR – Congo. In addition, the obtained results helped to determine the socio- economic and ecological future of the forest ecosystem found at the biosphere reserve of *Luki*.

1.3.1Political environment and forests in the DR- Congo

The Congolese government has suffered numerous civil wars through history. Currently the government is trying to stabilize the political situation in the Country which stills a miraculous to get better results. In the DR- Congo, different reforms have taken place in forest governance. However, the government focus is more on peace stability, rehabilitation of socio-economic and infrastructure in the DR- Congo. Due to that, the forests of Democratic Republic of Congo continue to be under serious pressure from different stakeholders and market forces. With little institutional capacity the DR- Congo is facing difficulties to protect its forest investment.

The improper function of forest institution gives an opportunity for illegal logging and misuse of natural resources to continue. In these views, lack of effective policies in-place, raises many questions, worries, and challenges for the government capacity to have a sustainable community forest management. Additionally, lack of good governance, corruption on natural resources, institutional support, poor dissemination of forest

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management knowledge, insecure property rights and deficiency in law enforcement causes the continuation of mismanagement on forest resources in DR- Congo (CIFOR et al; CIRAD2007).

The forest of Democratic Republic of Congo has paid a higher price for peace stability, life vulnerability occurred to both forest dependent people and environment. Forest ecosystem in many areas has been threatened by human activities during the war. In 2002, a new forest code to improve forest governance was adopted by the interim parliament. This law laid out some basic `framework` for forest policy. In this new forest code still said clearly that the government continue to be the owner of forest land in the Democratic Republic of Congo (Bruce1999).

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1.3.2The general objective of study

The general objective of this research was to find out opportunities and options of developing sustainable community forest management at the biosphere reserve of *Luki*. In order to know these opportunities and options, there is a need to analyse the existing community forest management practices and policy implications with regard to community forest management in DR-Congo.

1.3.3 The specific objectives of this study were:

1 To investigate the existing communities or joint forest management practices nearby communities at Biosphere Reserve of *Luki*.
2 To examine the perception and attitudes of local people toward community or joint forest management
3 To analyse the existing national forest policy in relation to community or joint forest management in Democratic Republic of Congo.

3.3.3 The Research Questions

1. How has the current community forest management with its unclear and insecure property rights caused the increase in forest degradation in Democratic Republic of Congo?
2. How has the adjacent village communities deprived of their right to benefit from forest resources?
3. How has the current state document with regard to forest policy have a clear distinction in rights and responsibilities between government and forest communities?

1.3.5The focus of this study

This analysis focuses on the perception of community forest management and policy implications for villages at the biosphere reserve of Luki in the DRC: a case study.

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CHAPTER II

2. LITERATURE REVIEW

2.1 General description of Community Forest Management

Community forest management as defined by, FAO, 1978, as forest practices that directly involve local people. But the concept of CFM, which has been practiced for many centuries, has not found a clear definition. There are many views and arguments on the origins of CFM. Contradiction becomes more and more perceptible depending on whether one is taking into account only a community member and non-government organizations (FAO 1978).Community forest management is comprised of varieties of aspects for forest land practices, capable of small-scale productions such as fuel wood and other forest products for local needs (FAO 1978).

As a community plants trees at the community farm land for economic enhancement, the results for that process are to generate income at the community level and "for other activities of forest dependent people". This definition is thus surrounded by a broad range of possible connections between people and forest on existing forests. But Sustainable forest management depends on inclusion of other stockholders who are involved actively in the management of forest ecosystem and who have stronger interests in forest resources. All of them have significant impacts on sustaining community forest management.

The main objective for all forest actors should be integrated in order to safeguard the values that forest ecosystem intended to achieve. Despite lack of clear definition, Community Forest Management still stands as a logical instrument and principal tool for management of community forest activities. Although the community forest management has different variations in definition it has the same related characteristic that can be easily noticeable (Kellert et al 2000).

The argument related to community forest management, should be that of inclusion of local people's knowledge and their interests in management processes and implementation strategies. Therefore, some basic justification to community forest management has been

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that, a way to enhance efficiency and equity in the management of natural resources (Castro et al; Nielsen 2001). An integral part of the concept of community forest management is that communities have rights and are capable for proposing recommendations related to policy and management strategy (Agrawalet al; Gibson 1999). It can also be considered as a solution to the so called heartbreak of the commons when providing management rights to the local communities (McCay, 2001).

Before the end of 20^{the}century at the Earth summit in Rio de Janeiro it was revealed that, the world is losing it's the most precious forests in many parts of the world, particularly in the tropical countries. The revelation raised more concern on how the forest in the tropic could continue to provide benefits for both local communities and nature (Brown 2002).

Community forest management started in discussion at the end of the 1970s. In the 1990s community based natural resource management scheme began to get wider. These strategies were taken as one of the important element that came close to sustainable forest management. These efforts put focuses on decentralization and towards promoting community participation in natural resource management. It has also been taken as an important step for recognition of human beings as an integral part of the ecosystems. By involving community people in management process is seems to be as an important steps for adaptation to the sustainable strategy intended to manage forest resources (Brown 2002).

2.2 The concept and significance of Community Forest

The main idea behind community forestry is that community forest activities are integral part for rural well-being. The basic concept is that community forestry aims to improve community life, which means to support the forest depended people to be able to carry out community forest activities on their own capacity (Arnold, 1991). In other words community people should have a well-recognized forest land in their community and be considered as part of the ecosystem. The forest depended people are able to participate in the different forest management schemes at the community level. The community people should be able to have local forest organization in order to build up local forestry institutions capacity. Procedures like these lead to decentralization of control and authority

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on forest operations. As the community people become more familiar with policy and management practices at community level, they will be in a position to utilising socio-economic and management objectives on forest resources at the community level (Katila2008).

The effectiveness of community forest resource management requires a clear understanding of management principles and knowledge of natural resources management. Community forest management and policy implications should be encouraged to community people due to it relevancy in forest resources management. Community forest development must therefore be forestry for the people. This means that by acknowledging traditional knowledge in forest management scheme and involving local people is important. When the significance of the concept is analysing the community forest management objective is to encourage participatory action. At the same time to have direct practices that meet local community needs: especial those communities people living in poverty. This can be dealt with through a clear understanding of communities and their relationships with institutions (Gilmour, 1991).

2.3 The local community with forest at the biosphere reserve of Luki

The biosphere reserve of *Luki* is among the last remaining reserve of primary rainforest in the western Provence of Bas - Kongo. The area is now under significant pressure from human activities which are causing the disappearance of valuables forest ecosystem. The human threat to the terrestrial ecosystem of this reserve is higher due to the influence of local communities that are around the reserve. It is estimated that one hundred thousand people living nearby the biosphere reserve of *Luki* .These people have numerous local forest activities including those of hunting and farming. Deforestation in the biosphere reserve of *Luki*is highly noticeable due to illegal logging, firewood collection to meet energy demand and many activities practice by local community (Lumbuenamo2012).

The concept of community forest management is not well known to many members of local communities at the biosphere reserve of *Luki*. The Department for International Development (DFID) in partnership with the forest monitor in 2008 made a joint initiative to start spreading awareness of the concept through community forestry pilot project. The

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project was carried out with different stockholders. The learning process was through participatory and the information obtain was aim to develop local community forest policy frameworks at *Luki*. This was first initiative to provide awareness to local people regarding community forestry management at biosphere reserve of *Luki*. The practices of community forest management in Democratic republic of Congo is a challenging one due to many reasons that include lack of human resource capacity and effective policy in place that clarify property rights arrangement (Hazel Rogers's et.al, Forests Monitor, 2008). However, it is obvious in developing countries; community forestry is very important aspects that save millions of lives. It is therefore for the government of DR-Congo to create better policy which will result in guaranteeing its communities for getting a chance to express their wishes to forest resources management.

Regarding this challenge to carry out community forest management, the Congo Basin Forest Fund (CBFF2009) started a REDD pilot project for community forest management meant for villages near the biosphere reserve of *Luki*. The objective of this project was to get communities at *Luki* familiar with REDD concepts so that local communities can contribute to forest management. The specific objective was aimed at poverty reduction and reducing deforestation and degradation of forest resources at the biosphere reserve of Luki. The initiation of this project was established as part of "(DRCs REDD+ preparation process)" to help government of DR- Congo to come up with best strategy (CBFF 2011).

The project fund was used to continue protecting 20,000 ha of forest which is under significant threat to human influence. There was doubt about the success of the project because community people were not well informed on the concept and government policy instruments were not feasible enough to encourage local community participation. The projects related to REDD+ were very important to the local community at the biosphere reserve of *Luki* due to socio-economic and ecological values the forest ecosystem provides to both reserve and local community. It is however; helpful if the government of DRC could understands well the role that community people can play in maintaining and managing forest ecosystem found in the biosphere reserve of *Luki*.

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2.4 Framework of Forest Policy

The general background of forest policy has been proposed by many countries at global level, which means the governmental forest institutes should stands as legal representative to maintaining contemporary, holistic national forest program. This is followed by a stronger announcement that provides strategic directions for management of natural resources. These policy statements are considered important for sustainable forest management. The Ontario Ministry of Natural Resources 2009 has defined "policy as a statement of proposed direction to build up guidelines for present future performance and decisions" (Ontario 2009).

A policy statement may contract with any level of decision or action from high- level strategic directions to detailed administrative measures. Policy is a well acknowledged document or procedure that is implemented through "policy instruments." Policy is a measure that includes strategic policy statements, legislation and regulations, program and strategies, directives, procedures, guidelines and standards. These elements promote a sense of authority that needs to be taken into action in different circumstances and as long all actions are followed under a legal framework. These actions should be accepted at the appropriate level of authority, be justifiable, realistically, legally, and be acceptable by all involved actors (Ontario2009).

2.4.1 Components of Policy development

The socio-economic and environmental services that forests provide to humanity are fundamental for supporting life. Due to the immensity of goods and services forests provide for society well-being, possible conflicts emerge when trying to use or manage common property such as forest. The better policy frameworks are based on how the decision process is made and how many stakeholders were involved in preparing governing policy (FAO 2010).

Illustration of policy components in this research is to give an understanding to readers on how the policy implication in various levels of natural resources management is arranged. These arrangements are vital, especially in places where basic policy structures are not

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properly functioning Policy instrument are tools that are used to avoid obstacles from achieving the goals which include institutional arrangement and financial incentives mechanism. Policy has numerous issues that determine right tools which make policies to be feasible and practical. The policy has regulatory and non-regulatory instruments; however regulatory instruments are those that prescribe the positive attitude toward law enforcements. The instruments are such as rules and regulations of laws enforcement and procedures. On the other hand, non-regulatory instruments are those which are presented in a document of policy like guidelines, or codes of contacts on self-regulation, directives, procedures, standards, and incentive programs. This can be official or unofficial agreements between parties to reach agreement and allocate responsibilities therein. Elements related to economies such as taxes, financial aids, loans, payment, funding, subsidies and market availability or support. Finally communication instruments enlightened are meant to increase awareness in order to make thoughtful answer to intending groups or audiences (Ontario 2009).

So far according to the political reality DR- Congo is using more non-regulatory policy instruments to manage its vast natural resources. These policy arrangement systems used in DR- Congo do not guarantee policy instruments functioning properly. The demand for forest policy by communities or interest-groups in forest resources management is to have a clear policy arrangement in place. When understanding the usefulness of effective policies in place help the government to anticipate in advance the future vision of their forest. Every policy arrangement in every country should aim to promote sustainable forest management. Whenever, policy wishes to be adopted by society it has to look at how the benefits from forest are equally shared. This unique opportunity of making better decision on forest resources management, require a mutual understanding, openness and participation in order to achieve an effective policy (FAO 1997).

In other policy development, as (Byron 2006) put it, there cannot be a feasible policy that can be useful if does not put clear its aims according to society needs. National policy arrangement should not consider issues related to the competency of the forestry bureaucracy and its entities, but to cover policies that will consider those responsibilities for national development like poverty reduction in the rural areas. According to (Byron 2006) states that, clear communication with other government authorities on policies

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arrangement from one government entities to the other is important (Byron 2006). In following up policy development there should be a desire of determining who needs to be involved and what kind of contribution provides for sustainable development of forest resources. All stakeholders in this case are identified as an individual's, local communities, forestry companies, non-governmental organizations and government bodies. The success and effective implementation of policy requires prior attention especially to who is involved, how they are evolved and is it really important in regards to their involvement. Even though, not all will be interested with this process.

It is important to involve all stakeholders in order to make better decisions through participatory approach. This help to identify those who could be interest in preparing feasible policy arrangement (FAO 2009; DFID et al; World Bank 2005). This process is vital in increasing awareness of policy and strategy to attain sustainable forest management to all interested stakeholders. In order to reach these aims, four components need to be in place; and these include forest administration, forest program, and forest strategy and forest operation (Vermeulen2005).

2.4.2 Property Rights as concept for public policy

Reviewing the concept of good governance in natural resource management, gives the inside of property rights system that address issues of the quantity and individuality of whom the rights stands for. A property rights package is defined as a set of the property rights systems (Bromley 1989).Obviously, property rights systems are anticipated in four main branches that include: private property, common property, public property, and open access. Private property present to matters where all components of a property rights sets to be connected with a unit of land or natural resource may be occupied by an individual, authorized person or local community (Bromley et.al, Daniel 1989).

The components of a private property package are collectively used by members of a defined group such as local community which means a property rights system is titled too as common property. In addition to this when comparing both private and common property, elements of the property rights package may be occupied and still managed by the government authorities, of which this refer to category of public property.

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Lastly is open access which refers to land or natural resources that have got no explicit right owners. This kind of situation is extremely rare to find a place that is defined as no-one's land. In reality, land and natural resources normally do experience open access where no one is interested or "claimed rights are unenforceable in the face of an absence of legitimacy or the means to exclude anyone from use" (Bromley 2003). This situation generates strong discouragement for sustainable management of natural resources. It ends up into a competition to capture resources in a battle against each other between the unity of land or natural resources.

Accordingly, private property entitlement does not always signal unlimited authority to its holder in determining how the resource can be used (Bromley et al; Daniel 2003). These events of private ownership of natural resources normally remain under government guidelines. Therefore, a component referring to sustainable solution related to common property is to understand those things that are very important such as: management rights, exclusion rights, transfer rights together with the security and duration of the rights that stakeholders need to have.

Referring to this case, the DR – Congo has provided numerous of strict regulation on logging quarter and management in the forest code of 2002; this without clear land tenure and policy strategy. Therefore, such restrictions truncate the individual rights contained in a package. As an example, persons that own forested land that is located in a certain area are required by law to obtain an operation permit from the government prior to conversion of the forest for other uses, or engaging in timber harvesting beyond the level that is allowed (Aggarwal et al; Elbow 2006).

Rights related to property are a compel obedience to law, regulation and commands" which define the rights of an individual to use or have access to certain resources, in relation to other stakeholders. It is obvious to state that rights are insignificant without connecting them to the duty imposed on all others to respect the rights of those who are subject to them. The context of rights in natural resource management, are rights that allow a holder of rights to use, to manage and gain benefits from resources (Bromley et al. 2006).

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The institutional arrangements defining the options and potential for decentralization of rights relate to natural resources. The institutional arrangement should tackle different aspects or quality of rights to the holder of such rights. It however, shows that a constricted focuses on some aspects of property rights are doubtful to create a reasonable conditions for livelihood improvements. The management and resource use outcomes, i.e. the forest's conditions and livelihood outcomes obviously affected by manmade activities rather than property rights. Additional factors include demographic and cultural factors, technology and markets, resource characteristics, and biophysical factors. The tenure rights are not the only factors that determine better outcomes of resource management. Nevertheless, it's a major factor that solves conflict in natural resource management (Rural Sociology 2003).

It is important to consider that property rights are vital in this case, the right of access to resources. The right to use is based on the ability for benefiting from the allocated property (Ribot2003). However, the ownership of resource and management regimes generally classified into private state and government properties. Government property supervision is usually approved through government institutions. On the other hand, the government may try to allocate and/or lease specific rights to individuals, groups and corporations on management period. On the common property right in certain type of people or individuals have the rights and obligation to the management of resources in common. The concept of property rights is a system that has multifaceted questions with possibility of many conflicts. Often the problem occurs from challenging claims over natural resources, overlapping community claims, conflicting sources of legitimacy and lack of consultation over the significance of resources (Ribotet al; Peluso 2003).

Many studies that discuss issues related to property rights and community management focus on understanding and the means of solving conflict between private ownership against common property (Bromley 1991). The collective management achievement includes different kinds of cooperation performance and local institutions behaviours in a community to help sustain resources. Security of property rights improves a triumphant collective action. The successful relationship of property rights and communal action is particularly significant for the adaptation to natural resource management, practices and technologies that require comparatively long-term commitment (Meinzen-Dick et al. 2002).

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The question related to property rights includes other significant matters to reflect on clearly defined limitations on the use of resources. Which the rights are relevant, clearly defined right ownership, and the existence of conflict resolution methods. Followed by the question if the range of rights is imperative, i.e. is there a right to propose and alter rules that cover the user and management right of the resource. Are these rights recognized publicly and is there any institution that enforces the establishment and following of the rights and rules? To add on that, communal action should be able to give remuneration to the local communities. Property rights should be made available and to provide enough benefits to cover organization expenditure and the investment in the resource as well as the costs of everyday management of the resource (Katila 2008).

2.5 Socio - economic importance of forest resources in DR- Congo

Like any other country in the developing world, the DR- Congo forest plays an important role to sustain both urban and rural community livelihood. In terms of sustainable development, the DR- Congo forests and forest dependent people have an important role to play in sustainable development of the forest sector. However, due to lack of information by local communities on the values those forests provide to both environment and human well-being these values have become doubtful by local communities. The researcher view is that information related to potential socio-economic and ecological benefits provided by forest resources should be considerably significant.

It is all known that the forest of Congo provide varieties of services including that of wood and non-wood products. Forest ecosystems provide also ecosystem services such as, erosion prevention, wind protection, water purification, shade to crops, food for livestock and absorption of carbon dioxide in the atmosphere as part of solution to climate change and mitigation (Nature & Fauna Magazine 2011). In the DR- Congo, urban people and rural communities still rely on fuel wood to meet their energy demand. Forest also provides amenity values such as natural setting for recreational and cultural heritage. Based on these socio-economic and ecological values, forest is also used as major contributor to poverty alleviation and for food security strategy in the community as well as for national development programs (Nature & Fauna Magazine 2011).

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On the other hand, forestry supports livelihood of poor communities. This mean that forest creating a nice living conditions and social stability i.e. income generating activities, housing development and medical facilities. In general, social and economic aspects of forest are becoming very important for local community. In developing community management in country like DR- Congo will create more awareness with regards to forest values and management capacity. It is not only awareness that is important but also to establish those forest activities that will help to improve community livelihood. There is so far potential for increasing awareness of community forest management in DR- Congo as people continue to have traditional belief to protect forest biodiversity.

2.6 Traditional ecological knowledge

Community forest management has already taken a central place in global discussion to maintain traditional ecological knowledge in forest related activities. The discussion has brought change in attitude due to the efforts done by national and international community to empower traditional knowledge. However, the change in attitude is due to recognition of the importance that indigenous knowledge contributes to sustainable forest management at international level.

The ecological knowledge is maintained by formulating clear forest policy and stakeholders inclusiveness in overall management. Participatory approach in community forest management is a way forward to maintain forest ecosystems (Carignan et al; Villard 2002). It is very important to increase mutual understanding and collaboration between traditional and scientific practices in community forest management. In order for community or conservationists to maintain forest ecological knowledge, the knowledge requires a wide range of forest management including better understanding of ecological definition and values involved during the practices. For that matter ecological landscape planning and conservation management also require broader view of forest ecological package. This includes understanding of ecological principal to both community and forestry administrators.

There are many examples of research on how to maintain this traditional knowledge. A good example is the integration management of species oriented approach. Integration of

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multiple objectives in forest management planning is an important strategy even in the community forest management (Walker 2001). However, for the question of species oriented approach the main attention is on individual or species diversity.

The approach's main objective is to help in prediction of the function and species distribution by using attributes of its ecological characteristic (Walker 2001). It is important to share with local community's addition ecological knowledge that helps to maintain adequate ecological information in community forest management. However, in this case the availability of traditional ecological knowledge that include socio-economic aspects as well as market information need to be considered. The practice will function properly when there is a desire to improve and officialise traditional ecological knowledge; by adopting mechanisms that include local people in decision-making processes. In the case of the DR-Congo forest dependent people continue to progressively play an important role in maintaining traditional ecological knowledge in forest management. The culture and socio-economic wellbeing of local community is increased by practicing this local knowledge in forest activities.

2.6.1 Perspective on theories behind community forest management

Sustainable Community forestry management is acknowledged as a contributor to sustainable conservation management of community forest. According to Bray and Klepeis 2005 states that the development of institutional capacity related to reduction of forest is embedded in community forest managed. These are the lands that do receive state and international organization support. The 'Community Forestry program has significant strengthens of existing community forest management institutions and helps to develop better institutions than existed before. Most of such deeds have always help in reduction of human pressure on the community forestland (Karky 2008).

The idea of community forest management has brought a great change in attitude not necessarily to communities but to entire sector of forestry. The understanding of the concept related to community forest management is to know how local communities achieve their forest rights. The institution arrangement at community forest level helps to understand how community forest management achieve their objectives. It is also

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important to know how various forest institutions assist villages in forestry monitoring for the accomplishment of their yearly management plan and other forest development plans. The important and practical idea is not only about land ownership. It's more to do with organization structure, transparency and how information is shared with forest stakeholders. Therefore, is for both sides to get informed about the matter related to forestry management, planning activities, rights and change in forest policies. It is also to see how institutions do in supporting community forest functioning.

Additional mechanisms to help communities develop reporting systems in all controversial issues related to forest management are important. However, the achievement of land tenure for local community may not be enough if government does not arrange a set of rules that will accommodate a range of community institutions in a broad policy structure.

2.6.2 Ecological knowledge focusing on local community in forest management

The term environmental literacy or eco- knowledge is used in this study rather than using local community and other words used by researchers such as indigenous or traditional knowledge. The term ecological literacy was used before for academic reason but in this study, it is used profoundly in the context of community forest management and policy implication. This study is using the term environmental literacy for it gives a wide range of understanding and applicability in different aspects not only in resource management. Information that is traditionally understood by local communities used to be regarded as valueless knowledge. However, as the meaning of local knowledge is widely discussed on the national and international level it is no more regarded as useless or false notion of knowledge. Traditional knowledge has so far gained importance in natural resource management at the local level (Sillitoa 1998 b).

It is very important to know that for last three decades different knowledge sources have been encouraged in searching for better solutions in natural resource management (Long Martello 2001). Like in the case of ecologists they have already considered the importance of indigenous knowledge for sustainable management of natural resources (Seiner et al; Oviedo 2004). Traditional knowledge has different perspective in the different social and

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ecological discussions. There are three distinct concepts with different methods used: classical, neo-liberal and neo-populist (Blaikie et al; 1997).

The classic concept considers traditional knowledge as a component of the problem and still refuses to accept its importance in natural resource management. On the other hand, the concept of neo liberal considers and focuses more on technology and market-oriented alternatives for the local people. The neo-populist concept considers local knowledge and takes it as essential for community development and empowerment.
These concepts value local knowledge differently. As for the neo-liberal one, it considers ways to obtain financial opportunity or occupation values, where-by the neo populist consider it as an honoured place for negotiation and centre for empowering local community (Blaikie et al; 1997).

The concept of "beyond farmer first" is based on the viewpoint of populists. It emerged at the end of 1980s and early 1990s; it was the concept that people had different views on community forest. These views raised various conflicts of interest and values when various actors had various accesses to natural resources without institutional supervision. Therefore, based on these negative experiences certain goal and rules had to be established as a way to solve conflict over natural resources. All these were done based on agreement with stakeholders (Thompson et al; Scoones 1994).

The observation environmental studies highlighted the idea that should be an attempt to reduce negative impacts caused by human being to natural environment. The above statement shows that, local knowledge was restricted as discussed on classic development concept. However, later on, it was thought as necessary to disclose ecological knowledge to local community activities (Milton 1997). The ecological traditional knowledge and its economic aspects were already addressed in conservation management of natural resources and it is now increasingly being emphasised. As an example for those who are studying Ethno-botanical science, traditional knowledge of medicinal plants has been supportive to researchers in finding right plants or change in vegetation of an area (Lykke 2000).

Before drawing conclusions on sustainable forest management it is better to understand the different demands and management desires of various stakeholders, such as social, political

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and cultural aspects of ecological concerns (Barry 1999 p 171 cited in Irwin 2000, 165). In many studies of sustainable forest management and conservation, traditional ecological knowledge is considered as a positive source for the participatory approach. It has been also considered as a way to include local knowledge in management practices. The thoughts behind the participatory approach pay much attention to scientific knowledge, which has a profound contribution to enhance the process and applicability of knowledge at the local community level (Posey et al; 1984).

2.6.3 Observation on ecological literacy of local Communities at Luki

Generally, the rural communities in DR- Congo for many centuries have used "ecological traditional knowledge" to maintain the natural forest resources. The knowledge can easily be seen within community forest activities at the biosphere reserve of *Luki*, despite criticism on the overall management system. Traditional ecological knowledge at community forest practice still used to manage forest in order to meet their social and economy needs at *Luki*. Nevertheless, the question remains how sustainable this knowledge is and for how long this knowledge will continue to be there?

At the village level it is obvious to see the number of community members diminish year after year due to change in environment and migration. People at the villages leave their communities to look for better life in bigger cities. It is therefore hard to know how the local community is trying to pass this knowledge to the next generation and at what circumstance can still be called local knowledge.

Despite the ambiguity of the terms and how it is related to management of natural resource, the practice is still relevant to be considered especially for Biosphere Reserve of *Luki*. It will be dishonour if it is disregarded and replaced by new forms of knowledge that may be more promoted by international agencies or academicians. It is the local knowledge that has kept available the abundance of forest resources at biosphere reserve of *Luki*. By putting it in different perspective on the observation of the researcher, scientific knowledge has done little impact on progress of forest management sector at biosphere reserve of *Luki*.

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The knowledge is there but only few people are exposed to it. In so many cases the traditional and indigenous terms always seems to be very important inwards but not all academicians acknowledge it. The traditional and indigenous are words that have never run away from social scientist's discussion. Local understanding refers to wisdom that local community use to a particular place (Long 2001, 114).

It can also mean that, many people at the community level do not extensively use the knowledge. The problem is raised when trying to use the concept of local knowledge or indigenous knowledge. This depends on how the word 'local' is defined to whoever wants to use it. The "local" may refer to a certain habitat area but it remains unclear exactly what that place is, how the area of demarcation is defined, who could be these people living is this area. It raised question as to what standard is used to define the local knowledge (Nygren 1999, p 288).

It is as the same as the word community, which is a confusing concept. The problem is how it should be defined; do the people reside in this community share same ideals and opportunities therein? Even if community lives in the same area, they can have various local communities living in the same community. It can be also a question of asking what is really local knowledge and who really owns this knowledge. To be wiser when using these words is to think that maybe the term local knowledge may also have some external influences for this local knowledge to be materialized.

In the discussion of this concept, it is still wise idea to consider local knowledge as something unique and important within the community where that knowledge is applicable and it has to be respected. The local knowledge might lack scientific expertise but it may have experience that provides practical solutions despite scientific disagreement. That is why it is very important for policy-makers to serious and wisely interprets this knowledge beforehand, by including and acknowledging local community expertise within the context of the legislation in natural resource management.

Unfortunate, lack of clear definition of local knowledge and community sometimes raises misunderstanding among ruling classes within community. As an example, to what extent are those who practice traditional medicine in the community scientifically accepted? At

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the same time, who has the right to possess this local knowledge at the community level and how is this knowledge spread from one generation to another. This example is illustrated in order to show how other groups may be marginalized at the community level when considering how best knowledge could be used. This discussion is for the reader to know that when dealing with local people and the knowledge they possess, it is very important to balance between science and traditional knowledge. Therefore, academician in general should develop more aspects that define these concepts well to avoid ambiguity.

2.6.4 Criteria and indicators for sustainable community forest management

After the declaration of Rio conference in 1992 there has been an increasing interest for development of Criteria and Indicators (CI) for sustainable forest management. Different processes started in various countries to lay down number of criteria and indicators that should be used to analyse social, economic, and environmental sustainability of forest resources. Based on the discussion related to criteria and indicators some countries or regions want more emphasis on the national level. But other still want more information at the forest governing bodies before standardizing the criteria and indicator (Ravi Prabhu 1998).

The comparisons of the existence to the ones that was done by CIFOR, has indicated that environment criteria in the forest management area are easier to be applied than social ones. It is also seen that, governing of rainforest and timber extraction is more of political agenda rather than sustainable management of tropical forests (Rice et al. 1997, 1998), & (Bowles et al. 1998).

Certain principles that are set as criteria and indicator include those of policy, planning and institutions framework which are favourable for sustainable forest. There are many practical issues recommended as criteria and indicators for sustainable forest management. The international agency CIFOR has developed a list of principles that can be used as criteria and indicator instruments for sustainable forest management. In order for these principals to work management scheme require to have a non-stop budget and sufficient fund to sustain management of forest resources. In addition any suggested policy and plans should be arranged based on the current available and accurate information.

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CHAPTER III

3. MATERIAL AND METHODS

3.1 Democratic Republic of Congo and study site

The Democratic Republic of Congo (DRC) is the third biggest country in the African continent, after Sudan and Algeria. DR- Congo has around 2,345Km^2 (905,063 sq. Mil). The population is about 68 million. It is located in central Africa, bordering with nine countries: Angola, Congo Republic, Central Africa Republic, Sudan, Uganda, Rwanda, Burundi, Tanzania, and Zambia. The forests of DR- Congo are referred to as the "house of gloom" by Joseph Conrad. The country was made famous by the explorers´ Staley and Livingstone. However, DR- Congo has also been known as a place of brutality and violence due to its past histories of civil unrests'. During the days of Arab slavery and ivory trade, up to current tribal warfare and the present ethnic violence and massacres continue up today (Nations encyclopaedia 2010).

The DR - Congo has the world's second largest river by volume and the second world's largest rainforest "(18 % of the planet's remaining tropical rainforest)". The DR- Congo forest resource represents 70% of the country's vegetation cover and makes it the most biodiversity rich country in Africa continent. Despite diversity and abundance of natural resources, DR- Congo's forests have become one of the world's most threatened ecosystems. Illegal logging, clearing land for agriculture and civil conflict have contributed to destruction of DR- Congo forests (Rainforest 2006).

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3.1 The location of study area at Biosphere reserve of Luki on the map of DR-Congo

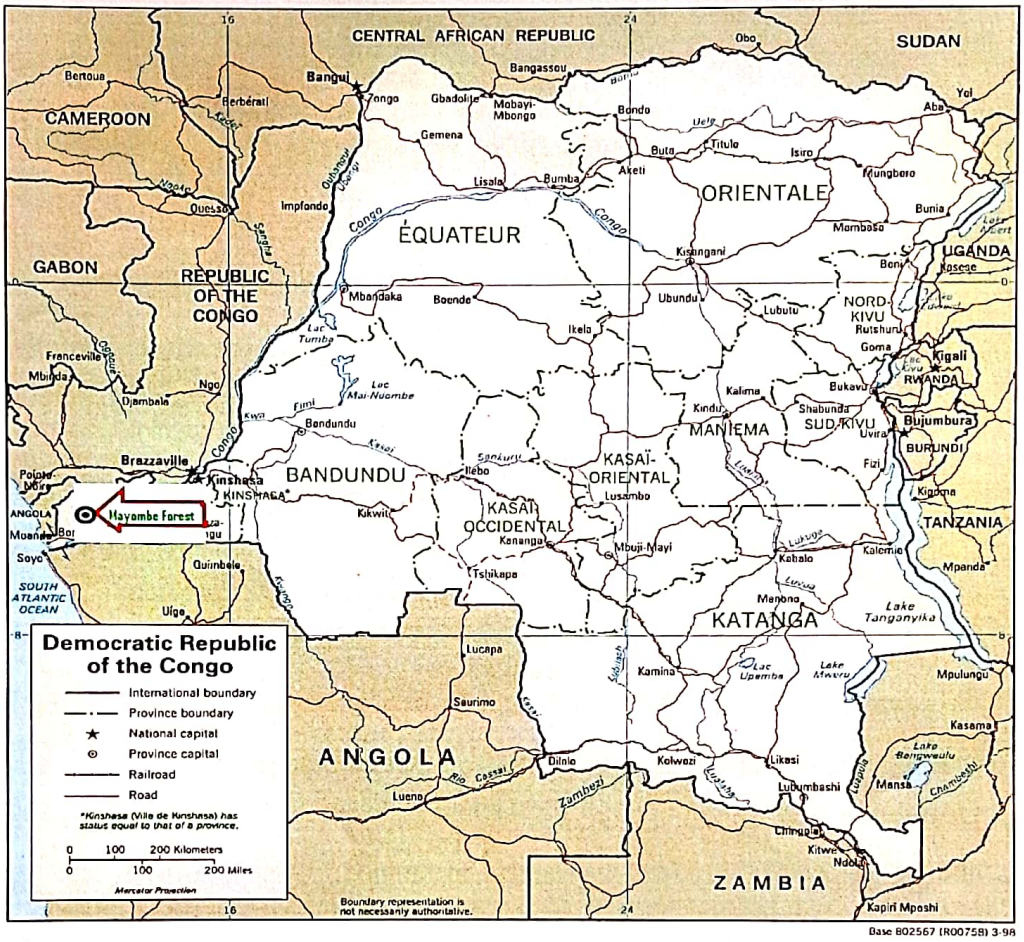


Figure1. The arrow above show the location of the research area, that was conducted at the biosphere reserve of *Luki* in southwest of DR- Congo (African roadatlas2010).

The map of DR- Congo (Figure1) is surrounded by nine countries which are also part of responsible for the uncontrolled overexploitation of DR- Congo's natural resources. The forest of biosphere reserve of *Luki* is among the most threatened biosphere reserves of DR-Congo. The forest of *Luki* is within *Mayumbe* forest which is sharing border with two countries; Republic of Congo and Angola.

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3.2 The map of biosphere reserve of Luki within Mayumbe forest in DR-Congo

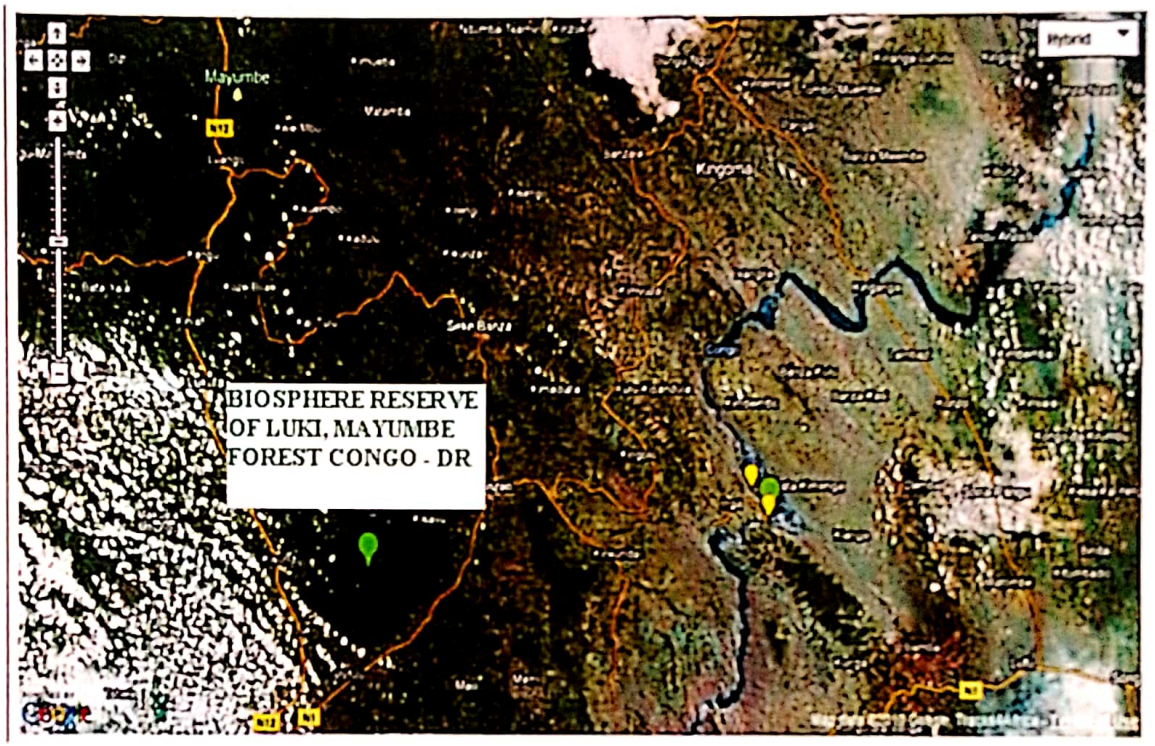


Figure2.A Map of Biosphere Reserve of *Luki is* the second remaining primary rainforest areas in the province of Bas Congo. However is now under greatest pressure of losing its forest ecosystem due to degradation of forest land which is caused by human activities (Maplandia2005)

The (Figure2) shows the place of this research study the site is an important research site for both local community and for scientific research. As it has been shown from satellite images its ecological and social vulnerability is based on easy access to forest resources by local communities and illegal logging. Its vulnerability is also due to the reserve being allocated near three DR-Congo international ports such as *Mwanda* port, *Boma* port and *Matadi* port.

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3.3 Description and geographic location of the study areas

The biosphere reserves of *Luki* are found at the bottom of bas-Congo Province; about 120 km to the east of the Atlantic coast and 30 km to the north of harbor of the city of Boma. The biosphere reserve of *Luki* is located between the 5°35′ and 5°43′ of latitude south, and between 13°07′ and 13°15′ of longitude. The altitude varies between 151 and 500 m above the sea level (Lubina 1984). The management of this reserve is under supervision of UNESCO, with exceptional governmental attention that composed of various entities from the Ministry of Environment, Nature Conservation and Tourism. The government bodies include the Ministry of Scientific Research, local government and volunteers. The initial idea of this site was established as an agricultural and forestry research station. The biosphere reserve is ecologically rich in high value of forest biodiversity and is an island of forest ecosystem that is surrounded by local agricultural activity. The next nearest district is located at around 80 km north; near the Angola border known as Cabinda border (Raymond2009).

The biosphere reserves of *Luki* "is justified as an area abundant with forest diversities that are strictly protected. This area is well recognized at the international level under the UNESCO program of Man and the Biosphere (MAB). It is a strategic and important site for the demonstration for better relation between human and nature. The management of this site is under sovereign jurisdiction of the Congolese governments. The biosphere reserves of *Luki* received its certificate by UNESCO due to its ecological status. The conservation effort of this area is the task of both the local community and national administrators. So far the government of DR- Congo has laid out a number of primary objectives for management of this protected area (Anonyme 1995).

- To preserve the natural and cultural variety
- To establish a form of management as a site for experimentation of the sustainable management of forest ecosystem
- To be as site for scientific research of forestry biodiversity, environment and training people on the management of forestry resource management'.

These principles sound good but what becomes difficult is the implementation of these principals on the ground. Therefore, the unimplemented principals have also contributed to unsustainable management of natural resource of the biosphere reserve of *Luki*.

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3.3.1 Climatic condition and territorial administration

The Biosphere Reserve of *Luki* (BRL) is a humid tropical rain-forest ecosystem. The area was founded in 1937 in order to protect the natural resources found in there for colonial interests. The Biosphere Reserves is among the three remain reserves in the Democratic Republic of Congo. The reserve is under administration authority of three territories. Firstly the sector of *Patu* is in the territory of *Lukula* where a big part of the reserve is located, notably the northwest, southwest and central area. The second sector of *Bundi* in the *seke-banza* territory, northern party is where also part of the reserve is located. The third sector of *boma-bundi* in the territory of *Muanda* located to the east and the southeast of the reserve. This area covers an area of 32,714 hectares and occupies the whole watershed of the *Luki*, which are the tributary of the river Congo, to the southeast of the primary *Mayumbe* forest in DR-Congo. The reserve was created by the order n° 05/AGRI of January 12, 1937.

At the beginning, reserve was constituted of a wooded domain for the state of whose management was carried out by the National Institute for the agricultural study only (INEAC 2007). In 1960, after the accession of the country to independence, the management of the reserve was transferred to the National Institute for study and Agronomic Research (INERA 2007).

The basic missions of INERA are for scientific experimentation in forestry which followed by inventory of the site, ethno-botany research, forest studies and for elaboration of the conservation methods. In accordance with the order n° 77 of February 23 1977, the management of wooded domain was withdrawn from INERA and granted to the Ministry of the Environment and Conservation of the Nature and Tourism (Président, et al MAB/CONGO 1976). In 1979, the UNESCO considered *Luki* as part of the worldwide network of the reserves of the biospheres. Therefore, management responsibility was given to the national Committee of MAB/DRC (Lubina1984).

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3.3.2 Economic activities

The habitat at the reserve devotes themselves to different types of economic activities. The main economic activities are agriculture and domestic small business activities of selling NTFP products.

3.3.3 Populations at Biosphere reserve of *Luki*

The population at the Biosphere reserve of *Luki* consists mostly of *yumbe* tribe (about 97%), from the *Bakongo* ethnic group. The population estimated to be 5,224 inhabitants divided into four major local groups: *Sumba-Kituti* (3,955 inhabitants), *Sukuti* (717 inhabitants), *Kimbuya* (142 inhabitants) and *Kiobo* (26 inhabitants).Include all MAB personnel living in the reserve station there are 384 inhabitants (Toirambe2004 - 2005). Immigrants who once came from *Mayumbe* and other urban centers such as *Boma, Matadi,* and *Mwand* occupied the reserve. However, the most migrants coming to *Luki* are those who are coming from several townships alongside the road and across the territories of *Seke-Banza and Lukula* (Lubina1984).

3.4 Methodology

The fieldwork of this research was conducted at Biosphere reserve of *Luki* in DR- Congo from July up to august 2010. In September data started to be collected and other official information's related to forest policy and land tenure system in DR- Congo. However finding such information was quite difficult due to current political situation and unavailability of information in DR- Congo. The political condition of the DRC- Congo has caused forest institutional arrangements not to functioning properly.

This research was contacted in order to analyze the existing community forest management and policy implication through participatory approach. During research field work, Participatory Action Research (PAR) methods were used to find out how the local community participates in community forest management. As it was mentioned by Chambers (1998) this approach is an important method that involves local people to participate in research activities. The approach is meant to involve community people and

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people outside the community from different backgrounds in searching for needed answers (Chambers 1998).

3.4.1 Data collection methodology

During research fieldwork data was collected using both primary and secondary data collection techniques. The techniques were used in order to achieve results expected to this research study. All data was collected according to its importance to meet the objectives of the case-study at the community level.

3.4.2 Primary data collection

3.4.3 Participatory Rural Appraisal

The main method used in this research was Participatory Rural Appraisal (PRA).Participatory Rural Appraisal, as a method of investigation, is a method that gives options and opportunities to local community to express their views based on their local knowledge and perception as well as experience and ability (Chambers1990).The village map, village histories, chief species identification diary were all demonstrated by villagers during this PRA sessions. During this exercise, transect excursions around villages were contacted. The focus groups consisted of men and women, most of them were farmers who carried out farming activities within and outside the Biosphere reserve of *Luki*. During this exercise total of one hundred and forty village people were interviewed. The selection of importance was made based on the village setting and it was decided after a transect walk in the village.

The fieldwork was successfully done with the support of MAB personnel who work in the reserve station. The highest numbers in the group were fifteen people and the lowest numbers in a group were three people. The total numbers of groups interviewed were fifteen. The field study methodology approach was conducted in order to understand the current perceptions of local people regarding community forest management and how the knowledge is practices by the local community through empirical field work. The analysis

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of policy from DRC government helped to understand how sustainable community forest management is arranged in DR- Congo.

The above methods used were relevant in finding answers for this research work. The methods used in this research were adopted from approach used by Wright and Elson (1997). The study was carried out through application of semi-structured interviews with local community at the biosphere reserve of *Luki*. However, key informants such as village leaders, knowledgeable persons and government officials were interviewed. Unfortunate, government officials were very much reluctant to comment on issues related to the current forest policy. In this research, participatory methods were used in order to involve people in the process of finding options and solutions of this case study. This method is used to provide important ways of learning for the researcher. (Lubini A1984).

3.5 Dialogue with group participants

This method or performance was utilized in order to obtain useful information regarding knowledge and perception of the local community on community forest management and policy implication. In every group participants were not separated based on their gender but the discussion was steered according to the question paper. The technique was used from one village to another and from one group to the other, which helped this research to be more reliable. Participants were very helpful and collaborative very well with the team members during this exercise. The approach used assisted the writer to better understand the community's life and their relationship to policy makers with regards to community forest management.

3.5.1Transect walk around Villages

The transect walk is a methods used to collect information through series of walks in an area. This help for researcher to get familiar with an area setting and try to discover range of problems or opportunities of the area (Simon 2000). The research used this method to collect information related to village setting in order to make right decision on how the group will be form. During the transect walk MAB personnel were asked to show boundaries marks between community forest land and protected forest land of the

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biosphere reserve. The MAB personnel and the researcher went around the villages to try and identify boundaries of community forest land. The transect walk took two days to walk around the selected villages, *Kiobo* communities people and local people live in the biosphere reserve station.

3.5.2 Semi-structured interviews

The method is used to guide interviewer or researcher to maintain the framework of enquires to the relevant questions that were prepared beforehand. However, this does not prohibit acquiring additional information during the interview (Simon 2000).The main techniques used were open-ended questionnaires to individual and group interviews.

3.5.3 Discussion with Focus Group

The methodology was used in order to better understand the diversity between people who participated in this exercise for community forest management and policy analysis. This method was used in every group at the village level. Some of the participants in a group were gathered while farming in the fields and some were gathered from different households. Local forestry administrators were interviewed during office hours.

There were many difficulties in finding answer to the questions especially to community people who have never heard about the concept of community forest management. This exercise helped the researcher to learn a number of issues related to how communities at *Luki* understand the concept and how they are intending to manage the forest. The table below is illustrating the main methods that were used during this research (Refer; table 1).

3.5.4 Secondary data

Secondary data were collected after the interview with local community at *Luki.* Scientific articles related to the concept of community forest and forest policy was collected. Material in regard to Forest in post-conflict in DRC, analysis of a priority agenda were also collected and Congo forest code of 2002 and many articles on Congo rain forest were used as part of secondary data for this research.

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3.5.5Table1 1

The table presents the main methodology approached used in this research.

Methodology	Country of Research	Focus Village	Investigated information
Methodological approaches	Democratic Republic of Congo	*Mayum be* forest *Luki* Village	Data collected
Primary data collection; Open-ended interview with community members at Biosphere Reserve of *Luki;* Village chief and his village elders. This exercise was done twice in different days	5 key informants but refused to comment on the current forest policy of DRC	Village chief and village elders	Information related to land use system and their knowledge of the institutions supportive system on the resource management and the work of extension services and law enforcement that support community forest
Open-ended interview in the village at *Kiobo* and inhabitants of the reserve communities as well as village map etc.	15 groups of people in the village but different location during the interview session	Community and village members	Sustainability of policy implication on CFM: Background history of the village, attitude and environmental change toward forest management, income generation system of the community living in the village and land use practices
Transect excursion of two days. The walk was prepared after arriving into the village. Two	Two day of transect walking and organise		To cross-check information relating to village setting and

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men accompanying me throughout from MAB project at the biosphere reserve of *Luki* to the village and adjacent community at the reserve.	member of community and see the area		existence of community forest around the area
Sub-group interview/ observation/discussion with community members and self-experience during the field work at the study area	15 groups of different people were identified and interviewed	Total of 140 people intervie wed from the same commu nity/vill age	Information about household livelihood and use of forest products, knowledge in tenure rights and perception on CFM and traditional use of forest resources. To assist in developing realistic acquaintance with CFM and policy implication on management of natural resources (NRM)
Secondary data collection; Literature reviews	2009	2010	Scientific articles related to the concept of community forest and forest policy, Forest in post-conflict in DRC, analysis of a priority agenda and legal document the current Congo forest code and many articles on Congo rain forest

The above table 1 provides brief information related to methods applied in the research study at the biosphere reserve of *Luki* in DR- Congo. (adopted from Irmeli Mustalahti 2007).

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CHAPTER IV

4. RESULTS AND DISCUSSION

4.1 Fieldwork results analysis of local community perception on community forest management and their practices

During the process of analysing the results, it was clear from the local communities that; social and economic values of the natural resources management were more important than ecological values. It is obvious in developing countries were people who still depend on natural resources to meet their daily social and economic values to desire socio-economic values more than environment values (Dalal-Claytonetal 2003).

In the process of sustaining abundance and diversity of natural resources, serious considerations of different stakeholders/actors are important in order to identify matters of concern to sustainable management of forest resources. Therefore, different approaches are needed in order to improve the management quality and learning process (Chambers2005).

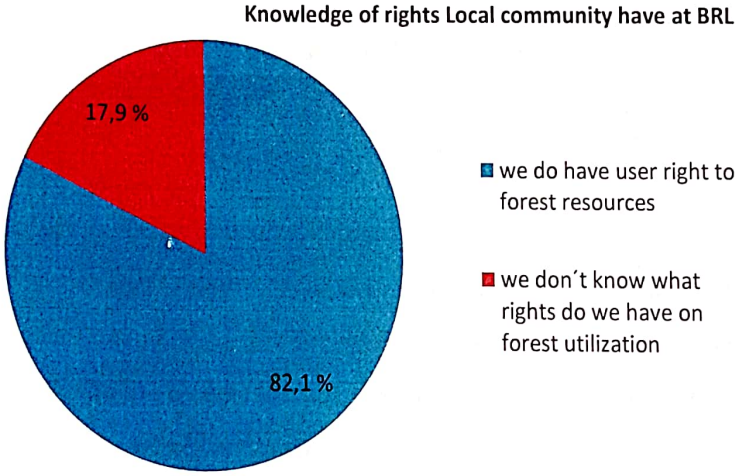


Figure 4. Illustrates results in percentage of the question related to local community knowledge on community forest management that exist at the research area. The results include the size of community land the government has allocated for the local community to practice community forest management.

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The results show that, the local community at the biosphere reserve of *Luki* particularly at (Kiobo) village had no significant knowledge with regards to the notion of community forest management. However, the result shows that the government of DR- Congo has allocated three hundred and forty five hectors of land for local communities to practice community forest management. According to the village elder's at *Kiobo* village, only one hectare of land was allowed to be used as a sample plot without proper support. It also shows that 91.4% of the interviewees have no idea regarding community forest management. Other result shows that 8.6%of interviewees have no idea about the existence of community forest land in the village.

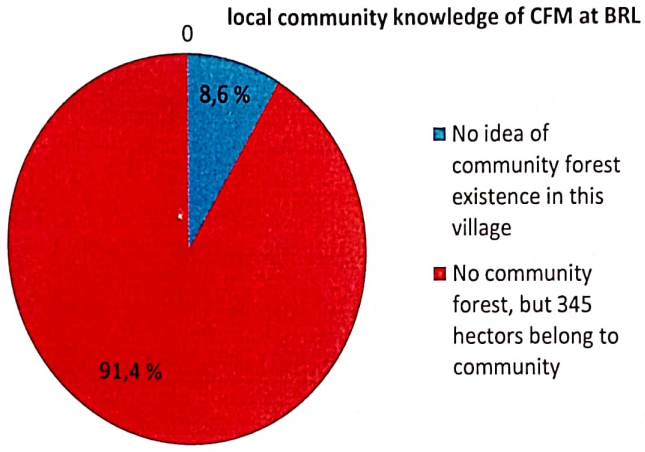


Figure 4. Illustrate results that shows in percentage of the question related to local community acquaintance on community forest management that exist at the research area. The result includes the size of community land government has located for local community to practice community forest management.

The results show that, local community at Biosphere reserve of *Luki* particularly at (Kiobo) village had no significant knowledge in regard to the notion of community forest management. However, the result shows that the government of DR- Congo has allocated three hundred and forty five hectors of land to for local community to practice community forest management. But according to the village elders at *Kiobo* village said that only one

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hector of land was allowed to be used as a sample plot without proper support. It also shows that ninety one point four per cent of interviewers have no ideas in regard to community forest management. Other result shows that height points six per cent of interviewers have no idea about the existence of community forest land in the village.

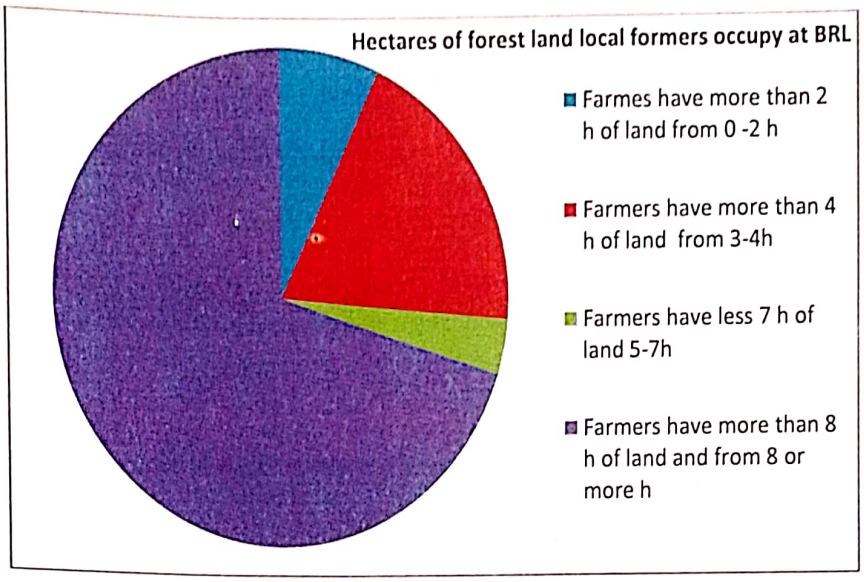


Figure 5. Present results that shown in percentage to the question related to the size of farmland that local people have occupied in the biosphere reserve of *Luki*.

The results presented in percentage to the question related to size of land used for agriculture by members of community in the Biosphere reserve. Shifting cultivation seems to be the most used practice by local people in the biosphere reserve. The results show that, 70% of each community member has more than 8 hectares of land to practice different kind of agriculture activities. However, all activities presented in (figure5) are illegal because there is no law that allows community people to practices such activities in the biosphere reserve.

The non – timber forest product (NTFP) seems to be the most important sources of forest products used by communities inside and outside the biosphere reserve of *Luki*. Therefore, local people plant trees that can be used as a fruit trees only.

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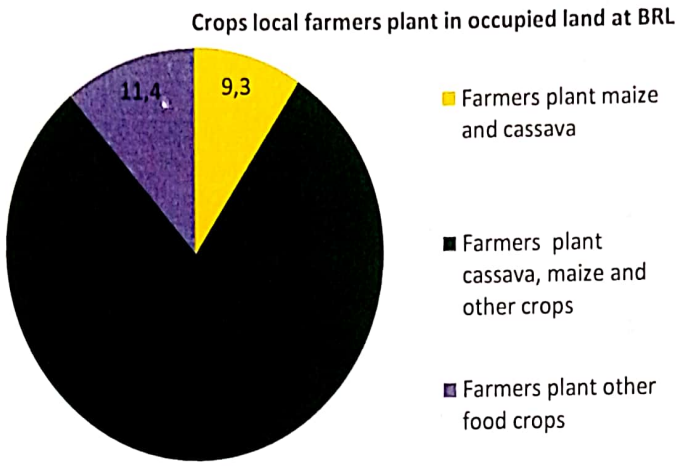


Figure 6.Presents results in percentage related to crops local people grow in occupied land in the BRL. The result shows that environmentally unfriendly crops are preferred by local people.

The result shows that, local farmers do not practice agro-forestry. The 79.3% of local farmer grow cassava, maize and other crops. These are activities progressively practiced within the biosphere reserve of *Luki*.

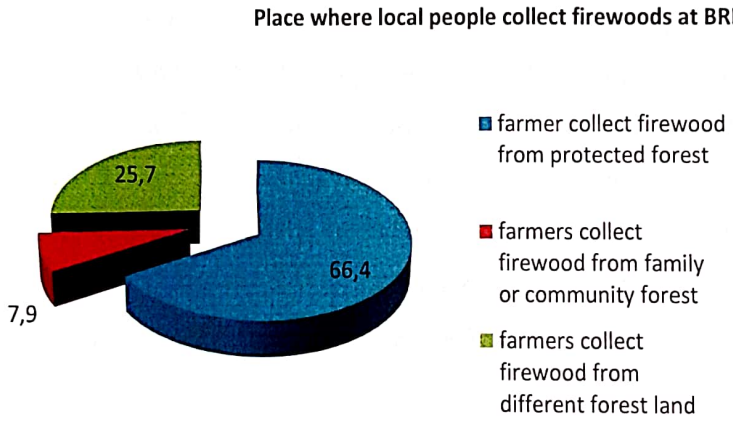


Figure 7. Present results in percentage to the question related to where local people collect forest products. The result explicitly explains various places where local communities collect firewood. The 66.4%of local people collect firewood from protected forest land in the biosphere reserve of *Luki*. 25.7% collect firewood from different community forest land for different domestic utilizations purpose.

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4.2 Field results analysis related to policy implication at biosphere reserve of Luki

The state of forest policy intervention in DR- Congo is still far from being successful. The natural forest resource of DR- Congo lack active forest policies and present law enforcement. The DR-Congo needs to clarify its forest policy in order to create a sense of good governance of its natural resources. After a thorough review on the DR- Congo forest code, it became clear that, there is no active forest policy in the DR- Congo.

The forestry institution seems not to be functioning yet due to many reasons related to socio-economic, political, human resource capacity, and knowledge dissemination. As one of community village chief firmly said that, no active economic policy means are ever used to support local community of Kiobo village. The type of forest policy means that the village's chief and local people were referring too was to the role of extensions services may play in order to achieve certain community forest management goal.

It is also very important to provide local people with policy information that is related to property rights and management. The government should also have a permanent financial incentive mechanism in order to promote community forest activities. There is a little collaboration existing between local forest authorities and local communities at BRL. Unfortunately, the government's official documents do not say anything about the implication of forest associations in community forest management. It rather lays down general fundamental principles of community forest management.

This case study shows that so far the DR- Congo forest code seems to be the only official forest policy document which government is trying to introduce to the forest sector. The forest code does not provide adequate policy instruments and practices related that community forest management. The state document strategies acknowledge that, there is community forest land and the community can use it under the customary law. It also says under the forest code, in chapter III, article 111 that, exploitation of community forest is managed under the supervision and technical control of local forestry administrators. It also continues saying that, the community has the right to use the forest but leaves an unclear

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picture of which forest. Government's official documents clearly say that land and forest is under the ownership of the government (DR-Congo forestcode2002). However, the government national forest program that can justify the land tenure system. It has been observed that the government of Congo has no clear policy intervention for sustaining community forest management. Due to this provincial forestry officials and national forest administrators were unable to comment freely on natural resources governance in DR-Congo. The silence of local and national forestry administrators left many questions unanswered related to policy.

4.3 The result analysis of the national forestry policy

The forest code is somehow in positive progress, because it has clear provisions and potential for biological, conservation and service for environment (Article87, 96and 119 of the forest code). Common property is misrepresented in the forest code, because rights related to common property are not clear. However, due to lack of policy instrument implication on the ground it has caused forest benefit unachievable to local community. The forest code has many forest governance principles but has left out mechanism on how good governance could be achieved. Additionally, the forest code does not provide enough information on how to alleviate poverty in the community through proper forest management.

Due to the absence of active policy instruments the government of Congo has responsibility for strengthening its institutions capacity. Even though the forest code does not tell anything related to tenure rights it is important document that has fundamental basic principle that could help for establishment of sustainable forest management. Therefore, any attempt on forest institutions reform should put clear to forest dependent people those forest values and what the government intend to do with the vast forest resource.

The forest code and forest law acknowledges traditional use of forest and those of indigenous communities. The rights for local people continue to manage forest land under customary rights. However, so far there still a big gap between policy and practices on ground. The policymakers at national level are very much disconnected from local people.

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The analysis of finding demonstrates that as for the past years management practice in natural resource had no consultations with local people or other stakeholders. The past management has caused reduction of stakeholder' participation in forest management. However, even though the Congo government is putting priorities on reforming its political and economic institutions capacity the chance for success is very narrow. It is due to deficiency in forest institutions capacity to cope with management challenge of forest resources. The DR- Congo, forest governance situation is worsening due to the spread of civil unrest. The break-up of institutions has even aggravated the management of community forest management to be less concern. The community people at biosphere reserve of *Luki* have no basic forestry administration structures: the situation make it more difficult in how these local people can form community forest management.

4.4 Discussion

The purpose of this research study was to find out opportunities and options that exist at the biosphere reserve of *Luki*. The current socio-economic and political conditions in DR-Congo make some options become difficult to achieve. Therefore, in order to develop the concept of sustainable community forest management at the biosphere reserve of *Luki* four elements need to be discussed beforehand. These includes (a) how to put in better prospects for the unclear and insecure property rights that cause increase in forest degradation, (b) communities deprived of their right in order to gain benefit from forest resources,(c) forest policy with no clear distinction in rights (d) feasible management responsibilities between forestry administrator and community forest.

The discussions in this study are very much influenced by the results of field work conducted in early July at the biosphere reserve of *Luki* in DR- Congo. What has been observed, in the reserve is that local communities' are very much contributing to illegal exploiting of forest in the biosphere reserve. The researcher also reveals that; traditional use of forest management by local communities has lack of scientific knowledge to support management of forests resources. Even though DR- Congo is doing better to maintain forest cover however, forest degradation and deforestation at the biosphere reserve of *Luki* is increasing at an alarming rate.

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4.4.1 Congo with property rights arrangement

Many negative results are already found in this case study related to community forest management and policy implication at the biosphere reserve of *Luki*. But one thing remains unclear and a serious question to ask to Congolese, what DR- Congo government wants to do with it forest resources? If there are no good clarifications at national level and plan that can be presented to forest dependent people. Therefore, the risk of losing this important remaining tropical forest is very high. The DR- Congo need to explain it forest management's intentions to its people. If not it will be very difficult to attain a sustainable community forest management at BRL.

Even though, international community is trying to intervene in reforming forest policies for DR- Congo but the chance to succeed is very little due to unclear intention from DRC government. The poverty in rural community is remarkable as the non-existence of clear policy continue to emerge. These mean that law and forest code does not have enough clarification on what DR- Congo want to do with its forest. It can be practical when policies instruments are implemented on ground with aim to secure forest sector.

In some area where community people lives, the presence of soil erosion and drought, this has contribute to difficulty of local community maintain agriculture productivity in those areas. The continuation of poverty in these community is also due to lack of local community having no access to market and transport to sale their forest products. Understanding the perception on community forest management of local community is based on the results of field work. It clearly shows that no matter how much institutions will be reformed if it does not put forest policy clearly to local people nothing can be achieved sustainably. The local people have right to know well the type of policy means government used to support community forest management. If policies and forest values are not clearly explained to local community any intervention will be unproductive.

During field work there were a lot of confusions the way community perceive community forest and how the government perceive it. The development of community forest management cannot be developed based on such different perceptions. The idea is to have a common understanding of the concept before thinking of establishing a sustainable

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community forest management in particular areas. The DR- Congo should be able to lay down numbers of targets for its forest resource such as economically, socially and ecologically. The clarification help in giving a clear direction of what are the targets for its natural resources not necessarily to Congolese people but also to entire world.

4.4.2 Opportunity to develop SCFM at biosphere reserve of *Luki*

Developing a sustainable community forest management at *Luki* is highly important. It is possible and because there is still abundance of natural forest resources standing and fertile land to promote different forest activities for low cost in production. Despite local community having little knowledge on the over roll management of forest management. Community people at the biosphere reserve of *Luki* are enthusiastic enough and more than willing to learn new ideas from outside world on how to manage forest resources. The community attitude toward forest management is positive but little information is available and is limited to number of people for example to those local forestry officials working for biosphere reserve of *Luki*. However, local communities are very much flexible and willing to learn despite community misunderstanding on the concept of community forest management.

For example, during field work at the interview session with local people, the local community did express their concern with regards to the establishment of CFM that is well-recognized by law. Local community continue saying that for such establishment of CFM will require a financial incentive as a sign of motivation that should come from the government of DR- Congo. The success of CFM will depend on how the government decision to shape its forest policy on community forest management. Even though the DR- Congo government still struggles on adjust itself to a stable state and institutions capacity is still weak. Nevertheless, the DR- Congo still have to do something in order to develop these noticeable opportunity for community forest.

The biosphere reserve of *Luki* has a lot to offer to the entire local community ecologically and economical etc. If the biosphere reserve of *Luki* is well managed the potential for local economic growth and ecological development is possible. The sustainable management of natural resource, particularly forests could still constitute strong base for DR- Congo for

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economic development and alleviate its people from poverty. This will occur when there swill for good governance and effective forest regulations through forest law enforcement. The community forest management will take clear shape if DR- Congo government is willing to put serious measures that include: clear policy that will define the role of all stakeholders and their limitations on forest resource management.

4.4.3 Local community access to Forest at the Biosphere Reserve of *Luki*

One thing that seems to be clear in this research is that, local communities have strongly access to forest land that is strictly protected at the Biosphere reserve. According to the definition of Biosphere reserve it is a strictly protected area saved as sites for scientific research and education (UNESCO2005). It is a unique place which is set aside for conservation of the natural resources in order to improvement relationship between man and the environment(UNESCO2005).However, according to the finding results of this research found that, the BRL seems to be as a common place for traditional farming activities.

The traditional farming practices that local people do are overwhelming the reserve. The degradation of forest ecosystem is increasing due to the presence of local people practice of agricultural activities in the biosphere reserve. But one point is still unclear to see whether, the Government of Congo and the international organization (UNESCO) know these farming activities and if they do why these activities cannot stop? At the same time we can ask ourselves are these activities officially permitted or are just illegally practices. If are legally permitted then it is better to not consider this site as a biosphere reserve. But if these activities are unlawful the Government and UNESCO should do something to stop degradation of forest in the biosphere reserve of *Luki* so that the meaning of biosphere can be strengthened and maintained at this site.

The result shows that seventy percent of the community people do have access to forest land within the Biosphere. In this case one can imagine the extent of ecological damage happening in the Biosphere reserve. The government of Congo has located 345 hectors of land for local community to practice various farming activities including community forest. This is not happening due to lack of economic incentives to promote community forest

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management at the biosphere reserve of *Luki*. In addition, the main reason the community does not use allocated land is because there is no clear structure on how the community should use the land and no clear policy strategy from both government of DR- Congo or UNESCO to support community forestry activities. In this case if UNESCO and Government of Congo-DR are serious enough to maintain this unique site, they should do something to establish community forest management by supporting activities in community forestland. The local forest authorities have to develop a clear boundary between the biosphere reserves of *Luki* and community forest land. This initiative could help in reducing pressure for forest dependent on the forest located in the biosphere reserve.

4.5 Community forest utilization rights and Obligation of Congo Government

The local community at the biosphere reserve of *Luki* are not fully aware of the rights related to forest utilization. The result shows that 82.1 % of the community people have no idea of what type of rights do they have for forest utilization. The question is now if such significant results were found in these small villages, how much could be in bigger communities. It is very important for community people to know their rights related to forest utilization but in this case local community does not know their rights. Due to no enough information is spread through extensions services. Some other reasons could be also due to lack of available information and active law or active policy for community forest management. In this case study, the absence of forest Law enforcement or ineffective policy on ground gives a signor to how weak forest institutions arrangement exists in DR-Congo.

The situation like this does not guarantee the sustainability of natural resource management. The responsibility of institution reform is for Congolese government. The traditionally DR- Congo has managed its forest resource without feasible policy for many years. This has caused the development of community forest management to unsuccessful. This attitude or culture need to change and the government of DR- Congo should see the opportunity that CFM could provide in harmonizing forest management in DRC.

As the political and economic instability continue to rise in DR- Congo, the government should have great responsibility to change its attitude toward community forest management. This

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change will help the government to put in prospect better relation between the local forest authorities and local community. The Congo government needs the support of international community in order to change its forest attitude and management. But before seek for international support, the Government of Congo have a task to review first all of its international accords, treats, bilateral and multilateral agreement that government signs when there was no forest law. It could be possible for some agreement DR- Congo has signed in the past may have something to do with current arrangement of forest management. The process to review these treats will assist Congolese government to realize its mistake of the past in natural resources management.

As DR- Congo came so far from different political system with different leadership system. The effect of these different leadership systems may also have something to do with signing unsustainable agreements that put difficulty for community forest management to function properly. Based on DR- Congo political system and how government informed its people about management of natural resource. In such management circumstance is very hard to know whether these agreements were on DR- Congo´s favour or just to save interest of certain stakeholders and left other aside.

The government of DRC has to consider the review of those international accords, treaties, and multilateral agreements that have been made before for managing forest sector in DRC. When reviewing the agreement of fort years ago that former government have signed could help to find out why this situation of rights related to CFM is like this in DR-Congo.

It is an unbelievable situation for a large forested country like DR- Congo for many years; forest governance was governed without forest law and effective policy. Despite the reform of 2002, that provides DR- Congo government with forest law and forest code. The government has to put financial incentive program and develop human resource capacity to be used as strategic and comprehensive approach to help community forest management to function.

The development of forest law and forest code was developed by transition government in 2002. It is really difficult to know whether this process was inclusive in order to present the interest of different stakeholders. It is also very hard to see whether the transition

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government did forest institutions reform through consultative approach with all forest stakeholders. If the participatory approach were practice during preparation the first draft of forest law and forest code, sustainable forest governing system will be difficult to be achieved. This means that reform to attain concrete results set for management objectives will be difficult. It is wise for anew stable government to consider inclusiveness approach, so that people should know the erroneous of the past in forest management system before finding new solutions.

4.6 Local communities at *Luki* and their perceptions on community forest management

As the concept related to community forest management already been discussed and being recognized in many discussion of forest management at the end of 1970s (FAO1978). However, 1990 seem to be the year when the bell rang for promotion of this notion to very high level in many countries (Brown 2002). The effort has been considered to be as an ecosystem approach. The method used is that leads to devolution and enhance community participation in natural resources management.

The community forest management usually refers to forest land that is located within community by distinguished boundaries that community in particular areas can take care of the forest land. These mean that, community will carry out different forest activities that provide various forest values and produce services that benefit all community members. Community forest also means that transfer of control rights to local community for the community to manage and share benefits there in. Some common characteristic that are observed in community forest management (Kellertetal. 2000) are;

- To involve local institution and communities in decision making processes
- Community people will develop power and authority at local level
- Ecological objectives should attain social and economy stability
- Encouraging local community to property rights and
- Enhancing traditional local knowledge in natural resources management (Cellaretal. 2000).

Nevertheless, this concept is acknowledged in paper by many governments but hard to see

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in practices. This is also in the case of community at biosphere reserve of *Luki*, local people seem to have own perception regarding to community forest. The most common perception found at community member at the BRL, is that community people recognize family forest land rather than calling it a community forest land. It is now clear in this case study that every community has their own way of understanding this concept. But the point is whether community forest or family forest management matters? What really matters is to see the better end results that will produce a sustainable socio- economic and ecological sustainability of forest resources at community level. What is also important is to see whoever get involved in community forest management or so called family forest activities should have enough knowledge to practices sustainable forest management.

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CHAPTER V

5. CONCLUSION AND RECOMMANDATION

5.1 Main questions and challenges in community forest and policy implications

The main challenging issue for establishment of community forest management is due to unclear policy and bad governance. The DR- Congo authorities should concentrate on how the government of DR- Congo is intending to use the community forest land and means that could be used to combat the deforestation problem in the biosphere reserve of *Luki*. Deforestation at the biosphere of *Luki* is caused due to expansion of local farming activities. It becomes very difficult to resolve the challenges posed by community forest management with no active policy and law enforcement mechanism.

The concept of community forest is not yet acknowledged by local community and it is even just been discussed by individuals within *Luki's* community. However, community participation in forest management is decreasing and is acknowledged by policymakers. The development of sustainable community forest management is very important to the local people at the biosphere of *Luki*. The major problem remain is the government of DR-Congo to provide a clear policy mechanism that will clarify tenure rights and responsibilities. The forest codes should be now developed from principal to forest policy, the contents should provide direction in which DR- Congo want to go with management of it forest resource at the community level.

Adjusting policy instruments in DR- Congo will help to improve the state of community forest management. The government authorities should stop a widespread of corruption that is done by high-level officials. As far as DR- Congo forest sector concern, corruptions has becomes a cancer to many government authorities. Forest knowledge is also inadequate advocate at community level. Educating local people about forest resource management will improve management situation at BRL. The DR- Congo should give more interest in developing community forest management by clarifying economic opportunities of forest resource to local communities.

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The research study has actually given the results that were expected from the research questions. The results show that, there are no clear and secure property rights; this is one of the aspects that cause forest degradation in the biosphere reserve of *Luki*. It also show that community people are not aware of rights related to management of forest resources, community are still deprived from their rights to gain benefits from forest resources. The state document regarding to forest policy have no clear distinction in rights and no clear management responsibility.

The transect observation during fieldwork shows that there is strong evidence for lack of dialogue between officials and community members. Therefore, in order to develop community forest management to be feasible in this community, there is a need for serious engagement in dialogue between local officials and local communities at BRL. This step will help to find a sustainable solution from the difficulties' that is preventing community forest management from not being properly practice. The main task of the local forestry authorities will beto explains the forest code to the local communities' for local people to know their limitation to forest resource utilization. Rural community need to know what activities are allowed and those are not allowed by the forest law. At the same time local community should be aware of what forest activities they can practice within the biosphere reserve of *Luki*, while continue preserving their cultural diversities alongside with forest biodiversity.

5.2 Development of sustainable community forest management system

Sustainable community forest management needs to be established or develop at the biosphere reserve of *Luki* as soon as possible. The forest resources so far the only resource that is providing direct cash benefits to local community. So far, it is already known that, there no proper forest management systems that exist to allow local communities to own and manage forest resource while deriving equal benefits therein. However, tenure rights should be developed and challenges need to be resolved from local too national level.

The success of community forest management concept is for government authorities to start working together with local community. Participatory approach in decision-making process should be the way forward to follows with plans of action for community forest

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management to succeed. The effort towards massive community's participation in forest resource management is when the government is motivating local people. Additionally the government should work with local people in developing clear policy mechanisms that can reduce land tenure conflict. If community forest is established will help community and environment to gain equal befits that forest supposed to provide to nature. Government has to set priorities that will address issues of concern to allow alleviation and solving community forest dynamic. There is a need to develop provincial community forest regulations that will recognize and supported by central government. If the Province or districts develop their own community forest management policy, the support from central government is very necessary and important.

5.3 Recognition of traditional rights for empowering local communities

The research study was focusing on community forest management and policy implication. The recognition of traditional rights as way to empower local people in community forest management is an important step to be respected by forestry authorities. The logical management can only be achieved where there is a mutual respect in rights. In a management, circumstance of natural resources identification and recognition of traditional ecological knowledge is vital for sustainable community forest management. Property rights such as landownership, access to forest, exclusion and duration rights to forest resources management require a clear clarification by law.

The aspect of property right is a foundation for proper resources management. Even though the government of DR- Congo has little concern in clarification of these aspects but these are very significant to makes a feasible management. Additionally is to establish good dialogue between government and other stakeholders. The process that will assist to avoid future management conflicts between stakeholders. In order for this to materialize all involved stockholders in forest management, need to be consulted in different management levels. Public participation of all forest stakeholders will be very important.

The local community at the biosphere reserve of *Luki* needs to be empowered in order to manage forest resources. In the past 32years of dictatorship, many things have been happening to forest sector without the knowledge of local community. Local community did

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not have opportunity to participate in decision- making process up to now this attitude continue to practices in forest management sector. Due to historical errors local community had to disvalue their role in forest resources management. It is obvious to say that traditional ecological practice has been and still the favoured practices that DR- Congo still have to rely on due to lack of human resources.

The lack of government of DR- Congo to not provide adequate knowledge to community's forest activities has caused community forest management not well practice. The absence of active financial mechanism has been also part of driving force for negative development on community forest management. The way forward to make change on these negative attitudes is the government to start understand its responsibility to community forest management. Even if the traditional ecological knowledge continues to be practices, supervision from local and central government authorities is very important at the moment. The supervision is to help in order to develop good relation between local communities and local forestry authorities.

It is therefore, for the government of DR- Congo to take serious measure to empower local communities. In addition to above thought; is that for success of this relation is through strengthening of local forestry institutions capacity, develop human resources capacity to cope with challenges posed by forest resources management. The government have also a big task to help develop community forest networks (DCFN). This should be followed by promoting alternative piloting' projects direct to local communities in order to develop financial income opportunities.

5.3.1 Improving collaboration in forest resource management

The forest resources and land use has become very complicated issue to solve when looked at how various policies framework are conflicting each other from local, national and international level. The sustainable solutions of community forest management are adjustment of policies, cooperation among forest stakeholders and developed countries that have dedicated their resources to sustain forest management. Therefore, sustainable collaboration is an important action when including all stakeholders in management and decision making process.

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Understanding concept of collaboration is also an important step, in order to make good initiatives and program for natural resource management. The effort to strengthening collaboration should come from both partners who are interested in forest resource and from the government of DR- Congo. The collaboration effort is more than normal cooperation, which includes sharing of knowledge, information and mechanism that assist in implementing these activities like technology. Collaboration should also include the capacity building and financial capability that partners may have in resource management. Therefore, collaboration between stakeholders and government is very important in order to reach certain objectives and goals set for community forest development.

The government of DR- Congo should be encouraged to have more multilateral in harmonization approaches. The collaboration should also base on clear term, for example rights in regards to forest management, utilization and duration of the agreement as well as how to secure these agreements for future contract. However, this seems to be highly demanding task but it is worth it. The main point is that all requirements should indicate that collaborative action will requires tools that improved natural resource management and policies. Sufficient social responsibility, management capacity and sensitiveness from all prominent stakeholders, such as governments, forest industries and local communities are necessary and important.

5.3.2 The implication of ecological states to forest sector in DR- Congo

The DR- Congo need to collaborate with developed countries in order to develop sustainable community forest management. The researcher has developed a concept related to what collaboration is needed in order to develop sustainable community forest management. The concept developed in this case study is known as "Ecological states". The "Ecological states" is defined as countries from developed countries that sustainably practice forest ecological knowledge on ground and have an active forest policy in place to manage sustainably forest ecosystem.

The "ecological states " are characterised by the attributes of concrete measures to manage forest ecosystem such as having an active forest program, have a nonstop budget to support

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forest activities having no corruption scandals over forest resource management. For instance countries like Finland, Sweden, Germany and Norway etc. are consider as an "ecological states" in this case study. The four countries used as an example is because of the way they manage their forest environment unlike when compare them with other developed counties for example Belgium, Greece, Italy etc. to how they manage their forest resource. Therefore, the practical forest aids that can be provide by "ecological states" will be helpful and definitely not like those Belgium, Greece, Italy etc. could provide to the DR-Congo.

The concept observed in this case study refer to sustainable support which "ecological states" can provide to developing countries for forest resources management. The aids of such countries are more important to the countries that are facing with vulnerability in natural resource management. The concept developed in this case study is very importance based on how community people manage forest resource in DR- Congo. It is because "ecological states" have experience, have a management discipline and knowledge capacity to provide practical measure and advice to forest management. For example DR- Congo has no enough experience and human resource capacity to manage forest resources. Therefore, implication of "ecological states" is very important especially during the reform of forest management in countries where no effective community forest management practice like in the case of DR- Congo.

5.3.3 Justification of forest circumstance of the past in DR – Congo and why the implication of ecological states is important

Congolese people have come far from different governing system with crisis after crisis; which has contributed to unsustainable conservation of forest ecosystem. There is a lot of forest management circumstances DR- Congo has gone through and this include proper knowledge and institutions capacity on natural resources management. In order to support DR- Congo forest management "ecological state", need to be well understanding forest management circumstances. The justifications of these circumstances are those that include to corruption, bad policy and lack of human resources capacity to cope with challenges to manage forest resource.

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One of the positive aspects of DR- Congo state of forest is that the DR- Congo has been a good partner of international community. The DR- Congo has been also conserving forest ecosystems which make it rich in biodiversity due to conservation effort of the past. The efforts of forest conservation should also set a ground for "ecological state" to support this country to establish a sustainable community forest management.

These are some of the positive efforts that need to be understood by "ecological states". However, if these are not taken to consideration it may show that criteria set for receiving forest development aid from "ecological states" are located to wrong a country that does little to conserve their forest. In addition to that, the condition also laid to aid either from "ecological states" or by international community (IC) should differ from country to country depending on how they have used their forest resource in the past and at the present. Even though DR- Congo seems to be a forgotten country in the planet but the "ecological states", for example Finland, Sweden, Germany and Norway should support DR- Congo to reform its forest sector.

The "ecological states" should at least remember the ecological contribution of DR- Congo forest is providing to the planet. If an "ecological states" do not acknowledge these circumstance and provide an immediately intervene, there is a danger of DR- Congo forest resource to be exploited under concessional loans or under the foreign assistance options.

As it is understood that DR- Congo has no trained human resource capacity and institution capacity to sustainably manage it forest, so in order for DR- Congo to do better it need an immediately intervention before is too late. The "ecological states" with their capacity and capability in exercising sustainable forest management can support this country to develop a sustainable community forestry management in DR- Congo. What seems to be some time unfair deal is to see that most of the assistance from "ecological states" turns to forget the ecological strength that DR- Congo has. The strength are those that include rich in biodiversity its role as carbon sinker for climate change mitigation and the role that forest can play for poverty alleviation at community level. Their many countries that have done little to conserve their forest biodiversity's in the past but still get substantial support from "ecological states".

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Some of discussion in this research is that, although the "ecological states" and international agencies target tropical forests. It is better for them to do more and to provide sufficient support because the ecological services the forest of the DR- Congo provides to the world is very important. The support of "ecological states " is that related to provisional of substantial training to forestry administrators and practical forestry projects. The support should be done through cooperation with national and local forest institutions in order to establish better strategy. The strategic aim it the one that prepare national and local forestry authorities and local community to take management responsibility in the future. This process can only be sustainably achieved with implication of "ecological state".

The training of forestry administrator and local people should be the most significant support local community could ever want now. It is however, unwise idea to pile millions of dollars in form of aid for community forest management to the country that has little knowledge and institutions capacity to manage and maintain its natural resource.

The results show that no reasonable management responsibilities between forestry administrator and local community that exist so far. The sustainable community forest management at the biosphere reserve of *Luki* require implementation of basic governance structure to manage forest resources. The basic structure refer too, is basic administration, program, strategy and implementation plan. The implication of "ecological states" can play a significant role to when preparing basic structure in order to reshape community forest at *Luki.*

The contribution of "ecological states" is also that could help DR- Congo to reform academic system especially on natural resource management. The second step is to develop more possibility of having more research on forest resource in DR- Congo. The results from different research contacted particularly in forest sector could assist Congolese authorities to start making better decision on NRM. This practical measure can also assist DR- Congo to start knowing how to build better national governing institutions capacity on their own.

As an example the way how the World Bank financed international environmental agency to make forest law and forest code for DR- Congo. This was an important step but it does

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not guarantee that the forest law and forest code can make change to Congolese people. Even if a forest law and forest code has been done but forest ecological knowledge is more important than making forest law and forest code for them. The forest law during economic collapse and weak institutions capacity will not save Congolese people now will rather save foreigner companies. According to local forest administrator said that, foreigner-logging companies participate in the process of making DR- Congo forest law and forest code but local community members did not participate. If this statement is true, which means the influence and interest of foreigners forestry companies were strongly represented in the current forest law and code than those agenda for local people in forest management.

Therefore, if the expectation of international community and international logging companies were to make forest law and forest code for Congolese people to obey the law they had no idea how it was developed. It will be very difficult to achieve goals set in the forest law and forest code of 2002. Unless forest logging companies impose, some kind of economic power to local people to do what they want but still not possible to do exactly what the law says and it will be very difficult even if they do so. What is a wise idea and step to take from international logging companies, World Bank, in partnership with DR-Congo government? It is to make more effort to invest enough money for vulgarization of forest law and forest code to the Congolese academic institutions. These will basically used for training local people and create practical activities on ground for example implementing piloting projects at local level through guidance of "ecological state".

5.4 The role of ecological states in the DR- Congo

The roles that "ecological states" can play to assist in maintaining sustainable ecological forest management in DR- Congo. As the world has acknowledged that tropical forests are the place for developing pharmaceutical products and revitalization for agricultural products.

Therefore, the concept brought in this research discussion; focusing on the supportive role that "ecological states "can provide to developing countries particularly DR- Congo. Historically, the DR- Congo has been a good partner of international community, and the government have been signing varieties of international agreements and treaties.

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Nevertheless, it has been very difficult to know what these agreements have done to the people of Congo and to the development of forest sector.

Some of addition argument related to the concept developed in this research is also looking at the role forest resources of DR- Congo have played in repaying those debts. It is a question whether this agreement has contributed in weakens forest policy in the DR-Congo. If the forest of the DR- Congo has been used as tool to pay for international debts, which is not a wise idea in a state, where forest law enforcement still weak. The opinion of the researcher of this case study is that because of weak policy and incapacity to cope with challenge posed by community forest management the DR- Congo deserves to be supported by "ecological states". The contribution of "ecological states "will play very important role in sustainable development of community forest management in DR-Congo.

If we go back during dictatorship regime, we can see that, many forest companies had concession forestry. Fore thirty two year foreigner companies exploited DR- Congo forest without sustainable management plans. For different reasons international community felt to support DR- Congo in developing sustainable community forest management. Some of these reasons include those related to political and economic variability. However, the contribution from the World Bank was very significant but the question is to ask ourselves whether the process of making forest law and forest code was realistic. The forest law and forest code was just written by international ecological agencies and give to Congolese people to practice it.

The process of institution reform could not just start by make forest law to Congolese people without knowledge of academic institutes or civil societies. Therefore, the process of preparing forest law for DR- Congo was not inclusive enough. This could mean that, international environmental organization under the assistance of World Bank did not have good intention to assist DR- Congo to start a sustainable forestry institutions reforms. The DR- Congo needs an effective forest law that can bring change in attitude to forest sector. For example, if the processes that were used to make forest law were incompetence this means that, international community should take full responsibility for inactiveness of forest law in DR- Congo.

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Blaming Congolese people for not obeying the forest law will not solve any problem. It is just because the international community decided to make forest law for DR- Congo instead of training Congolese people to know how to make an effective forest law and policy that suit the existing forest culture of Congo society. The forest reform in DR-Congo is very necessary but it will be more productive when "ecological states "get involve in provide their full support to forest reform rather that financial support that international community is providing to DR- Congo.

5.5 Recommendations to develop community forest at the biosphere reserve of *Luki*

The millions of poor people live in rural area are depending on forest resources to meet their daily needs. The land use change in the biosphere reserve of *Luki* is noticeable and the need to make change of the situation is eminent. The reason for degradation of forest landscape is due to expansion of local agriculture activities in the protected area according to the results of this research. The DR- Congo forestry administrators need to look for a new form of strategy to cope with current forest degradation trend that has taken place at the biosphere reserve of *Luki*. The strategy should be an inclusive strategy for forest stakeholder in order to promote the multiple uses of forest resource. The government of DR-Congo should be able to support local community forest activities outside the reserve. The relationship between local forestry authorities and local community at the biosphere reserve of *Luki need* to be improved. The local government forester should practices those forest activities that will help in reducing community pressure to forest ecosystem of the biosphere reserve of *Luki*.

The sustainable management process that needs to be applied at *Luki* is the process of participatory approach. The government should make policies that will promote new farming systems of environmentally friendly, economically and cultural viable. These are required as a response to secure and preserve remaining tropical forest found in the biosphere reserve of *Luki*. If any kind of innovative strategies to be proposed, forest environmental knowledge should be among the first priority and the importance of traditional farming should be not be disregarded.

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The community people at biosphere reserve of *Luki* deserve to be acquainted with knowledge related to sustainable community forest management. The suitable solution now is to empower community members with various forest ecological educations followed by practical activities/piloting projects. The best projects activities that can support the solution are to create forest rehabilitation projects on the degraded land. The government of DR- Congo with partners need to start initiating number of reforestation projects at local community forestland and in the biosphere reserve.

Forest restoration in the deforested area at the biosphere is crucial in order to continue maintaining forest abundances and ecological diversity in the reserve. Afforestation is also another important option but this requires a tremendous investment from forest companies who will be interested to invest in forest production. As for now, if any activities are to be established, the management requires a careful plan. Community member themselves should be among people to manage these activities under supervision of well-trained forester sup to the time local community members are able to take over management control. In any attempt of new strategy, traditional agroforestry practiced by local community should not be ignored because it has a great potential for food security to local people. It is already acknowledged that, trees play a vital role in sustaining forest dependent people to survive. The most benefits that local people could also get from community forest activities are getting acquainted with forest management knowledge. In order for forest continues providing socio-economic benefits and ecological services require a change in policy attitude to forest management from forest stakeholders. It will be very important to establish a community forest management so that communities can participate in forest management. The role that government of DR- Congo should do now is to focus on the future of forest sector by establishing a sustainable community forest management.

The forest extension services should assist community people recognize the values forests have when planning forest activities together with local people. There is a positive result when DRC accepts to establish community forest management at *Luki* community. The government of DR- Congo needs to encourage community people to take control of forest management at *Luki.* This strategy will help in minimize the loss of forests in the biosphere reserve while maximizing ecological benefits for both reserve and local community.

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5.6 Recommendation on policy implications

The unsustainable community forest management in the biosphere reserve of Luki has worsened due to many reasons; some of these reasons are inactive of forest law, inactive forest institutions and lack of trained human resources. Therefore, so far governing forestry regimes have not yet put enough efforts in reshaping community forest sector at the biosphere reserve of *Luki* in DR- Congo. War after war has become a weapon used to justify their weakness for not establishes good governing and policies for natural resource management.

Right now local communities at biosphere reserve of *Luki* have started to voice out their disagreements and disappointments with the forest governing system. The local people are now claiming for more rights in managing their natural resources through land ownership rights. Due to inactive forest law and lack of management supervision from responsible institutions, illegal logging is rampant; encroachments into the reserve are increasing and conversion of forestland to permanent local agriculture is increasing. As these activities, increase in the biosphere reserve of *LukI* it is increasing ecological damage and more cost for rehabilitation of the biosphere reserve of *Luki*. The decrease in forest abundance in reserve has raise certain concerns to what extent local community can continue to have economic dependence on the forest ecosystem of the biosphere reserve of *Luki*.

The research study has found that local communities at *Luki* still use non– timber forest product (NTFP) as products that play a significant role in supporting their livelihoods. In the area outside the reserve, a larger part of land is not in use by local people for agriculture practices due to unclear policies mechanisms. Instead local people go and practice farming activities in the reserve. These practices are destroying the environment and increase canopy defoliation of the forests in the reserve. The community people are practice farming activities that are not ecologically health for biosphere reserve of *Luki*. Based on the analysis of this study, the research proposes the following points that stand as recommendations. The recommendations provided in this research are providing a way in which this opportunity and options that is observed in this research can be developed at the atthe biosphere reserve of *Luki;*

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- Government of Congo should clarify the forest code on what DR- Congo government wants to do with its forest resource especially at community level
- A policy framework should be put in place as soon as possible. Forest institutions should be active enough to make program of action for CFM at the BRL
- Clear explanation of different rights that are set to manage forest resources in DR- Congo and policy means that give opportunity on how community people at the biosphere reserve should use the land that government has allocated for them
- The available principal that is in the context of forest code should be vulgarized to academic institutes and to local communities at the biosphere reserve as soon as possible
- The principal found in forest code should be accessible to forest stakeholders
- To provide clear forest boundaries between community forest land and forest land that belong to biosphere reserve (BRL)
- Provide clear policies on resource management and technical tools to manage community forest at biosphere reserve of *Luki* for example financial incentives, knowledge and practical training local people how to manage forest resources.
- Reform forest institution of which objective should meet current challenges posed by community forest management through participatory approach
- Developing a clear policies objective in forest resource management and long-term solution should be based on maintaining good governance in resource management
- Decentralization should not be a focusing point at the moment due to inadequate level of ecological knowledge in forest resource management of local people
- Government should open a wide door to foreigner investors while enforcing law and supervision as well as having a political will in forest resource management.
- Government should provide forestry technical facilities and management guidelines to community people to exercise community forest management
- Government should allocate policies means/incentives to support community forest activities.
- In order for policies to work in DR- Congo, it will require serious participation of local communities in forest management activities.
- To provide clear methods of identification to which land is for community and acknowledging their traditional rights to practice traditional ecological knowledge
- Establishment or development of sustainable community forest management regime
- Any proposed management system on community forest management should base on

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contexts of stakeholder's forest management objectives.

- The DR- Congo government in collaborations with foreign investors should work together in empowering local communities so that the benefits derived from forest ecosystem should equally be shared.

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5.7 Concluding remarks

The community forest and forest policy implication in forest sector is still a huge subject to the government of DR- Congo. One thing that is so far clear in this research study is that, local people need to be made aware of the practicality of the concept regard to community forest management. The success of community forests management still has a long way to go. Feasible policies toward forest resource management still require a further study in DR-Congo. Political condition and corruption in DR- Congo has become a management cancer that cannot allow the development of a sustainable community forest management so far. The community forest management and policy development is an urgent and necessary for sustainable future of community forest management in DR- Congo. The community forest management and policy framework should be created as soon as possible in order to give great opportunities for future operation in community forest management. At the same time, social, political, and economic condition in the rural communities should be adjusted. However, inexistent of good relationship between local community and government officials does not guarantee positive results for future development of community forest management at the biosphere reserve of *Luki*. There is a need for attitudes change from forestry officials toward community people at the village level. Ecological democracy in resource management should be encouraged on community forest management. Mutual understanding between local community and forestry administrator at the BRL is recommended. Community participation is a process that should be encouraged at biosphere reserve of *Luki*. The local government should be encouraged to participate in the process for capacity building and social learning at the community level. More research is encouraged for forest resource management in DR- Congo, especially at the biosphere reserve of *Luki*. The research on community forest management and policy implications, show that under current political conditions of DR- Congo, this results wasn't a surprise. The case study's how the way local community perceive the concept of community forest management. It also shows their knowledge capacity and how policies arrangements are set at community level. This study also shows a clear distinction in rights to forest resource management as well as the biggest gap that is between policy maker and local community. The relation and applicability of policy need to be given more attention from government officials to make the process of community forest management feasible.

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