

# **Forest Conservation and Management Practices in Cameroon: Case Study of Bimbia-Bonadikombo Community Forest and Takamanda National Park**

A thesis approved by the Faculty of Environment and Natural Sciences at the Brandenburg University of Technology Cottbus-Senftenberg in partial fulfilment of the requirement for the award of the academic degree of Doctor of Philosophy (Ph.D.) in Environmental Sciences

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Day of the oral examination: 25<sup>th</sup> October 2018

## **DECLARATION**

I hereby declare that this dissertation is the result of my original research carried out at the Brandenburg University of Technology Cottbus-Senftenberg, Germany within the framework of the International Ph.D. (Doctor of Philosophy) program in Environmental and Resources Management. I hereby admit that this dissertation has never been submitted in whole or in part for a degree at Brandenburg University of Technology Cottbus-Senftenberg, Germany or elsewhere. References to other people's research have been duly cited and acknowledged accordingly in this work.

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Regina Edawa Nyambi Anaka, Date of Signature

## **DEDICATION**

I dedicate this dissertation to my kids; Anongka Anaka, Mandi Anaka and David Anaka, and to my beloved husband Divine Asoh Anaka, who have been a constant source of inspiration and support during the most challenging moments of my Ph.D. studies. I also dedicate this work to my mentor and late brother Prof. Dr. Phillipe Nyambi (RIP) for his moral and financial support throughout my academic career. Lastly, this dissertation is dedicated to my parents, Mr. Nyambi Moses and Mrs. Nyambi Rose for their constant love and financial assistance throughout my academic life.

## ACKNOWLEDGMENT

Firstly, I would like to express my sincere gratitude to my first supervisor, Prof. Dr. Dr. h.c. (NMU Dnepropetrovsk) Michael Schmidt for his continuous support throughout my Ph.D. studies. I am very grateful for his motivation, patience and immense knowledge especially during the internal Ph.D. colloquium. His guidance and support significantly helped me in course of this research. I would also like to express special appreciation to my second supervisor Prof. Dr. iur. Eike Albrecht for supervising this thesis. In addition to my supervisors, I would like to express special thanks to the manager of Bimbia- Bonadikombo community forest, Mr. Ivo Mbongaya Arrey for his valuable assistance during the field research. A special thanks to the Takamanda National Park Conservator, Mr. Walter Ashu Egbe for his assistance during the research period. I would especially like to thank my field research assistants, Mr. Samuel Ashu Etah, Mr. John Arrey Tabi, Mr. Ekoko Benjamin, and Mr. Paul Mbua Mondo who were never tired of moving from one village community to another. Special thanks to my colleagues at the Ph.D. departmental colloquium for their contributions to this thesis. My sincere gratitude goes to Dr. Terence Onang Egute for his academic and moral support throughout my Ph.D. studies. His valuable comments helped me to improve this dissertation. A special thank you goes to Dr. Dimity Palekhov and Dr. Brite Seffert for their valuable comments during this Ph.D. thesis.

I would like to express gratitude to my siblings and entire family for providing me with moral support throughout my Ph.D. studies. I owe a special thank you to my brother-in-law Anaka Benjamin, my friend Rose Fru and to my cousin Mrs. Emelienne Enghewo Egute, who supported me morally while in Germany. Special thanks to my kids Anongka Anaka, Mandi Anaka and David Anaka for their perseverance in my absence, especially during my extended stay in Germany. I immensely appreciate my beloved husband, Mr. Anaka Divine, who spent sleepless nights with our kids in my absence and was my support in moments of dire need. Thank you ABSTRACT challenges during my Ph.D. studies.

## ABSTRACT

Cameroon's forest is one of the richest ecosystems in the Congo Basin and in Africa as a whole in terms of its biodiversity. This rich biodiversity status can be attributed to the country's stable wet, cold and sometimes dry weather conditions. The forest ecosystem is characterized by different forest types including lowland evergreen, and semi-deciduous, montane and sub-montane forests. These forest types are currently subjected to multiple categories of threats including but not limited to pressures from the local communities living adjacent them. By enacting a new forestry law in 1994, the government of Cameroon intended to intensify efforts toward the protection and conservation of this rich biodiversity by creating protected areas and increasing local community participation for a sustainable management of forest resources. However, misunderstanding, misinterpretation and poor implementation of the forestry law has rather stirred illegal exploitation of resources. This study aimed to compare two forest management systems, a state management system (the case of Takamanda National Park) and a community-based management system (the case of Bimbia- Bonadikombo Community Forest), to determine which management system better conserves and protects the forest against biodiversity loss. The study applied a methodological framework that made use of selected indicators and criteria to evaluate the extent of sustainability of the two forest management systems and challenges faced in implementing them. Both quantitative and qualitative results were realized through the administration of questionnaires, semi-structure interview and in-depth contents analysis of Law No.94-1 of 20<sup>th</sup> January 1994 that lays down forestry, wildlife and fisheries regulations and the 1996 Environmental Management Law that directs Cameroon's compliance to the international standard of protecting the environment.

Results indicated that community-based system of forest management is a much more sustainable approach of forest management than a state management system. Based on the criterion of cultural values attributed to natural resources in the community based management zone (Bimbia- Bonadikombo Community Forest), 78.2% of the local communities were more willing to protect biodiversity (e.g. reduce their activities, adopt alternative practices, collect and use resource wisely from this areas etc.), as opposed to 48.3% from state management zone (Takamanda National Park), where people are totally restricted from the use of protected area with no alternatives. This

study found that the level of participation in the community-based management system was much more inclusive and transparent and encourage the active contribution of community members in the management process. On the other hand, in the state management system, a high level of corruption, lack of transparency, delayed and irregular salaries of forest guards and minimal participation of local communities in forest management decision-making was noted and likely responsible for the ineffectiveness and unsustainable management efforts in this system. Irrespective of the forest management system, results indicated that sustainable management remains a big problem in both study areas, and is challenged by several factors including weak forest governance, poor implementation of forestry laws, inadequate access to public information and lack of alternative means of livelihood that could improve the wellbeing of the people living around these areas. The study recommends the adoption and implementation of a more inclusive, transparent and accountable management in the state managed system (Takamanda national park), particularly the full involvement of respected Elites, Chiefs and Traditional Councils. It recommends further, continuous environmental campaigns and sensitization to keep custodians and all stakeholders involved in the management of both areas (Takamanda and Bimbia-Bonadikombo) reminded of the values of this ecosystem and the need to conserve and protect them. Finally, to achieve sustainability in both management systems, alternative sources of food and income and additional capacity to achieve sustainable management objectives at all levels are urgently needed.

**Keywords:** Conservation Management, Sustainable Management, Biodiversity, Community-Based Forest Management, State Forest Management, Cameroon, Bimbia-Bonadikombo Community Forest, Takamanda National Park

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## List of Acronyms and Abbreviations

ABS	Access and Benefit sharing
BB	Bimbia-Bonadikombo
BBCF	Bimbia-Bonadikombo Community Forest
BBNRM	Bimbia-Bonadikombo Natural Resource Management Council
BC	British Columbia
BTU	Brandenburg Technical University
CBD	Convention on Biological Diversity
CDC	Cameroon Development Cooperation
CF	Community Forest
CFA	Communante Financiere Africaine
CFE	Cameroon Forest Estate
CIA	Central Intelligence Agency
CIFOR	Centre for International Forestry Research
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNPFE	Cameroon Non-Permanent Forest Estate
CNPS	Cameroon non-permanent forest estate
CNU	Cameroon National Union
COMIFAC	Central Africa Forest Commission
CPFE	Cameroon Permanent Forest Estate
DED	German Development services
DFAP	Department of Protected Areas and Wildlife
DFID	Department for International Development
EIA	Environmental impact assessment
FAO	Food and Agricultural OrganisationOrganization
FESP	Environmental Sectoral Program (FESP)

FFS	Farmer Field School
FMUs	Forest Management Units
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GFC	Global Forestry Crisis
GFW	Global Forest Watch
GIZ	German International cooperation
GPS	Global Positioning System
HCVF	High Conservation Value Forest
IMF	International Monetary Fund
ITTO	The International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
KFW	German Development Bank
KNP	Korup National Park
LBGRCP	Limbe Botanical Garden and Rainforest Genetic Conservation Project
MCP	Mount Cameroon Project
MINEF	Ministry of Environment and Forestry
MINFOF	Ministry of Forestry and Wildlife
NBSAP	National Biodiversity Strategy and Action Plan
NGOs	Non-governmental Organizations
NTFPs	Non-Timber Forest Product
OAU	Organisation of African Unity
OAU	Organization of Africa Unity
PSFE	Program Sectional Forest and Environment
PSMNR-SWR	Programme for Sustainable Management of Natural Resources Southwest Region
SMP	Simple Management Plan
SSV	Sales of Standing Volume
TNP	Takamanda National Park
TNP-MP	Takamanda National Park-Management Plan

TOU	Technical Operation Units
UN	United Nations
UNSD	United Nations Statistic Division
VARCIG	Victoria Area Rainforest Common Initiative Group
VLFC	Land and Forest Conservation Committees
WCED	World Commission on Environment and Development
WCED	World Commission on Environment and Development
WCS	World Conservation Society
WWF	World Wildlife Fund

# **Chapter 1 : General Introduction**

## **1.1 Background to Study**

This chapter presents general introduction and background to this study. It begins by providing background to the research, then presents a detailed insight to the statement of the problem, the research goal and objectives, the justification of the study, the research questions and limitations of the study, and ends up with the structure of the thesis.

Changes in land use are increasingly affecting the global forest. Approximately half of the forest that once covered the planet has now been destroyed. This forest degradation happens as a result of changing management objectives (Birdsey and Pan, 2015). Since 1990, the world's natural forest has declined by 3%, but planted forest area has actually increased in all regions globally, so much so that it now accounts for about 7% of world's forest land. Recently in 2016 world tree cover loss reached an alarming rate of 73.4 million acres (29.7 million hectares), about 18 million acres (7.3 million hectares) of forest are estimated to be lost each year which is roughly the land size of the country of Panama in South America (Bradford, 2018). An estimated 18.7 million acres of forest land are lost per year which is equivalent of 27 soccer fields every minute (Bradford, 2018). Primary forests that have managed to completely avoid direct human interaction account for approximately 34% of the entire world's forest land, but that number is rapidly decreasing. The issue of forest degradation is particularly in South America and Africa notably, where there is the most human pressure placed on the world's forest resources (Roshetho et al., 2008; Whiteman, 2013; Diangha and Wieleb, 2014). Growing population has led to the decline of natural regenerated forest that is not classified under primary forest, specifically because of unsustainable activities including agricultural practices such as slash and burn, hunting, collection of non-timber forest products (NTFPs) and timber logging companies (Adeoye and Ayeni, 2011). Due to lack of management intensity, the forest area typically known as land that lacks management plan and protected area has dropped significantly since in the 90s and comprises only 21% of global forest (Birdsey and Pan, 2015). Recently, there has been a major increase in the amount of forest areas marked for conservation of biodiversity and sustainable forest use, but despite these conservation areas, forest managers and exploiters face many challenges. The forest managers pay more

attention exclusively to forest conservation, without acknowledging the need of the local people in the forest's vicinity to maintain a livelihood (Elkermann, 2015). The forest plays an important role in foreign earning through tourism and timber exploitation. The forest resources benefit not only the Indigenous peoples in the area, but society at large. Income that is generated from forest sources contributes significantly to rural local people's livelihoods and their economic well-being (Miah et al., 2012). Subsistence agriculture provides food, stability and resilience to the growing numbers of rural poor in Sub-Saharan Africa, but climate change and unsustainable forest use threaten the health of the forest and - by extension - the local people (Techoro and Schmidt, 2014). The importance of forest resources makes such areas more competitive and complex to manage. In fact, forest vulnerability<sup>1</sup> is coupled with the fact that it is easier to exploit than other natural resources like petroleum and copper, which need a high degree of expertise and technology. Forest resources place an added value on local livelihood, which makes it harder to restrict the indigenous people<sup>2</sup> that have access to forest resources (Nkemnyi et al., 2013). In South America and Central Africa, there is an urgent need to appropriately safeguard these forest resources by providing the local people with alternative means of living in developing countries (Birdsey and Pan, 2015). In addition, degradation and forest loss in the tropics is already occurring at an alarming rate, while the demand of the local people is simply increasing (Romijn et al., 2015). There is an estimated 1,048,700 km<sup>2</sup> of remaining tropical forest, distributed throughout Africa, South America and Eurasia. There is suggested evidence that c. 300,000 km<sup>2</sup> of tropical forest now coincides in some form of protected area, with South America alone having 71.8% of that number (Miles et al., 2006).

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<sup>1</sup> In this context, forest vulnerability means that because local people are poor and vulnerable, they need a safety-net for their livelihood. They do not have any skills or education that might enable them to depend on other trade. Their only means of survival is to turn to forest exploitation. Unlike a practice such as mining, which would require some expertise, the harvesting of forest products like Non-Timber Forest Product (NTFP) does not require any training or skill. In times of adversity, indigenous and poor forest residents have no safety-net for securing a livelihood, making forest resources vulnerable.

<sup>2</sup> Indigenous people in many countries in Sub-Saharan Africa consider the term "indigenous" differently. In terms of Cameroon and this study, indigenous people means 1) forest-dwelling people who have been occupants of forest land for a long period of time; 2) people who directly depend on forest land for their physical needs and their social and cultural values; 3) people whose cultural values are different from the dominant population of the country; 4) people who are usually isolated politically by the government.

Despite all this, there is still a call to create more protected areas to preserve the vanishing forest. This has historically been viewed as a desirable method to engage in forest conservation and biodiversity protection. In 2010, the world database estimated that designated amounted to approximately 17 million km<sup>2</sup> (or 12.7%) of the world terrestrial land area – excluding Antarctica (inland waters) – around the world Geldmann et al. (2013). There is a higher portion of protected areas (13.3%) in the developing world. The developed world possesses about 11.6% of this area. The highest percentage of protected area (20.4%) is found in Latin America (Bertzky et al., 2012).

Six countries i.e. Gabon, Republic of Congo, Democratic Republic of Congo (formerly Zaire), Equatorial Guinea, the Republic of Cameroon, and Central Africa Republic make up the Congo Basin Forests. This tropical forest stood at approximately 198 million hectares in 1995, making it the second largest rainforest in the world, after the Amazon Basin<sup>3</sup>. The Congo Basin<sup>4</sup> is known to be home to mountain gorillas, chimpanzees, lowland gorillas and forest elephants and about 1,000 species of birds. It is also home to 75 million people and approximately 150 distinct ethnic groups, who depend on forest resources (Global Forest Atlas, 2017). Following data compiled in 1995, out of the 40,850 plant taxa that are enumerated in the Central Africa area, 175 of them are classified as rare (Awemo, 2006). The Republic of Cameroon alone possesses approximately 8,000 forest plants species, and the Central Africa Republic is home to about 1,000 endemic plant species (Cheo, 2010; Mbatu, 2016). In addition, 63% of the central African countries' local population resides in rural areas and mostly depend on forest produce for fuelwood, medicine, food, clothing and household items. Forest resources like medicinal plants are internationally traded, which contributes to local livelihoods (Ingram and Schure, 2010; Fuashi et al., 2011; Nkemnyi et al., 2013).

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<sup>3</sup> The Amazon Basin is found in South America and is the largest tropical forest in the world with a dense forest area of about 5,500,000 km<sup>2</sup> (Wikipedia, 2017).

<sup>4</sup> The Congo Basin is found in Africa and is the second largest tropical forest in the world. It is a sedimentary basin drained by the Congo River, which is located in the West of Africa, sometimes called the Congo. It has a forest land area of about 3.700.000 km<sup>2</sup> (Wikipedia, 2017).



Cameroon Forest Policy is known to be one of the most advanced in the Congo Basin. The related elaborate policies in the conservation of biodiversity and sustainable management of forest resources in Cameroon include the wildlife and forestry policy which is enshrined in the Law No. 94/01 of 20 January 1994 to lay down Forestry, Wildlife and Fishery Regulations (hereinafter the 1994 forestry law)<sup>5</sup>. The main objectives of its various implementing decrees include:

The protection of the country's forest and wildlife heritage via participation in conservation of biodiversity and the preservation of the environment in a sustainable manner, while simultaneously renewing the wildlife and forest resources through better management (Mbatu, 2016).

To involve rural populations in the implementation of forest policies, notably through community forestry. Nationally, decentralization policies have been created in the hope that indigenous communities will participate in governing their own forest, which will help in the improvement of conservation of forest resources (Ofoulhast-Othamot, 2015).

## **1.2 Forest Resource Management History in Cameroon**

The management of forest resources in Cameroon has a long history, but it is seemingly a contradictory and inconsistent one (Njoh, 2007; Mbatu, 2009). Before the colonial administration, forest management started within villages and communities and is continued presently through local ministries (Mengang, 1998). However, according to a report by Mbatu (2009), the evolution of official protected areas and forest reserves started in the colonial era, contributing to the tension between local communities and new administrative structure. The current Cameroon forest and natural resource policy has been in effect since Cameroon gained its independence enabling many to claim that, that was the official beginning to forest management in Cameroon. Before the coming of the first colonial administrators in the 1900s, forest resources were governed and managed according to the local people's law (customary law). The traditional village chiefs acted as the resource management administrators. When hunters travel outside of the village to hunt, they had to receive permission from the chief to enter the forest for hunting<sup>6</sup>. If they did not receive

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<sup>5</sup> This is the forestry law that codified the management of natural and forest resources.

<sup>6</sup> According to Mengang, (1998), during the colonial period, hunters were obligated to bring any animal for which they had traveled out of the village community to hunt to the chief's palace. The chief would then share the animal with the entire community. This was under customary law. Thus, hunters were discouraged from going out of the village to hunt because they did not want their

permission and killed animals anywhere, they could be punished through the totem of the village (Etiendem et al., 2011). In this way, chiefs could ensure that resources were not over exploited and everyone in the village received enough of these resources. Due to the changes during the colonial period, people were prohibited to hunt and kill any animal if they do not have a license to hunt, and all resources were technically property of the state (Cerutti et al., 2008). This obviously ran counter to the previous system.

Cameroon is recognized as one of the most important countries in Sub-Saharan Africa in terms of forest biodiversity, hence the need to create protected areas to guard forest resources (Mbtatu, 2016). In the early 1960s, when Cameroon became politically independent, there were several hunting operational reserves in the country, including Dja, Waza, Kalamaloe, Douala Edea, Santchou, Korup, Benoue and Bouba-Ndjidah. In the 1930s, French colonists began creating hunting these hunting reserves and educating the local population on planting exotic plants such as fruits, neem trees and some species of eucalyptus in the savanna zone. The population was receiving education on resources tenure, but all the resources remained property of the state. Due to this regulation, the first forest guards were employed to protect forest resources and wildlife. However, as far back as independence, the method available for developing these human resources has only been decreasing, relative to those that were available under the colonial regimes. There has been a change away from policy mentality toward a desire for rural communities to participate in the sustainability of forest resources (Abugiche, 2008). From the 1960s until today, the management of Cameroon forest resources has happened through various ministries, including the Rural Development Secretariat; the Department of Tourism; the Ministry of Livestock, Fisheries and Animal Husbandry; and the Ministry of Environment, Nature Protection and Sustainable Development. The Rural Development Secretariat was charged with dealing with forest and water. Given the fact that all-natural resources belong to the state, the law punishes anyone who destroys forest resources. The first colonial parks were created in 1968: Waza Park, Benoue Park and Boubandjidah Park (Cerutti et al., 2008). The Department of Tourism adopted responsibility for the parks in order to promote the activities of that department. Today, Cameroon has 25 national

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bushmeat to be shared.

parks, 69 forest reserves, 392 community forests, seven botanical gardens, six zoological gardens, five sanctuaries, and four wildlife reserves (MINFOF, 2005; Cameroon Forest Estate (CFE), 2014).

### **1.3 Forest Management Decentralization and Community Participation**

Different institutional changes have been made to Cameroon's forestry law, which aim at increasing rural people's participation in forest resource management and contributing to the socio-economic development of Cameroon's economy. However, the decentralization<sup>7</sup> and institutional policy is perhaps the biggest contributor in increasing indigenous people's participation in forest management decision-making. In fact, with the management of decentralization in forest policy, the governing of community forests including timber royalties was transferred from the government to the local population and its municipalities. Indeed, the central government made the decision not to manage and control the forest units that henceforth developed community forest like the Bimbia-Bonadikombo Community Forest (BBCF) (Nuesiri, 2015). Unfortunately, this institutional change has led to a small number of individuals benefiting from the forest resources, contributing to the marginalization of the rural populations from decision-making in the community forests resources (Subedi and Timilsina, 2016). The poor participation of local population in community forests, as well as the increasing mismanagement of forest resources reported in the Southwest region and Cameroon in general, stems from idea of decentralization. The local people are marginalized in decision-making and the few stakeholders are benefiting from participating in forest management in the Southwest region of Cameroon (Alemagi et al., 2012).

The population of Cameroon uses forest for hunting, fishing, agriculture, harvesting of non-timber forest products, fuelwood, harvesting of medicinal plants, and so on. The equatorial Bantus who make up 19% of the population, favor using the forest as a source of wealth. They generate income from timber trading, NTFPs and wildlife resources. According to Cameroon population 2019 demographics, the equatorial Bantus make up 19% of the population. They use the forest as their

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<sup>7</sup> In this thesis, "decentralisation" means the powers of management are awarded to the local people to control and manage their own forest resources. In doing this, they must participate and make decisions concerning their forest. Higher authority power is distributed to lower authority to form a controlling board charged with managing the forest sustainably for future generations.

source of wealth. Other stakeholders like the pygmies, according to Joshua project ministry of frontier ventures, make up a population of 54,000 live in the forest and it is their source of livelihood.

About 57.1% of women invest in the health of the forest because it guarantees their survival and livelihood (Cheo, 2010). The results from Southeast Cameroon show that marginal timber use by rural populations for building materials or as a domestic energy source does not balance with forest sustainability (Ndoye and Tieguhong, 2010). However, the possibility of local populations using wildlife and NTFPs sustainably is unclear and several factors contribute to this situation (Ndoye and Tieguhong, 2010). NTFPs have subsistence, importance and sociocultural significance and are primarily part of an adaptive livelihood strategy (Shanley et al., 2015). The higher number of stakeholders who are involved in the extraction of NTFPs and animals' resources and the regularity of their extraction will lead to forest degradation. According to Chakravarty et al. (2015), an effective policy intervention could improve the position of all the stakeholders who are involved in NTFP collection without hindering the principle of sustainable forest management.

### **1.3.1 Forest Product Use Dimensions**

The evolution toward the management and sustainable use of forest resources in Cameroon can be divided into five main dimensions: economic, social, technical, institutional and ecological. To achieve conservation and sustainable forest management, the economic, social and ecological factors need to be well integrated and acknowledged by all the stakeholders who are directly involved in the forest department in Cameroon (Tieguhong and Ndoye, 2008; Karsenty, 2006; Scholl, 2005; Kamga-Kamdem and Tiebou, 2006).

#### **1.4.1.1 Ecological Dimension**

The main goal of the ecological dimension is to guarantee and promote the conservation of natural and forest resources to satisfy the needs of future generations. The forest department has made an effort to carry out national inventory and logical steps that could better enhance this dimension, including forest zoning and the distribution of forest into different land uses, as well as the enhancement of wildlife, forest control and monitoring mechanisms (MINEF, 1995; MINEF, 1999; MINFOF, 2005; CFE, 2014). The permanent sector is made up of production forests known as Forest Management units (FMUs), protected areas including hunting zones and council forests.

The non-permanent forest is comprised of land allocated for agricultural purposes, community hunting zones, agroforestry zones and community forest. FMUs are designed for production of wood and different forest resources and maintaining conditions that can ensure the preservation of environmental and ecological functions (CFE, 2014). The main interest of the Cameroon government concerning biodiversity conservation is the transformation of about 30% of the total land area into conserved state forest areas (Cameroon Forest Estate, 2014). The creation of many national parks, zoological gardens and nature reserves in the 1930s, created awareness for the forest department to convert many forests into biodiversity conservation areas.

#### **1.4.1.2 Social Dimension**

The social dimension stipulates that local populations may sometimes participate in the management of natural and forest resources and may somehow profit from these resources. The Cameroon government undertook concrete measures in this direction, including the creation of schools, good road networks, hospitals and community halls for the village communities. All of these facilities came from benefits obtained through forest products. The timber companies also pay taxes to the local communities. These taxes are sometimes spread between the public treasury and the forest management board (50%), while the local council takes approximately (40%), and local communities about (10%). An annual forest tax exists for wildlife and timber sectors (Kamga-Kamdem and Tiebou, 2006).

#### **1.4.1.3 Economic Dimension**

The exploitation of forest products should contribute to the national budget. To achieve this goal, the government should revise the forest sector and incorporate the forest fiscal reform into forest concessions. This is difficult, since the forest fiscal reform did not only increase tax rates but also ensured the conservation of natural and forest resources. This was done through the implementation of the reduced-impact logging method. Cameroon has an estimated forest cover of about 21.2 million hectares, which occupies about 45% of the country's surface area (MINFOF, 2005). With the recent economic crises, the general significance of the forestry domain and the use of industrial timber in particular have increased within the national economy sector.

### 1.3.2 Permanent Forest Following 1994 Forestry, Wildlife and Fisheries Law

In Cameroon, the state ensures the protection of natural and forest resources. According to Section 20 (1) of Law No. 94/01 of 20 January 1994 to lay down forestry, wildlife and fishery regulations; the “National Forest Estate (NFE) shall comprise permanent and non-permanent forests”. According to the law, the management of the permanent forest is to sustained forest resources, so that the forest land should be protected from biodiversity loss, and for future production of that forest (MINEF 1995). Within the meaning of the above law, in order to protect wildlife, state forests are divided into areas like national parks, forest reserves, wildlife sanctuaries, buffer zones, and zoological gardens. This is illustrated in Table 1.1 below.

**Table 1.1 Cameroon Permanent Forest Estate (CPFE)**

Permanent Forest Estate (PFE) Allocation Type	Number	Area (ha)
Forest Management Unit	115	6785464
Forest Management Plan Approved	89	5360510
Forest Management Plan in process of Elaboration	16	845938
Not Allocated	10	579016
Forest Reserves	69	823749
Protected Area (PA)	39	4701138
National Parks	25	3569898
Wildlife Reserves	6	971897
Sanctuaries	6	149417
Integral Ecological Zones	2	9926
Hunting Zones (Zic/ZicGc)	65	531090

**Source: Cameroon Forest Estate (2014)**

The above forest types form the property of the state, and the exploitation of state forests may be controlled or prohibited. According to Section 29 (1) of the 1994 law, in this permanent forest,

rules and regulations shall be drawn to manage forest resources so that rural communities living adjacent the forest should benefit from timber logging rights.

### 1.3.3 Non-Permanent Forest Following 1994 Forestry, Wildlife and Fisheries Law

Non-permanent or unclassified forests on the other hand are forests on non-permanent forestland. This is illustrated in Table 1.2 below. The Community Forestry (CF) concept was introduced by the Food and Agricultural Organization (FAO) in the 1970s and is still promoted today (Jong, 2012). There are many definitions concerning community forest. Community forestry is when greater control is given to a community to manage and governed its own forest resources by its own participation and decision-making board. In this light, the community in question fully benefits from the user right. In return, protects the biodiversity for future generation (Shrestha and McManus, 2007; Cronkleton et al., 2013; Schusser, 2016). Duinker et al. (1991), see a community forest as “a tree-dominated ecosystem managed by the community and providing local income and other values and benefits for the community.

**Table 1.2: Cameroon Non-Permanent Forest Estate (CNPFE)**

Non-Permanent Forest Estate (NPFE)	Number	Area (ha)
Communal Forest (CF)	41	1638148
Designated	21	1201430
Proposed	20	436718
Community Forest (CF)	392	1364203
Provisional Convention	118	406078
Final Convention	274	958125
Sales of Standing Volume (SSV)	84	187539
Agro-Industrial Planes	74	415937

Source: Cameroon Forest Estate (2014)

His own description gave room to socio-economic, ecological, and cultural benefits to local people by involving them in the resource governing of forested lands. However, MINFOF (2009) describes community forest as “a forest forming part of the non-permanent forest, which is covered by a management agreement between a village community and the forestry administration”. The

village in charge of this forest is responsible for its management with some support from the government.

#### **1.4 Statement of the Problem**

Cameroon is endowed with a very rich cultural and ecological diversity. The country's forest covers approximately 21.2 million hectares which is almost half of its territory. Unfortunately, Cameroon's forest is subject to serious problems such as deforestation resulting from logging and farming, a lack of an effective forest management program and awareness, climate change and an increasing population. According to Egute and Albrecht (2014), if the forest is not conserved and managed sustainably, climate change will negatively impact the functioning of the ecosystems, which will affect the livelihood of the local communities who depend on it, inevitably making them vulnerable. In recent years, Cameroon's forests have degraded to an alarming rate. In just 50 years, half of the forest cover has already been lost (Cerutti et al., 2008). Due to the failure of weak and ineffective conservation and sustainable forest management programs, there is now a lack of effective protective areas. This came about due to fuelwood collection, extensive hunting and extensive farming. This caused deforestation and gross loss in animal population, even in protected areas. The problem is aggravated by the constant increase in population and the increasing demand for fuelwood and various other forest products. Presently, hunting of fauna and flora, habitat loss, climate change, and the lack of strong law enforcement are all threatening the forests of Cameroon. Many scholars have pointed out that loss of forest cover, which comes as a result of loss in biodiversity, will later cause severe land degradation problems (Karsenty, 2006; Ajonina et al., 2014). To avoid this, local people must participate more actively in resource management (Alemagi et al., 2012). In spite of the conservation measures that have already been taken, many animals and plant species, including the chimpanzee and gorilla, remain severely threatened even in protected areas<sup>8</sup>. The biggest factors are poaching, deforestation, logging, epizooties

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<sup>8</sup> In this context, "protected area" refers to areas that are specifically designed solely to maintain biodiversity loss. This can mean national parks, forest reserves, wildlife sanctuaries, and botanical gardens. It is sometimes referred to as High Conservation Value Forest (HCVF).



harvesting<sup>9</sup>, fragmentation of the habitats, poverty and bush fires<sup>10</sup>. It has been strongly argued that the centralized, state-controlled forest model of management has failed on many accounts, even according to its own normal norms, with common problems being continually miscalculated to sustain yield, and imperfection of corporate power, which leads communities who depend on forest resources lack income for their livelihood (Cheo et al., 2011). Cameroon began to introduce successive forestry governing laws and land issues after the country's independence in the 1960s. According to Mbile et al. (2008), this was implemented so that the government should control its forest land and resources due to the unpredicted nature of the post-colonial period. The rights were surrendered to big timber companies whose main objective was to make profits for themselves (White and Martin 2002; MINFOF and FAO, 2005; MINFOF, 2009; CFE, 2014).

The main issue from the Cameroon forest sector was to address the ecological, economic and social problems of the forest so as to protect forest resources for future generations. To attract the required foreign investment and favorable taxes, these were all crafted and implemented into forest management policy. However, the problem of forest sustainability became a big issue in the 1990s (Cheo et al., 2011) due to increase level of unemployment, rise in population growth, migration and lack of income. These factors motivated the local people in forested areas to exploit the forest in an unsustainable way leading to degradation of the forestland. However, because of all these, the government turned to community forest model. Forest community licenses were officially in place in 1994, aiming to enhance the participation of rural communities in sustainable forest management and the conservation of forest resources, as well as to enhance their own livelihood, while simultaneously seeking to secure and ensure enormous benefits for forest communities within the national territory for future generations. The major problem currently faced by the Bimbia-Bonadikombo Community Forest (BBCF) and the Takamanda National Park (TNP) is unsustainable exploitation of forest resources, and failing to meet conservation measures, like hunting, fishing, collection of non-timber forest products (NTFPs), fuelwood collection, farm

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<sup>9</sup> "Epizooties harvesting" refers to the harvesting of large mammal wildlife species in protected areas.

<sup>10</sup> Bush fires occur when the bush, forest, houses near the forest, vegetation and/or grass become engulfed in flames. These fires usually take place in protected areas or the area surrounding. Most bush fires are the result of arson.

encroachment and severe deforestation due to illegal collection of timber. Due to high rate of unemployment, the research areas of BBCF and TNP are under serious threat. More farms are extending to the core forest because urban communities surrounding the forests; hence, many unemployed young people are turning to the forests for survival.

Colonial governments created nature reserves in Cameroon mainly to protect certain flora and fauna species from extinction. The tropical rain forests of Southwest Cameroon (both community forests and national parks) are subject to increase pressures from stakeholders, who have various aims and expectations. In this case, NTFPs and animal resources are the most widely used by the populations. It is the rising tremendous pressures on these forest resources, the general population's perception of the forest, their dependence on forest resources because of income or food, which led to the creation of the BBCF and TNP where there is huge biodiversity of flora and fauna <sup>11</sup>around the Southwest region. To ensure forest sustainability, conservation of national resources and socio-economic development of forest-dependent communities<sup>12</sup>, the diverse local use of forest resources and sustainability should all be integrated into forest management decision.

### **1.5 Research Goal and Objectives**

There are many studies that have compared the community forest model with the model of the state forest with regards to sustainability and conservation of forest resources. The main aim of this study is to compare the two forest systems in Cameroon and their effects on conservation and sustainable management of forest resources. The two forests chosen are a non-permanent forest (community forest) i.e. Bimbia-Bonadikombo Community Forest (BBCF) and a government-managed permanent forest i.e. the Takamanda National Park in the Southwest region of Cameroon

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<sup>11</sup> Loss of fauna in protected areas; confirmation of highly dispersed populations of existing large mammal species in recent biological surveys coupled with movement of some of these species in the landscape means that enormous consideration is needed to create corridors linking large areas to guarantee their long-term protection and conservation.

<sup>12</sup> The communities in and around the protected areas must be sufficiently sensitized on the laws governing the use of natural resources especially forest and wildlife resources. This constitutes a major barrier to the involvement of the local communities in protected areas.

on tenure. The study will analyze the effects of the two models on local control and overall management structure.

Specific objectives include:

- 1) Evaluate the extent of sustainability of Bimbia-Bonadikombo Community Forest and Takamanda National Park management systems and identify traditional management systems in maintaining sustainability of both forest areas.
- 2) Evaluate the extent to which both forests are managed according to the various management plans approved by the ministry.
- 3) Evaluate the challenges faced in using the two forests management systems.
- 4) Assess the forest management system used in BBCF and TNP in relation to national forest heritage and the principles laid down at the Convention on Biological Diversity (CBD).
- 5) Make recommendations for improvement.

## **1.6 Justification of the Study**

Suggestions from many authors have shown that community-based forest management is better given that it shares the goal of social justice, development equity, ecological sustainability and empowerment (Gauld, 2000; Almeagi et al., 2012). There is a lot of literature in favor of the community forest regime and promotion of conservation. According to Luckert (2005), the communities advance the main objectives of sustainable management of forest resources to be better than the forest that is run by the state. He further argues that “local communities are the segment of society most impacted by forestry operations and should have more control over forest management” than the forest managed by the state. Duinker et al. (1991) point out that community forests can be sustained in a meaningful community awareness education and general satisfaction as well as enhance public involvement in resource-related decision-making. For example, Furness and Nelson (2012) states “cultural sites of the Cowichan tribe in the Canadian province of British Columbia (BC) have been protected due to the implementation of the community forest model”. The implementation of Bimbia-Bonadikombo community forest in the Southwest region of Cameroon has in some way solved the problem of timber that is harvested illegally. This is a clear example to show that if the communities manage their forest, they can easily dictate who is harvesting timber illegally. Increased monitoring will enable the young trees to grow and the forest

will recover from deforestation and degradation. In regard to economic services, the collection of NTFPs from recovered areas will bring benefits to the community.

### **1.7 Research Questions**

The research will be seeking to provide answers to the following questions:

1. What impact does the use of forest resources have on forest sustainability and biodiversity conservation in community forests and national parks? Which do the operators take or should take to tackle this impact?
2. Do the stakeholders involve in forest management respect the law (norms)? If not, why and which decisions should be made to tackle such a problem?
3. Are there known conflicts among the stakeholders with respect to the access or the use of forest resources? If so, do these conflicts compromise the conservation and sustainability of the forest ecosystem? What strategies or actions have been taken to address these conflicts?
4. Do the local communities participate in benefit-sharing? Do the decisions on forest management consider the divergent interests of stakeholders?
5. Do the local people participate in the decision-making process of the forest? If not, why and what could be done to change this situation?

### **1.8 Limitations of the Study**

Even though this research has reached its aims, there were some shortcomings and unavoidable limitations. First, this research was conducted in two study areas in different administrative divisions in Cameroon. In fact, with limited finances, research assistants were hired and trained for each of the study areas. Secondly, the access to the villages was a huge problem. Given the hilly topography of the BBCF, it was tiring tricking from one village to another. The heat and mosquitoes within the forest was also an added nuisance. To reach some villages, we had to cross the river via ferry or canoes. For example, when we arrived at the River Ebe in the TNP area, the ferry was already crossing and had almost reached the other side of the river. We had to wait for about three hours for it to return before we could finally cross. Thirdly, the study considered using a harvesting model in order to calculate the total number of animals killed, but it was later concluded that there might not be sufficient time to construct such a model accurately. A harvest

model usually needs long-term demographic data which was not available in either study areas. Fourthly, formal conversation with illegal timber loggers in the TNP area could not be conducted because these loggers are from neighboring Nigeria and usually performed this illegal act at night. They use torch light to see in the dark and chainsaw to cut down timber. One respondent did state that “many of them die at night, in the course of performing this illegal act. Since places are dark and they cannot see.” They log at night and return to Nigeria very early in the morning. It was difficult to obtain this kind of information from local people as most of them were suspicious that we might be from the forest department. Most of them report that the information could be used against them. Some even reported that previous researchers have deceived them, claiming that they would contribute to village development and yet never provided any sort of payback. However, the field assistants easily resolved this problem as most of them were natives of these study areas. They were able to explain the circumstances in the local native language. Finally, limited access to MINFOF, Non-governmental Organizations (NGOs), forestry staff, key informants, documents and archives was another issue. It was difficult to visit their official offices or meet them on site. In fact, an appointment had to be arranged with a letter from our department before they were willing to release documents, archival materials and cordially participate in the interviews.

## **1.9 Structure of the Thesis**

This dissertation is made up of eight chapters. Chapter 1 presents the general introduction to the research, explaining the problem, research goal and objectives, justification of the study, research questions, limitation of the study and concludes with structure of the study. Chapter 2 gives insight into the literature review on the world’s forests, both domestic and international. Chapter 3 presents regulatory policies and Cameroon awareness of forest conservation. It begins with an introduction highlighting Cameroon as one of the parties of the Convention on Biological Diversity (CBD) and ends up by pointing out shortcomings of creating the BBCF and TNP. Chapter 4 provides the general introduction to forest management policy in Cameroon and to the general study area. That chapter begins by providing details of various initiatives to protect the forest and finishes with the presentation of the two study areas. Chapter 5 provides the materials and methods used in this study, and explains the methodological framework employed in the study. It concludes with data analysis. Chapter 6 presents the first part of the results and discussion. The results of that chapter are based on the first study objective: to evaluate the extent of sustainability of BBCF and

TNP management systems and identify traditional management systems in maintaining the sustainability of both forest areas. Chapter 7 presents the second part of the results and discussion. This chapter comprises three sections, which focus mainly on evaluating the extent to which both forests are managed according to the various management plans approved by the ministry, and evaluating the challenges faced in using the two forests management systems. Chapter 8 is based on the conclusions drawn from the research study and offers recommendations for the sustainable management and conservation of the BBCF and TNP as well as general forest management in Cameroon.

## **Chapter 2 : Forest Management and Sustainability**

### **2.1 Management of Forest Resources**

There is a growing global concern for the alarming environmental crisis and the health of the world forest. The intricacies of domestic and international debate on how to manage the forest sustainably means that policy makers must consider country's forest policies. However, it has become a major problem to manage forest resources. Keong (2016) suggested that, to reduce this unsustainable use of forest resources and to preserve it for future generations, regional leaders should make increase level of ethical engagement with the forest. This chapter highlights the major hindrance to conservation and sustainable management of forest resources. It begins with management of forest resources and forest sustainability and ends up with some key approaches to participatory forestry. According to Boadu (2016), forests resources provide income and ecological benefits<sup>13</sup> for countries in Africa and the world. The management of forest resources will only be successful under new forestry laws and regulations and more careful management of allocating local resources to the people (Boadu, 2016). Sloan and Sayer (2015) assert that tropical forest pressure on its management is significant despite good global forest management policy. While it is necessary to plant more forests, doing so will be of little benefit if better forest management practices are not enacted by local communities. Another study carried out by Strauch et al. (2016) shows that rural livelihoods in Africa depend heavily on forest natural resources. They further analyse that improper management of forest resources due to drought and frequent social instability lead to their unsustainable exploitation. They later conclude that traditional management practices of forest management result in improving the overall forest condition. They suggest that the government should consider incorporating this management method into forest management policy. Management of forest resources is not a set straightforward process. It's the result of

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<sup>13</sup> Ecological benefits in this context means, many countries in the world recognise Protected Areas (PA) as biodiversity conservation pools which should be created and managed as large functional ecosystems. The management of the PA should integrate conservation objectives and indigenous human users' rights and general welfare of the adjacent local communities (Boadu, 2016). Indigenous conservationists have observed that the protected area system inherited from colonial period is only partially representative of major part of the world. Therefore, a new protected areas network should plan to cover all eco-regions and to take account of the previous deficiencies as much as possible.

complex negotiation practices linked to understanding at the local and technical levels, exogenous and endogenous views of knowledge structured through politico-economic experience which policy makers could transform into a method or strategic framework.

Forest sustainability is a vital aspect of forestry. True sustainability means that the existing potential of biodiversity must be retained. In order to ensure the future health of the forest, the amount of felled timber and loss of natural resources must happen at a rate that can be sustained. On average, this means it cannot be greater than the growth rate of the forest. If that rate is exceeded, the over-exploitation will cause a long-term decline in the amount of yield, and the renewal of the forest cannot be guaranteed (Ndenecho, 2005 cited by Cheo, 2010). The Brundtland Commission defines a sustainable system as a system that is able to meet current needs in a way that will not have compromised its ability to meet future needs (WCED, 1987). The system will have as many resources in the future as it had in the past. This definition has important implications on the ongoing local and global conversations on forest conservation (Mohammed et al., 2017).

The idea of sustainability may seem straightforward, but it is actually a complex concept that incorporates a variety of views. Maintaining biodiversity and forest cover without frustrating the livelihood of local people remains questionable (Mohammed and Inoue, 2017). According to Mohammed et al. (2017), in order to obtain sustainable forest use, the local forest users and the government must collaborate. They must work together to improve or maintain the forest's ecological integrity, and this will contribute to local people's well-being,<sup>14</sup> as well as conserve the forest for future generations. There are other reasons for maintaining the forest: retaining soil cover, carbon sequestration, erosion control, clean water, vegetation and wildlife. Mohammed et al. (2017) found that if the forest department becomes involved in planting and other forest maintenance-related activities as well as share in the benefits reaped by forest users; this mutual

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<sup>14</sup> Local people's well-being here is the collaboration of management of protected area to provide window of opportunities for local communities and community development. Accompanying community development measures like development of road infrastructures, schools, livelihood activities. This will contribute to enhancing local support in conservation of biodiversity and management activities (Cheo, 2010).



interest will foster forest sustainability. They further point out that if local people are sanctioned and the users are not given rights to the forest, this will consistently lead to unsustainability.

## **2.2 Drivers of Deforestation and Forest Degradation of Tropical Rainforest in the Congo Basin**

In the Congo Basin lies the tropical rainforest, which is located in Central Africa close to the Western Coast and spans 700,000 sq. miles (Bomze, 2012). Notwithstanding Congo Basin Rainforest covers 6 different countries in Africa, which include Gabon, The Central African Republic, the Republic of Congo and parts of Cameroon. According to Bomze (2012), tropical rainforests have some defining characteristic that they receive from 50-260ml of rainfall annually. The temperature ranges from 68°F-92°F, and usually the humidity levels is 88%. This ecosystem biodiversity is extremely very high. Mostly importantly the Congo Basin tropical Rainforest is home to 1,000 bird species, 400 mammal species and 10,000 plant species, 3,000 of which are not found elsewhere, (Bomze, 2012). Below is the map that shows the Congo Basin Rainforest.



**Figure 2.1. The Tropical Rainforest of the Congo Basin: Exploring the Heart of Africa.**

**Source: Bomze (2012)**

According to Ernst et al. (2013), in a study carried out at the national forest cover change in the Congo Basin, they examined a total of 547 sampling sites distributed systematically over the humid forest. This forest cover are the six central Africa countries containing moist tropical forest. They used high resolution imagery to estimate deforestation and degradation. They found out that the

annual net deforestation rate in the Congo Basin is estimated to 0.09% between the year 1990 and 2000. Also, degradation net rate was 0.05% between the year 2000 and 2005. This sole exercise approximate annual net deforestation to 0.17% and net annual degradation to 0.09%. They also found out that in the Congo Basin there was an accuracy of 92.7% assessment revealed of tree cover classes agree with independent interpretation experts.

According to Ernst et al. (2013), they conclude that Congo Basin double in annual gross deforestation between 1990-2000 and 2000-2005 going at a rate of 0.13% to 0.26% which represents, respectively 240,000 and 480,000 ha/yr. Also, the gross degradation doubled from 0.07% to 0.14% that is 130,000 and 260,000 ha/yr. The representation shows that the net deforestation between 1990 and 2000 was 167,000 ha/yr. and the second period which accounted for 317,000 ha/yr. Tanner and Johnston (2017) and Pfaff et al. (2013) all expressed the concern about deforestation in the tropics. They point out that “in the past this was motivated largely by concern about the potential loss of the enormous biodiversity possessed by tropical forest”. They later conclude that if we study from the past about what causes deforestation and forest degradation, then we can fully address the issue. According to Dimobe et al. (2015), even though protected areas or national parks can help mitigate the effects of climate change, there is an increasing threat of deforestation and forest degradation. In Burkina Faso, in West Africa, they found that from 2001 to 2013, the amount of forests dropped by 14.33%, tree savannas by 22.30% and shrub savannas by 5.14%. Since the local people were in search for agricultural land, thus it increased by 167.87%, and woodlands also went up 3.21%. Dimobe et al. (2015). Conclude that agricultural expansion and fuelwood collection are the main activities that lead to deforestation and forest degradation, in the Congo Basin. They later conclude that deforestation and degradation are direct and indirect causes, these are shown in the table below.

**Table 2.1 Direct and Indirect causes that led to Deforestation and degradation in the Congo Basin and Cameroon**

Direct causes of deforestation and degradation			Indirect causes Of deforestation and degradation		
Infrastructure Extension	Agricultural Expansion	Wood Extraction	Demographic Factors	Technological Factors	Cultural Factors
<b>Roads contraction</b>	Cultivation of land	Fuelwood exaction	Population density	Agro-technical changes	Public attitudes
<b>Public and private sawmills</b>	Shifting cultivation (slash and burn)	Charcoal production	Population distribution	.Application in the wood sector	Values, Beliefs, and way of thinking
<b>Settlement (rural and urban)</b>	Cattle ranching	Pole-wood usage	Lifecycle features	Agricultural production factors	Forest frontier mentality
<b>Mining, oil exploration</b>	Resettlement and migration	Commercial businesses	Natural increment	Increase in market sector	Individual Behavior
<b>Private Company (hydropower)</b>	Resettlement projects	State run-private growth coalition	Growth in human infrastructures	Exportation factors	Household Behavior

**Source: Adapted from Tegegne et al. 2016**

In a study carried out by Tegene et al., to assess the drivers of deforestation and forest degradation in Congo and Cameroon using study interviewed experts to analyzed current political strategies in forest related sectors of Cameroon and the republic of Congo, the results came out that, current direct divers, regarding the deforestation impact expansion of agriculture about 75% respondents indicated subsistence farming, particularly slash and burn farming as the most important driver of forest lost in Cameroon. About 70% of Cameroon population depends their livelihoods on farming activities which accounts for 85% of forest deforestation. Likewise, in Congo about 45% accounted for that. They concluded that increased demand for fuelwood, hunting, collection of non-timber forest products, population growth, the belief and land tenure system expansion of agro-industrial plantation contribute largely, directly and indirectly to forest degradation and deforestation in Congo and Cameroon, which are explain below.

## **2.3 Causes that led to Deforestation and Forest Degradation in the Congo Basin and Cameroon**

Overpopulation and economic industrialization affect the modification of natural systems, which influence the level of forest resources. The collection of NTFPs, agricultural expansion, logging of timber and gathering of fuelwood are all likely causes of deforestation. Tanner and Johnston (2017) and Pfaff et al. (2013) all expressed the concern about deforestation in the tropics. They point out that “in the past this was motivated largely by concern about the potential loss of the enormous biodiversity possessed by tropical forest”. They later conclude that if we study from the past about what causes deforestation and forest degradation, then we can fully address the issue. According to Dimobe et al. (2015), even though protected areas or national parks can help mitigate the effects of climate change, there is an increasing threat of deforestation and forest degradation. In Burkina Faso, in West Africa, they found that from 2001 to 2013, the amount of forests dropped by 14.33%, tree savannas by 22.30% and shrub savannas by 5.14%. Since the local people were in search for agricultural land, thus it increased by 167.87%, and woodlands also went up 3.21% (Dimobe et al., 2015).

Logging in Cameroon is highly damaging to the rain forest environment (CIA, 2014). Aside from logging, deforestation also results from fuelwood collection and subsistence farming, which is typical in the southwest province of Cameroon. About 13.4% or 3.3 million hectares of forest cover was lost in Cameroon between the years 1990 to 2005 (CIA, 2014). Since the end of the 1990s, deforestation rates have increased by 10% (Sunderlin and Pokam, 2002). Deforestation causes soil erosion, desertification in the north and a drop in the quality of pastureland (Sunderlin and Pokam, 2002). Cameroon is also faced with over-hunting and over-fishing everywhere in the country. The growing population of indigenous forest dwellers and pygmies claim rights to land, which the government refuses to recognize.

### **2.3.1 Increased Demand for Fuelwood**

In rural areas, fuelwood is the most dominant source of energy. Cooking involves a lot of energy-intensive activity. Fuelwood consumption contributes significantly to forest degradation (Sulaiman et al., 2017). Unsustainable fuelwood usage and increasing population growth cause an imbalance between fuelwood demand and supply. In addition, Sulaiman et al. (2017) add that this increased collection of fuelwoods for commercial purposes is a direct result of corruption and lack

of government effectiveness in forest policies. Such neglect goes a long way to trigger deforestation. During the two oil crises in the 1970s and in 1980s, a significant interest arose in what was then perceived as the “poor man’s energy crisis<sup>15</sup>”. Countries like Cameroon felt the crises deeply and contributed to massive forest decline as developing countries were in need of wood biomass for energy. In developing countries, consumption of household energy sources outside larger cities depends almost exclusively on fuelwood. Lohri et al. (2016) point out that urban households in low and middle-income countries are faced with the problem of finding affordable, sustainable and reliable cooking fuel supplies. In effect, the only means they turn to is to use fuelwood, which is collected from the forest often via unsustainable logging practices with low efficiency production methods and long fuelwood transportation routes. In developed countries, 80% of fuelwood is for industrial use and only 20% is for the purposes of energy. The reverse is true in developing countries. About four-fifths of harvested wood is used as charcoal and fuelwood. Fuelwood does not only cause deforestation, but it also damages human health. Sulaiman et al. (2017) found that the impact of fuelwood consumption on health leads to a higher mortality rate for adults and children under five in sub-Saharan Africa, where fuelwood usage for heating and cooking is on the rise. The threat was particularly strong for children under five. Therefore, they explicitly suggest finding a cleaner source of fuel as an alternative to fuelwood.

### **2.3.2 Traditional Hunting and Fishing Practices**

Traditional hunting, specifically in the tropics, is mostly subsistence hunting. Hunters harvest a large number of animals from the forest each year, and their livelihoods depend on the ability to do so. The total number of animals harvested does not only constitute bush meat, but a general wide range of different species. Traditional hunting has a significant impact on wildlife population. Delibes-Mateos et al., (2014) point out that traditional hunting has been replaced currently by model strategies like the farm-reared animals, which can bring harmful impacts on biodiversity. They go on to discuss how little is known about the hunters’ own points of view and their choices for forest conservation. When it comes to hunting bush meat, they found that hunters weigh

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<sup>15</sup> The poor man’s energy crises refer to the lack of energy sources available to local people in that reside in the national park and surrounding areas. It peaked in Cameroon during the 1990s when many people were laid off from their jobs. They turn to the forest for survival, particularly to charcoal production.

economic value against the value of conservation of wildlife, and generally favor their own livelihoods. They suggested that the forest department should identify areas of high conservation value forest and stop the hunters from exploiting these areas. Lindsey et al. (2007) assert that there is a weakness among conservation NGOs and forest departments when it comes to the effective control of hunting as a conservation tool. They further point out that the weakness is because they do not have reliable information on the ecological impact of hunting. Their findings show that a minimum of 1,394,000 km<sup>2</sup> of forest land is used for hunting in Sub-Saharan Africa, which is more than the area covered by national parks. They later point out that hunting is an important factor in forest conservation. Hunters need alternative means of securing their livelihood.

According to Mirera et al. (2013), fishing that is carried out in the mangrove forest with simple local gear is regulated by tides and seasons. The limited migrant fishing and the average catch of the sizes of the fishery is limited. Mud crab men dominate the fishing industry. They indicate that fishing done mostly during spring low tide is mostly done by pole, fishers rarely using baited traps or weighted nets. In fact, the fisher people follow specific tracks that are strongly guarded by individual fishers. Mirera et al. (2013) go on to explain that adult fish movement goes deeper and further in the mangrove forest, unlike juvenile fish. They conclude that many fisher folks were operating without license permit. For logistical reasons, fisher people do not want to shift to fishing different areas. This extended stress on the same fishing sources will lead to over exploitation of the mangrove forest. Mirear (2011) carried out a similar study in Kenya, which indicates that crab exploitation and mangrove forest degradation has increased over the last few years and could potentially threaten the practice of fishing. He further revealed that the size of a standard crab sold at market has decreased from more than 1 kg two decades ago to 0.5 kg currently. This critically threatens both the livelihood of local fisher people and the ecosystem as a whole. They finally conclude that if these habits are not controlled, mangrove forest will likely degrade, and this will indirectly impact the stock exploitation and livelihood of local people in the coastal communities who depend solely on these resources.

### **2.3.3 Collection of Non-Forest Timber Products**

Ndangalasi et al. (2007) point out that it's necessary to monitor the plant and species levels and study the impact that human populations living in Sub-Saharan Africa have on forest produce and

resources. The harvesting of NTFPs occurs in protected forest despite the fact that the local people are forbidden from harvesting them. When forest products are over-exploited, this threatens species and can alter forest composition and structure (Ndangalasi et al., 2007). If the forest department follows good management practices, it will lead to the monitoring of sustainable levels for harvesting species and promoting alternative species plants for the same purposes so that conservation strategies can be met. A study carried out by Rist et al. (2012) points out that many forests in the tropics are exploited by forest-dependent communities both for NTFPs and for commercial timber. The difference between these two uses may have important implications on the livelihoods of forest-dependents. They found out that there is negative effect on timber logging and non-timber forest produce, on which most people's livelihood depends. They later suggest that the forest department should research and implement good policy measures that are realistic in an effort to reconcile timber and NTFPs. According to Tieguhong et al. (2015), NTFPs compromise the diversity of the forest produce that support local people's livelihood, as a result of harvesting and trading of these natural resources. The Central Africa Forest Commission (COMIFAC) recognizes the significance of NTFPs in reducing poverty and in conserving biodiversity. Actually, COMIFAC requires each member state to direct and aid members to implement appropriate regulations. They point out that the law was bureaucratically, arbitrarily and weakly enforced and implemented (Tieguhong et al., 2015). In addition of the 18,368 financial transactions recorded, 81% of those transactions were bribes<sup>16</sup>, which comprised 34% of trading cost in total. This corruption alone further creates negative environmental impacts and high transaction cost due to illegal and over-exploitation of forest resources. In fact, this reduces government revenues, since the regulatory framework is weak, it does not promote good business environment. Good governance is necessary on the economic improvement upon the livelihoods of people who depends on NTFPs. They later suggest that, the government should revise regulatory framework and implement increase transparency and counter corruption.

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<sup>16</sup> When local people are caught breaking the law, they often are able to pay some money and avoid punishment. This is one of the biggest setbacks in implementing forest management strategies and achieving the desired results (Tieguhong et al., 2015).



### **2.3.4 Impact on Population Growth**

The population is growing rapidly. One billion people are added to the world's population every eleven years. Since in 1950, the world population has increased significantly. There is an estimate that in the next three decades, three billion people will be added to the eleven billion existing people and that by the 22<sup>nd</sup> century, the world population will be triple what it is right now. According to a new UN population medium projection, the world population is expected to be 9.4 billion people by 2050. That is 446 million less than the last estimation, which was done in 1994, and 652 million less than that done in 1992 (Harrison and Taylor 1997). The majority of the population growth is taking place in Africa. The population expansion rate will triple from 642 million in 1990 to 1.6 billion by 2025. This growing population will have a negative effect on the environment. African forest region faces a juxtaposition of human population growing rapidly in protected areas and making it difficult to protect the hotspots of biodiversity (Ryna et al. 2017). According to Ryna et al. (2017), even though rates of forest cover may change in many Africa countries, the most significant negative impact on forest conservation is population growth. Due to the increasing rate of population, about 2.06% of the annual forest loss has taken place in the African region (Ryna et al., 2017). Protected areas were exploited because of people lacking alternative means of living. Most of the deforestation occurs because local people are seeking agricultural land. Ryna et al. (2017) suggest a significant protection policy on the biodiversity hotspot. Another study carried out by Morales-Hidalgo et al. (2015) states that it's important to protect biodiversity from population growth. The global primary forest reduced by 2.5% (10% in the tropics only) in the years 1990 to 2015 (Morales-Hidalgo et al., 2015). About 98% of this primary deforestation occurred in about 25 countries, with about half in the developing countries (Morales-Hidalgo et al., 2015). In this effect, more forest area needs to be under protection due to increase in population growth.

### **2.3.5 Land Tenure System**

Land and natural resources are crucial in determining sustainability when there is security in the tenure system. Land tenure is a set of personal rights that an individual or some private entity has to hold land, which will help that individual or local people get involved in the management or protection of that land or forest. In developed countries, standing institutions usually back the

concept of land tenure security. In contrast, the concept carries divergent meanings and is not so widely recognized in the least developed countries (Simbizi et al., 2014). According to Simbizi et al. (2014), the concept of security is refined and defined as a land tenure system that results from an emergent property. The notion of such security arose because of the interactions among all the various elements of a land tenure system. Simbizi et al. (2014) later conclude that local people can only enjoy total security when there is that dynamic equilibrium between all elements in the land management system. In order to better the livelihood of local people and achieve environmental conservation, there is a need to create public policy centered on guaranteeing land tenure to local people. This has already brought about the relation between sustainability and land tenure (Chiaravalloti, 2017). Incentives for local people can be increased in line with the value of the resource, for instance grant them more rights to access the land or grant rural communities a percentage of the revenue's concession.

### **2.3.6 Traditional Belief in Forest Conservation**

According to Luo et al. (2009), in a study carried out in China, the Biama Tibetans ethnic group possesses ancient beliefs and traditional rich knowledge to conserve the forest and its biodiversity. Because they have developed their traditional beliefs, customs, culture and knowledge over years, this has played a critical role in conserving local biodiversity, including animals like the giant panda. Luo et al. (2009) further analyze that the local people of the Baima community have a good sense of self-identity that relates to their local traditional belief, which plays a big role in protecting and conserving the wealth of biodiversity and their village. The Baima community respect their beliefs, traditional ways, and customary regulations of the village that relate to the natural resources and conservation. They later conclude that Baima community traditional knowledge, practices and local customs should be used to meet conservation of biodiversity. Rural communities have an important role in conserving the forest because of their traditional knowledge practices. Chun (2014) supports the idea that local people's interest should be taken into consideration in the legal system because they have traditional knowledge <sup>17</sup>and benefit from the

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<sup>17</sup> Traditional knowledge in the context of this thesis, is 'know-how' knowledge that is passed from one generation to another, including various skills, practices and cultural beliefs.

forest close in their general vicinity. They later conclude that, to respect local people interest about forest rights and resources to traditional knowledge, it is right for the legal system and common laws system to cooperate with each other so that conservation needs be met.

## **2.4 The Role of Forest Management and Institutional Approach**

One of the fundamental roles of this research is to find out the role of forest management institutions<sup>18</sup> that secure a means of living for the local people. The property rights and the relationship between livelihood structures and regimes are complex. Community interest in managing forest resources has been increasing in recent decades (Caballero, 2015). Nkemnyi et al. (2016) illustrate how local institutions influence sustainability outcome in forest management in Cameroon. They further analyze how major setbacks in reaching sustainable forest management by institution does not lie only in the hands of the stakeholders. They later conclude that the institution should carefully exploit and understand the various complex issues, which are influenced by forest management in order to foster collaboration for sustainable management of forest resources. Another study carried out by Behera and Engel (2006) states that incomplete, insecure and often incoherent transfer of certain rights from the forest department to local communities is sometimes a significant source of incentive on the part of local communities. They further state that institutions that deal with the government always manipulate the situation and are not held accountable, which leads to setbacks in law enforcement in forest management. This should raise questions about the efficiency of the management system. Institutional barriers stand as a setback between forest managers and the forest users (Pollumäe et al., 2016). The informal institutions are somehow more different and often do not relate to the ones which are formal. There is usually a number of institutional setbacks that influence decision-making, which can enhance sustainability and cooperation, but if these barriers are not ignored, then the policy goals might not be met and sustainability will not be enhanced. According to Arts and Buizer (2009), there are

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<sup>18</sup> If institutional structures are not well-arranged to control the management of forest resources, the institution will fail. Even if the forest is handed over to the community to manage as a community-based forest, it will still fail. There are some setbacks when it comes to community forests, such as the fact that the management powers are concentrated in the hands of the village elites. They control the institutional structure and collect everything, sometimes only for their own benefit (Brown and Lassoie, 2010). In order for a forest management system to succeed, the institutional structure should be formed in a way that can help local people.

some reasons to discuss the institutional approach to forest management, including rules in policy changes and continuity among the stakeholders, to lay more emphasis on the roles and ideas of institutional dynamics and to make a useful distinction amongst institutions. They analyze the global forest institutions from the early 1980s and the results shows that most instances where sustainability and biodiversity have been institutionalized are no longer in good management. They later conclude that due to these institutional approaches of forest management, there is now another picture of global forest policy entirely.

## **2.5 Forest Management in the Context of Participation Approach**

To promote sustainable forest management practices, it is necessary for rural communities to take part in decision-making. This has been widely recognized as a better management method to attend sustainability (Coulibaly-Lingani et al., 2011). This system of participation management involves both government and the local communities. To participate in forest management, local communities require incentives, which include the right to collect forest products. This will enable the communities to be totally involved in the management and utilization of these forest products. In another study carried out by Brännlund et al. (2009), in National Kabore Tambi Park in Southern Burkina Faso, the results show that forest conservation is done through household participation and these activities are mainly notified by three variables related to policies: training, community-management-based forest associations, land use security rights. To increase community participation, the government must come up with a policy reform to increase people's knowledge of the benefits of conservation. Their results further show that, improving land use security for the local people will enable them to participate in forest management activities. Coulibaly-Lingani et al. (2011) conclude that policy reform in order to increase local communities' management of forest resources is essential and requires immediate effort and attention.

## **Chapter 3 : Regulatory Policies and Cameroon Awareness in Forest Conservation**

### **3.1 Related International Agreements Leading to Forest Conservation in Cameroon**

The chapter presents an insight into how Cameroon has gained awareness for the protection of its national forest heritage. Cameroon was part of the signatory of three major international conventions, including the Rio Declaration and Agenda 21. The Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) led directly to the creation of Community Forests, National Parks and other protected areas to promote conservation. This chapter then further highlights some key legislation governing community forest in Cameroon. Finally, this chapter points out the shortcomings of creating BBCF and TNP.

In the late 20<sup>th</sup> century, exploitation of forest resources quickly resulted in loss of biodiversity, and thus many policies related to international forest conservation were enacted in order to try and conserve forest resources. Cameroon participated in major related international conferences and ratified many international environmental agreements that seek to provide a wide global response and many approaches in protecting and supporting systems for human life on earth.

#### **3.1.1 Law No 94/01**

The Rio Declaration does not actually focus on forest conservation, but with the introduction of Agenda 21, both documents were able to bring major socioeconomic changes to Cameroon's forest sector and policy. According to Section 111 of Agenda 21, one of the fundamental rules for attaining sustainable development is to bring the public attention into the participation in decision-making so that all social groups should be well committed and represented in forest conservation. Since Cameroon is a signatory to the Rio Declaration, it is obligated to integrate its principles into the country's Law No. 94/01 of 20 January 1994 to lay down forestry, wildlife and fishing regulation. Cameroon created council and community forests as a way of motivating communities to take responsibility for managing their own forests (RoC, 1994; Brunner and Ekoko, 2000). In addition, the Cameroonian Environmental Management Framework Law of 1996 (Law No, 1996/12 of 5 August 1996) took some principles of the Rio Declaration into consideration. This includes Principle 17 on Environmental Impact Assessment (EIA). Cameroon also hosted the 1999

Yaoundé summit which culminated in the adoption of the Yaoundé Declaration under which the heads of state of Central Africa agreed to work rigorously for the conservation and sustainable management of the forest ecosystems in their respective countries. This summit formed the Central African Forest Commission (COMIFAC)<sup>19</sup> in order to serve as the only decision-making board on forests in the Central Africa Region, which includes Cameroon, Chad, Sao Tome, Equatorial Guinea, Central African Republic, Democratic Republic of Congo, Republic of Congo, Burundi and Rwanda. The importance of this summit was indicated by the presence of President Emeritus, the World Wildlife Fund (WWF) and Prince Philip, who co-chaired the Summit with Cameroon President Paul Biya. This navigates the way for the signing of the Congo Forest Conservation Agreements in 2005. This took place at the Congo Brazzaville Forest Summit, where all heads of state of the Congo Basin were present. This agreement outlined ten strategic components for implementing COMIFAC's goals on forest conservation and fostering a sustainable ecosystem (COMIFAC, 2005).

### **3.1.2 Convention on Biological Diversity**

The Convention on Biological Diversity (CBD) is an important international environmental agreement adopted on May 22, 1992 to address the problem of biodiversity loss. As stated in Art. 1 of the CBD, its objectives are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Cameroon ratified the Convention on October 19, 1994 and has taken some measures geared towards realizing its objectives. For instance, Law No. 94/01 of 20 January 1994 to lay down forestry, wildlife and fisheries regulations partly serves as an implementing instrument of the CBD. With respect to forest protection, Article 17 (1) of the 1994 law focuses on the protection and sustainability of forest ecosystems; Section 18 (1) forbids any one to dump, toxic product or any industrial waste which will likely destroy or modify plant and animals life in the national forest; Article 22 (1) states that at least 30% of the permanent forest shall cover the total area of the national territory, reflecting the country's ecological diversity. Cameroon has established

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<sup>19</sup> COMIFAC was formed in 1999 by the Declaration of Yaoundé. It is an intergovernmental body in Central Africa responsible for managing and guarding forest resources sustainably. It also promotes the wildlife trade network. Executive director Raymond Mbitikon sits in the head office of the organisation, which is in Cameroon (Wikipedia, 2016).

several protected areas to conserve biodiversity in accordance to the requirements of the CBD and this includes the Takamada National Park (TNP), Mount Cameroon National Park, Korup National Park (KNP), Kilum Ijum Mountain, Boumba Beck National Park, and Lom and Panghar National Park (Mbatu, 2016). Furthermore, the CBD Access and Benefit Sharing (ABS)<sup>20</sup> requirement as provided in Article 15 is taken into consideration in the 1994 Forestry Law as Section 2. It states that economic and financial spin-off that are procured that come as benefits or profit from genetic resources should be shared amongst stakeholders of that state forest. The order to share these benefits shall be laid down by the ministry in charge of forestry (GFC, 2008). To promote CBD implementation, Cameroon cooperates with various partners. This include for examples a trilateral agreement between Cameroon, the Republic of Congo and Gabon that took place in 2005, in addition to commitments made at the Yaoundé Declaration resulting in the protection of forest areas and the safeguarding of wildlife. This commitment has safeguarded the River Dja, which constitutes part of the Dja UNESCO Biosphere Reserve, as well as the surrounding forests including Odzala and Minkebe National Park.

### **3.1.3 Convention on International Trade in Endangered Species of Wild Fauna and Flora**

In 1973, Cameroon became part of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Cameroon incorporated the ideals of the convention into its 1994 Forestry Law and has been making efforts to comply with its commitments under the convention. For example, a native tree vegetable known as eru<sup>21</sup> (*Prunus Africana*) which is increasingly under threat from the local and international communities is now monitored more closely for sustainable harvesting practices, despite not being classified on the official endangered

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<sup>20</sup> Access and benefit sharing, in this context, refers to resources that are from genetic forest products. Following Article 15 of the CBD, Article 65 (1) of the 1994 Forestry Law states that all the genetic biological produce from the forest shall be shared between the national research company and the local community that resides adjacent to that forest. All stakeholders shall benefit from the produce in a transparent fashion. Article 65 (2) also stipulates that there shall be certain conditions which shall be set before the procedure of benefit sharing can begin. This will be between the international research company, the national research company and the local communities.

<sup>21</sup> Eru is a leafy vegetable from West of Africa which is edible which growing naturally in the forest and sometimes is cultivate due to its demand

species list of the International Union for Conservation of Nature (IUCN). In 1986, policies were enacted at the national level for monitoring eru (Cunningham et al. 2016). Cameroon signed into law a total ban on harvesting eru in 1991 and again in 1993 (Cunningham et al., 2016). In 2007, the western governments prohibited and put pressure on the Cameroon government to set stronger laws on the harvesting and exporting of this plant known as *Prunus Africana*. Using the capacity of the Environmental Sectoral Program (FESP), the Cameroon government has regulated the harvesting of *Prunus Africana* sustainably (Amougou et al., 2010). FESP is a driving vehicle for International Tropical Timber Organization (ITTO). The CITES program has helped in the harvesting of *Prunus Africana* in three Regions in Cameroon, where this tree is found. These policy measures help the cooperation between local authorities, governments and international organization to lay down the rules in cultivating and harvesting *prunus Africana*. The Kilum-Ijim community forest in the Northwest Region of Cameroon in 2002-2003 signed a management plan with 17 community forests to sustainably collect and harvest *Prunus Africana*. In 2013, Cameroon, Chad and Central Africa Republic (Cunningham et al., 2016) signed a bilateral agreement, which aimed at fighting wildlife hunting and illegal trade, an extremely common practice within the African countries in the Congo Basin. The three-nation agreement was facilitated by the IUCN with ongoing activities in the region, which include Bouba Njida National Park, Waza National Park, Sena Oura, and Zakouma protected areas in Africa. All these high-profile international conventions led to increased public awareness for the need to conserve forest resources in Cameroon and its neighbors.

#### **3.1.4 Legal and Institutional Frameworks for Forest Management**

The main legal instruments enacted in order to implement the policy of national forestry include; Law No. 94/01 of 20 January 1994 to lay down Forestry, Wildlife and Fishery Regulations, Decree No. 95-531-PM of 23 August 1995 to determine the conditions of Implementation of forestry regulations, Decree No. 95-466-PM of 20 July 1995 to lay down the conditions for the Implementation of wildlife regulations, Order No. 0565/A/MINEF/DFAP/SDF/SRC to set the list of animals of class A, B and C, distributing animal species whose killing are authorized as well as the rate of their Killing per type of hunting permit, and Law No. 96/12 of 5 August 1996 Relating to Environmental Management. References will be made on some provisions of these laws in this thesis. The Ministry of Forestry and Wildlife (MINFOF) was created by Decree No.2004/320 of



08 December 2004 reorganizing the government. The current mission of the ministry is to implement and assess government policy in the wildlife and forestry sector. In order to get this done, central administration and decentralized (external) is comprised of MINFOF services which include Regional, Divisional and sub-Divisional Delegations. MINFOF also possesses a Department of Protected Areas and Wildlife (DFAP). The third and fourth component of the Programme Sectional Forest and Environment (PSFE) dealing with biodiversity conservation is therefore charged with the implementation of DFAP. DFAP has three sub-departments, six services and a pool of support staff. Garoua Wildlife School and Mbalmayo Forestry School contribute to wildlife management under the structure and authority of MINFOF. These schools are charged respectively with the training of wildlife and forestry technicians.

### **3.3 Creation of the Bimbia-Bonadikombo Community Forest**

In keeping with the policy and conservation initiative of international organizations, the 1994 Forestry Law established an overhaul of the national forest policy. Its main aim was to improve the local people's participation in conservation and management of forest resources in a way that would improve the people's livelihood (Movuh, 2013). In 1995, the law and decrees were enacted. A model known as a community forest was created as part of a non-permanent forest estate. MINFOF introduced the model which was free of charge in order to promote its use (Movuh, 2013). Community forests created a new form of forest management, so that local communities can gain immediate legal access to forest goods including timber. Individual communities are required to manage their own forests with technical assistance of the administration in charge of the forest (Sobze, 2003). This shows that the administration that is responsible of the forest will contract part of the state forest to the village community to manage sustainably. One such community forest, the Bimbia-Bonadikombo Community Forest (BBCF), was created on May 18, 2002, following the 1994 Forestry Law (Sections 37 and 38)<sup>22</sup>. Bimbia-Bonadikombo was created

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<sup>22</sup> Section 37 (1) stipulates that “the services in charge of forests shall, in order to promote the management of forest resources by village communities which so desire, give them assistance. An agreement shall then be signed between the two parties. The technical assistance thus given to the village communities shall be free of charge.”

Selection 37 (2) states that “community forests shall have single management plans approved by the services in charge of forests.”

Selection 38 (1) stipulate that “the management agreements provided for in Section 37 above shall specify the beneficiaries, the

by the Mount Cameroon Project Limbe (MCP), funded by the British government in accordance with the Department for International Development (DFID) and the Cameroon government through the Global Environmental Facility (GEF) (Nuesiri, 2015). The idea to create the Bimbia-Bonadikombo Community Forest crystallized in 1998 after consulting with MCP Limbe with the indigenous forest users in the area. There were three elite institutions within the indigenous population that were engaged with the MCP Limbe: Victoria Land and Forest Conservation Committees (VLFCC), Limbe Traditional Council, and Victoria Area Rainforest Common Initiative Group (VARCIG). BBCF stretches through Camps 2 and 3 from the Ombe River, which forms part of the Cameroon Development Cooperation (CDC) palms and rubber plantation up to the road. It extends further to Bimbia, Jamstone River, and Mabta to the coast by the east and to the south is the Atlantic Ocean, with 3,735 hectares surface area of this community forest (Ngalim and Simbo, 2016). This community forest has some protected areas within the forest, and it has witnessed some illegal activities within the protected area, which lead to the degradation of the community forest. The communities living adjacent the forest has to depend on the forest produce for their livelihood (Ngalim and Simbo, 2016). The mixture of the stakeholders in BBCF is unique as compared to other community forests in the Southwest Region. The heterogeneity is the result of diverse economic activities and different tribal groups of local people adjacent the forest. According to the 1994 Forest Law and Guideline, all buffer zones around all protected areas are officially recognized. In this study, the BBCF protected area must be safeguarded for conservation of biodiversity while providing a sustainable livelihood to the local communities living adjacent to protected areas. Table 3.1 below shows the key pieces of legislation that govern community forest in Cameroon.

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boundaries of the forest allocated to them, and the special instructions on the management of areas of woodland and/or wildlife, formulated at the behest of the said communities.”

**Table 3.1: The Key Legislation Governing Community Forest in Cameroon**

Laws	Year of enacted	Description of the Law
Law No. 94/01	1994	The main regulatory framework governing forestry in Cameroon. It contains provisions for community forestry
Decree No.95-531-PM	1995	Provides a framework for implementation of the main forestry regulation
Decree No.2005/0577/PM	2005	Mandates public participation as a fundamental requirement for community forest decision-making
Decision No.0098/D/MINFOF/SG/DF/SDFC	2009	Provides a framework which contains procedures for the attribution and norms for managing community forests
Order No.0520/MINATP/MINFI/MINFOF	2010	Stipulates how proceeds from the exploitation of a community forest should be used

**Source: Alemagi et al. (2012)**

### **3.4 Creation of Takamanda National Park (TNP) and Benefits Sharing**

Created in 2008, following Decree No.2008/2751/PM from 21 November 2008 from the ministry of forestry to help protect and save the endangered cross-river gorilla, the TNP is one of the protected area in Cameroon. This national park was an old protected area known as Takamanda forest reserve that was created in 1934 to protect timber for future logging. It has a land surface of 675, 99 km<sup>2</sup>. The primary support to create TNP comes from partnership funding between the Ministry of Forestry and Wildlife (MINFOF) and the German Development Bank. This was funding for a five-year program to protect key conservation areas in participation with southwestern local communities in Cameroon. The creation of TNP was also supported by the German Development Service (DED), World Wildlife Fund (WWF), German International Cooperation (GIZ) and World Conservation Society (WCS). The TNP now forms a very important trans-boundary protected space with Cross-River National Park, in Nigeria. The park's periphery is also protected with the contribution of all stakeholders to promote conservation. The benefits of BBCF are different from the benefits of the TNP. The Joint Order No.000122/MINEFI/MINAT of 29 April 1998, sets the terms of use of logging revenue intended for local village communities

from companies benefiting from concessions and small-scale logging. The BBCF enjoys this right. They also enjoy users' right to carry out forest exploitation but are forbidden to exploit HCVF. TNP communities living adjacent to the park do not have the right to carry out forest exploitation in the national park. The creation of all national parks is usually for environmental and biodiversity protection. In fact, in most African countries, the communities that live in the park vicinity expect benefit and socio-economic contribution in their livelihood (Ezebilo and Mattsson, 2010). Sharing benefits that arise from the national park is a very big problem. Furthermore, there is only vague or narrow legislation surrounding the trade of the forests' genetic produce. To share this benefit, that is gotten from the forest genetic resources; there must be community involvement in the commercialization of this produce. The manner of distributing these profits to a wide range of stakeholders is a big problem. Another way to share these benefits is to pay the profit made into the conservation trust funds. This money from the conservation trust fund can help the local communities carry out developmental projects like road construction, schools, community halls, health centers as well as invest in human resources. Another way the TNP can also benefit from the creation of national park is through eco-tourism. National park advocates are always of the opinion that the benefits from eco-tourism should contribute to the conservation trust fund (Ezebilo, 2014). Unfortunately, the TNP eco-tourism is not well developed enough for the community living in the park's vicinity to benefit from this sector.

The TNP is an unusual region of ecological richness and diversity. This national park contains the largest intact block of contiguous forest in the West of Africa, with a completely unique ecosystem (PSMNR-SWR, 2014).<sup>23</sup> Important and threatened Cameroonian biodiversity and endemic species reside within the TNP. Among the taxa that exhibit a high level of richness in species and endemism in this region are the amphibians, primates, birds, dragonflies, butterflies, vascular plants and fish. The cross-river gorilla is known to be the most endangered of the four sub-species of gorilla, with a total population estimated to be between just 200 and 250 individuals. At least 50 gorillas are known to be within the TNP, about 40% of all the cross-river gorillas known to

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<sup>23</sup> PSMNR-SWR is an active NGO made up of German Development Bank (KFW), MINFOF, GIZ, WWF, WCS. It is promoted by the firm GFA/DFS. This PSMNR-SWR concentrates in the management of protected areas, management of forest resources, and is also involved in solving conflicts that arise from land use. They protect about 318, 00 ha of HCVF today. <http://psmnr-swr.org/about-psmnr-swr/psmnr-in-brief/>. Last accessed 06.05.2017

exist in Cameroon. This indicates the extreme importance of the national park for conservation of the cross-river gorilla, making this enigmatic species an important component of the national park. Looking at herpetofauna,<sup>24</sup> the national park is blessed with rich reptile and amphibian fauna of 75 species in 15 families. About 30% of these herpetofauna in Cameroon are found in the TNP. The national park harbors an extremely high bird count that comprises 313 species, which is considered to be second highest in Cameroon (PSMNR-SWR, 2014). About 65 species of dragonfly in eleven different families are recorded in this national park alone, out of 182 species recorded for South West Region in total. Ezebilo et al. (2010), support that the aims of creating a national park are biodiversity and environment conservation. In most developing countries, the local people who reside adjacent the parks expect to benefit from the social and economic benefits of the area. Because human activities are still depleting forest resources, this is impacting local people's livelihood living inside and on the borders of the national park (Mbile et al., 2005). To safeguard forest resources the local people living adjacent protected areas must be sensitized and provided with alternative means of living.

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<sup>24</sup> The Oxford English Dictionary defines Herpetofauna as “the reptiles and amphibians of a particular region, habitat, or geological period.”

## **Chapter 4 : General Introduction to Cameroon and Forest Management Policy/Study Area**

### **4.1 Chapter Introduction**

This chapter begins by presenting general information about Cameroon: its location in Africa, topography, climate, population and language, religion, history, ecotourism, economy and the environmental situation. Cameroon own forest management policy has managed to work closely with the international forest policy. This chapter also presents the two study areas and gives detailed information about their location and various activities that are noted in these areas.

Cameroon is located in the central African region. According to CIA (2017), the Republic of Cameroon is the known official name, and the total land area is 475,440 km<sup>2</sup>. Cameroon is the 54<sup>th</sup> largest country in the world. Geographically, it is slightly larger than California. On the south, it borders the Republic of Congo, Gabon and Equatorial Guiana. To the east, it borders the Central African Republic. Chad lies to the northeast and Nigeria to the west. To the west of the Bight of Biafra at the South-Eastern end of Nigeria, begins the Akwaya River, at a latitude 4° 40' N. It descends to the border of Equatorial Guinea, which is at the river Campo at Latitude 2° 20' N. between Longitude 8° 30' and 10° 20' E (CIA, 2012). The absolute Cameroon location is between 1° and 13°N latitudes and 8° and 17°E Longitudes. Yaoundé is the capital of Cameroon and one of the biggest cities is Douala, which serves as the economic capital for the country. The culture, climate, and vegetation of Cameroon are as diverse and representative of the continent as a whole. That is why Cameroon is dubbed “Africa in miniature”. Mount Cameroon is one of the famous and largest volcanos. Situated in the west of Central Africa, Cameroon has ten administrative regions: Adamawa, Centre, East, Far North, Littoral, North, North West, South, Southwest and West (Vidiani, 2011). The country has large reserves of liquid petroleum gas which are largely untapped. Reserves gas as of 2015 stood at 135,100,000,000 in m<sup>3</sup> (cum.) (CIA, 2017). The most readily exploitable form of energy in Cameroon is hydroelectric resources. Cameroon has the second greatest potential of hydroelectric resources in Africa after the Democratic Republic of Congo.



Figure 4.1. Map of Cameroon

Source: Vidiani, 2011

### **4.1.1 Topography and Climate Zones of Cameroon**

Cameroon have four geographical regions and is triangular in shape, (Encyclopedia, 2018.) The western lowland rises from sea level to 600 m (2,000 ft.). On average, it is about 100 km (60 mi) in width and extends along the coast of the Gulf of Guinea. In that region, the forested volcanic mountains consist of a highland, which is in the Northwest region, reaching over 2,440m (8,000ft) in height. At the coast of the south stands Mt Cameroon which is isolated (4,095m/13,435ft), and is the highest peak in west of Africa and the nation's only active volcano. Eastward is the central plateau region and from the highlands northwest to lowland western is the border with the central Africa Republic and northward to the Benue River. At the elevations of 900 to 1,500m (2,950 to 4,920ft) is the Adamawa plateau forest which gives way to savanna at this transitional area. At the slopes of the Chad Basin, lies vast Savanna plain in this northern region.

### **4.1.2 Climate Zone of Cameroon**

Lying within the tropics, Cameroon is hot all-round the year in the southwest region. Even though the northern and southern regions of Cameroon are climatically distinct in two areas. The average annual rainfall on the coast is between 250 and 400 cm (100 and 160 inches). Mount Cameroon receives 600 to 900 cm (240 to 350 inches) in the western slope. Along the coast, the mean temperature ranges from 22<sup>0</sup> to 29<sup>0</sup>C (72<sup>0</sup> to 84<sup>0</sup> F). According to Ott (2014), the amount of precipitation generally decreases from the coastline to the north while the temperature rises inversely. The dry seasons in the south last from November to March and June to August. The climate is more comfortable in the northern part of the country. In the Central plateau, total rainfall is around 150 cm (60 in) per a year. In the north, Lake Chad has a rainfall cumulus of 60 cm (24 inches) and the mean temperature ranges from 23<sup>0</sup> to 26<sup>0</sup> C ( 73<sup>0</sup> to 79<sup>0</sup>F ), although in the far north it can reach 50<sup>0</sup>C (122<sup>0</sup>F). In the north, the dry season lasts from October to March (Ott, 2014)

### **4.1.3 Population language and Religion**

The population of Cameroon in 2012 was estimated at 21,700,000 people, with a gross national income per capita of 2.27 and a life expectancy of 51 for men and 54 for women (Schumann and Streit-juotsa, 2014). There is a high population rate within urban areas. The UN estimates an annual rate of 2.3% in an annual population rate change in 2005-2010 (UNDESD, 2017). As overpopulation causes a shortage of employment opportunities, people from the western highlands



are moving to the coastal region as workers, seeking employment in plantations and lumber mills<sup>25</sup>. There is smaller, similar movement in the south and east. Cameroon practices both polygamous and monogamous marriage, hence that is why here there are such large and extended family structures. There is an extraordinary amount of diversity in Cameroon, and it is described as an “ethnic crossroads” because of its more than 250 tribes and 279 different indigenous languages (Rosendal, 2008). In Africa, Cameroon is the only country that has adopted both French and English as its official languages (Kouega and Baimada, 2012). In the northwest and southwest regions, most people speak Cameroon Pidgin English as a *lingua Franca*. There is another language, which is associated with Arabic, known as Liturgical. Mixed with this complexity is a superimposed, a bi-cultural division between the Anglophone community and the Francophone community. The former community is from the former British Trust Territory of Southern Cameroon. The Anglophones make-up 20% of Cameroon’s total population and occupy just two of the ten administrative provinces. According to Fombad (2007), the Francophone community is from the former colony French Cameroon, whose total population is about 80% of Cameroon, and comprises eight out of ten regions.

Islam and Christianity are the two main religions in Cameroon. Throughout Cameroon, the Christian churches and Muslim Mosques operate freely. Christians make up approximately 69.5% of the total population. Muslim another 19.5%, while the practice of traditional indigenous religious beliefs is 6%. Orthodox Jews constitute less than 5% of the population. When it comes to the Christians, Roman Catholics are 39.2%, Protestants are about 28.1%, and other denominations of Christian such as Jehovah’s Witnesses constitute 4%, Religious Beliefs in Cameroon (RBC, 2016). Approximately 12% of Muslims are Sunni, belonging to Maliki School of Jurisprudence. Muslims and Christians are found in every region. Mosques and churches are located near each other and both groups are significant in large cities. Protestants are mostly found in the two largely Anglophone provinces, such as the Becks Church of God, among others. Catholic are mostly in the southern and western regions of the largely Francophone regions. Animists, Christians and Muslims are fairly mixed over the whole population, often living with its

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<sup>25</sup> Workers from different regions move to the regions where there is timber wood so they can use their local chainsaw to cut the wood into logs to gain income.

own community. Bamoun is the largest Muslim ethnic community in the west of Cameroon. This influences the local communities in Bimbia-Bonadikombo and Takamanda region who believe in their local God. They usually go to the forest once every month to worship the gods, and in times of trouble, they visit their gods for solutions. Understanding this practice will be important for research management. Intrinsically, many local religious groups are indigenous in character. In the southern parts of Cameroon, there is a traditional religious practice in which the people believe that their ancestors' spiritual power is bestowed on people, animals and natural objects. Religion, individual outcomes and gender-specific health has proven to influence fertility in Cameroon (Alyssa, 2012). Insufficiently, one popular explanation in developing countries and Cameroon context is gender relations in mediation. Gender roles within the household can be shaped by religion and family negotiations (Alyssa, 2012). Several approaches emerged after exploring and explaining the role and position of religion in development. Religion is one of the leading factors recognized in development (Lemvik, 2013).

#### **4.1.4 History and the Economy**

The Portuguese were the first Europeans to arrive on Cameroon's coast in the 1500s (Fombad, 2007), but malaria prevented them from settling and exploring the interior until the late 1870s. The Portuguese were headed by Fernando Po, who named the River Wouri "Rio dos Camaroes," which means River of shrimp; Cameroon derived its name from this Portuguese appellation. At the Berlin Conference of 1884, Cameroon and several of its neighbors were partitioned and became the German colony of "Kamerun". It was known as German Kamerun from 1884-1916. It was during the First World War that the combined British and French forces defeated the Germans in Cameroon and divided Cameroon into two portions: Northern and Southern Cameroon. The French took the larger Northern portion, which was about four-fifths of the territory. The British took the smaller portion, during this time Cameroon was known as British Cameroons and French Cameroun in 1916 -1961. The League of Nations recognized the arbitrary division and gave those mandates and powers to rule and administer these portions until Jun 28, 1919. Part of the British territory was joined to the Nigerian colony and they were ruled and administered as one colony. French and British Cameroon together demanded independence in 1950. Guerilla warfare ran rampant in 1957. By 1959, France granted internal autonomy and self-government to French Cameroon. In 1960, La Republic du Cameroon became independent and Ahmadu Ahidjo was

made the first president, from 1960-1982. He granted amnesty to political prisoners immediately after independence. Southern Cameroon went to the polls to vote in order to become part of La Republic du Cameroon. The legal tender Communauté Financière Africaine<sup>26</sup> (CFA) became the legal currency in 1962. The Federal Republic of Cameroon elected and was governed by President Ahmadu Ahidjo and his Vice President. Cameroon was known as the founding member of the OAU (Organization of African Unity) in 1963. S.T. Muna formed Cameroon United Congress (CUC) in 1965 and A.N. Jua became the Prime Minister of West Cameroon. The Cameroon National Union (CNU) became one party state in 1966. This was the only sole political party, despite the fact that the constitution allowed multiple parties. S.T. Muna replaced A.N. Jua in 1968 as the Prime Minister of West Cameroon. In 1970, Foncha replaced Muna as Prime Minister of West Cameroon.

1972 was a remarkable year in Cameroon history, whereby a referendum was held to join the two Cameroons. The United Republic of Cameroon had been divided into the Anglophone (English-speaking) section and the Francophone (French-speaking) sections. These two separate countries combined to become one United Republic of Cameroon. Today Cameroon has two separate educational systems: A Francophone education system, inherited from the traditional French system and the Anglophone system, which was inherited from the British system of education (Beth, 2015). To this day, the education system in Cameroon is a legacy of the colonial period. Different aspects of national life were built around this bicultural and bilingual structure which was still very much retained after independence. The office of Prime Minister was created in 1975, with Paul Biya Mbi Vondo being the first person to hold that title. As written in the constitution, Paul Biya became president in 1982 when Ahmadou Ahidjo resigned from office of president without any cause. From 1982 to the present, Paul Biya is still the president of Cameroon.

According to CIA (2014), in Sub-Saharan Africa, Cameroon is somehow amongst the countries with good economy, with a Gross Domestic Product (GDP) of \$53.16 billion and a real growth rate of 4.8%. The gross domestic product per capita was estimated in 2013 to be \$2,400, with gross national savings of 21.6%. This is due to the country's modest oil resources, which are

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<sup>26</sup> Communauté Financière Africaine directly translated means "African Financial Community."

concentrated in the coastal zone around Douala. Agricultural conditions are also favorable in Cameroon. The main products in the forest zone are cocoa, coffee, rubber, bananas and palm oil. Cotton, groundnuts, maize and livestock are the dominant products in the north, with timber production mean annual of c. 1,918,900m<sup>3</sup>. (GFW, 2005). Timber contributes significantly to the gross domestic product. It is presently worth 345 billion CFA (525,949,109 Euro.) per annum, accounting for approximately 10% of total export revenues. A total amount of 648,330,109 CFA (988,372 Euro) in 2007 is worth noting, for revenue which was generated from the national wildlife sector, with the park entrance fees representing approximately 2.5% 15,955,000 CFA (24,323.24 Euro). Cameroon's forestry revenue generally excludes NTFPs harvest revenue and illegal timber exploitation. Despite all this, Cameroon still faces stagnant per capita income, which is a serious and but common problem in developing countries. In addition, there's the relative inequitable distribution of income, endemic corruption, and a top-heavy civil service that is unfavorable for foreign investors. World Bank and International Monetary Fund (IMF) programmes in 1990 were designed to spur up investment in agriculture, improve trade and recapitalize the nation's banks. Many reforms were pressed, including transparency in budget, poverty reduction programs and privatization. Large infrastructure projects like the deep-sea port in Kribi and Lom Pangar Hydropower are currently under construction. A natural gas electricity plant has recently been opened. These are positive changes, but Cameroon needs to develop a business environment that is more positive to foreign investors.

#### **4.1.5 Ecotourism, Wildlife and Environment**

There are numerous tourism sites in Cameroon: mountains, lakes, waterfalls, caves, archaeological remains. Some of the most famous natural attractions include: Mount Cameroon in Buea, Bamboutos Mountain, Mbere Valley National Park, Takamanda National Park (TNP), Manegouba Mountains in the Littoral Region, Faro and Benoue National Park, and Bimbria Slave Trade Site, among many others. Figure 4.1 shows some protected areas in Cameroon that tourists occasionally visit. Wildlife revenue is mostly generated from safari hunting, entrance fees to the parks, auctions and fines from the park. The council and administration in charge use tourism fees to run the various parks and recreational sites. However, the revenue produced from ecotourism is insignificant compared to other African countries like Zimbabwe, Tanzania and Kenya. An average of 100,000 tourists visit Cameroon every year of which only 10,000 are interested in

visiting parks and recreational sites. The revenue currently generated from park entry and wildlife conservation is usually paid back to some communities. Tsi et al (2008) asserted that “the population of North Cameroon will be willing to pay from 50-500 FCFA” i.e. (80-326 Euro) for park entry.

The World Wildlife Fund (WWF) asserts that despite the economic growth of Cameroon, the country still faces a string of environmental problems. These problems are tightly connected to population and socio-economic factors. Environmental issues include waterborne diseases, deforestation, overgrazing, and desertification, poaching and over-fishing. Agriculture and wildlife in Cameroon is face continuous threat due to the increase in population and poverty. Cameroon today faces extremely poor sanitation. Water is one of the biggest environmental problems facing the country.

#### **4.2 Cameroon Forestry Management Policy**

The concept of sustainable management and conservation has an important part to play in Cameroon forest policy. The national government has enacted new forest policy and legal framework in the last two decades (Cercutti et al., 2008). Sustainable forest management can only be improved through the implementation of forestry laws and regulation (Agrawal et al., 2008). In Cameroon, the state is the primary body responsible for forest management. Cameroon’s first forest law dated back to 1974. The 1983 Decree of Application was completed (Decree No.83/169 of 12 April 1983 on the Implementation of Law No.81/13 of 27). It stated that in order to enter the logging profession, you have to be physically present, before the granting and renewal of licenses procedures. Exploitation animal species were controlled, and the different taxes were written down in a procedural guide known as “Cahier des procedures pour L’exploitant forestier<sup>27</sup>.” In 1988, the Forestry Department published this law. Five-year long forest exploitation licenses were granted to some private companies, which were then renewable. 2,500 hectares concession was considered a working area, which was known as “Assiette de Coupe<sup>28</sup>.” Harvesting more timber was not permitted after a deal closed. The coming year, a license had to be nominated in advanced. Some

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<sup>27</sup> Directly translated, “Cahier des procedures pour L’exploitant forestier” means “Produce were concessions for commercial logging are granted to forest exploiters.”

<sup>28</sup> “Assiette de Coupe” refers to setting the bases of timber wood that is cut from the forest.

different types of permits existed in logging, which consisted of “gre-a-gre<sup>29</sup>” and “Vent de coupe<sup>30</sup>,” but the law did not define the conditions to obtain them. For inventory purposes, 45 species were listed, and trees in the “Cahier<sup>31</sup>” smaller than a specified diameter could not be felled. The variation of 50 cm to 100 cm was the minimum diameter, depending on the given species. An estimated average volume of 5 m<sup>3</sup> out of a commercial volume of 35 m<sup>3</sup> was extracted per hectare (Evans, 1990).

During this time, writing a forest management plan for forest exploitation was not a prerequisite. Some forests like the semi-deciduous Deng forest have developed management plans. A permanent Gazette forest production was almost non-existent; the concession of a period of one to five years was a short-term for timber production. Regulation of exploitation of forest management was based on the 1981 law until the 1994 law promulgation, which is the present forestry and wildlife legal instrument in Cameroon. The passing of this current law was based on the Cameroon government goal of achieving sustainable forest management (Foahom, 2001).

#### **4.2.1 Efforts Made in Forest Management Policy and some International Conventions**

The forest in Cameroon has undergone many legislative and institutional reforms. In this light, the forests comply with many multilateral and bilateral conventions (Mbatu, 2009). On October 19, 1994, Cameroon ratified the Convention on Biological Diversity. This has resulted in many rules that totally modified the entire sector governing the forest. In 1992, the Ministry of Environment and Forest was created following (Decree No. 96-237-PM of 10 April 1996 to know the methods for the functioning of funds provided for in law No.94-1 of 20<sup>th</sup> January 1994 to lay down forestry wildlife and fishery regulations) to protect the forest. The Institute of Agronomic Research (Decree No.96-238-PM of 10 April 1996 to determine the remuneration for services rendered under the implementation of forestry and wildlife regulation), the newly created institution put more emphasis on research. In designing a national zoning plan and policy for forest management, plan-drawing guidelines were made to maintain biodiversity conservation in Cameroon. Their

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<sup>29</sup> The expression “gre-a-gre” means selling of timber by private sectors or individuals.

<sup>30</sup> “Vent de Coupe” signifies the felling areas of timber harvesting.

<sup>31</sup> “Cahier” is the specification which meets the standards of timber harvesting.

objectives, priorities and strategies are to attain sustainable management of forest resources. Cameroon ratified international, regional and sub-regional conventions, and put in place a forestry policy to attain sustainable forest management (Mbatu, 2009).

The following include some of the important international, regional and sub-regional conventions that Cameroon has ratified:

- Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 23 November 1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 3 March 1973)
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 23 June 1979)
- Convention on Biological Diversity (05 June 1992)
- United Nations Framework Convention on Climate Change (05 June 1992)
- United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, October 1994)
- Convention on Natural and Cultural Conservation of Resources (Algeria 1968)
- Convention on Cooperation relating to the protection and Development of the Marine Environment and the Coastal Area of the West and Central Africa (Abidjan, 16 March 1981).

The first major policy objective of Cameroon is to establish a forest estate which is either permanent or the non-permanent (Figure 4.2) so that the forest can be closely monitored in order to conserve biodiversity. Another objective is to develop a rural forestry (Community Forestry and Agroforestry) and to develop the section of non-timber forest products which will meet the needs of the forest-dependent local populations. There is a dire need to regenerate and build up forest resources to ensure their productivity. Developing forest resources will increase the GDP of the local people by safeguarding the environment and carrying out the conservation of biodiversity in a sustainable manner, with the objective of ensuring the protection of our forest heritage. The last objective is to raise the living standards of the local population and increase their decision-making in forest conservation and management of forest resources, which will be shown in this study.

#### 4.2.2 Management of National Biodiversity and Forest Resources Following the 1994 Forest Law

The Cameroon forestry policy recognizes the role of Protected Areas (PA) in biodiversity conservation. The creation of protected areas came about in order to manage and conserve ecosystems. Cameroon has six primary ecosystems: fresh water, semi-arid, coastal, marine, mountain and tropical humid dense forest (Cronin et al., 2014), making it one of the richest ecological countries in Africa. About 400 botanists carried out research between the years 1861 and 2006, concluding that Cameroon has 235 families, 1,779 genera and about 8,500 species, out of which 410 are exotic species (Cronin et al., 2014).

**Table 4.1 Cameroon Flora Biodiversity**

Nature	Number	Remarks
Families	235	
Genera	1179	
Species	8500-10000	Grasses 7000 species
Exotics	411	
Endemics	808	
Endangered	176	IUCN classification
Invasive species	11	

Source: Cronin et al. (2014)

For instance, there can be found about 200 species of Rubiaceae—a kind of coffee plant—in Cameroon, and a stagger 7,000 species of Graminae. The number of plants that have been listed as suitable for consumption includes about 150 local vegetables, 50 local spices, 300 edible fruits, 300 forages, and 70 local fiber productions, about 820 medicinal plants and seven oil production species. However, as shown in Table 4.2, wildlife species in Cameroon are diminishing due to various activities like agriculture, logging, hunting, bush fires and climate change.



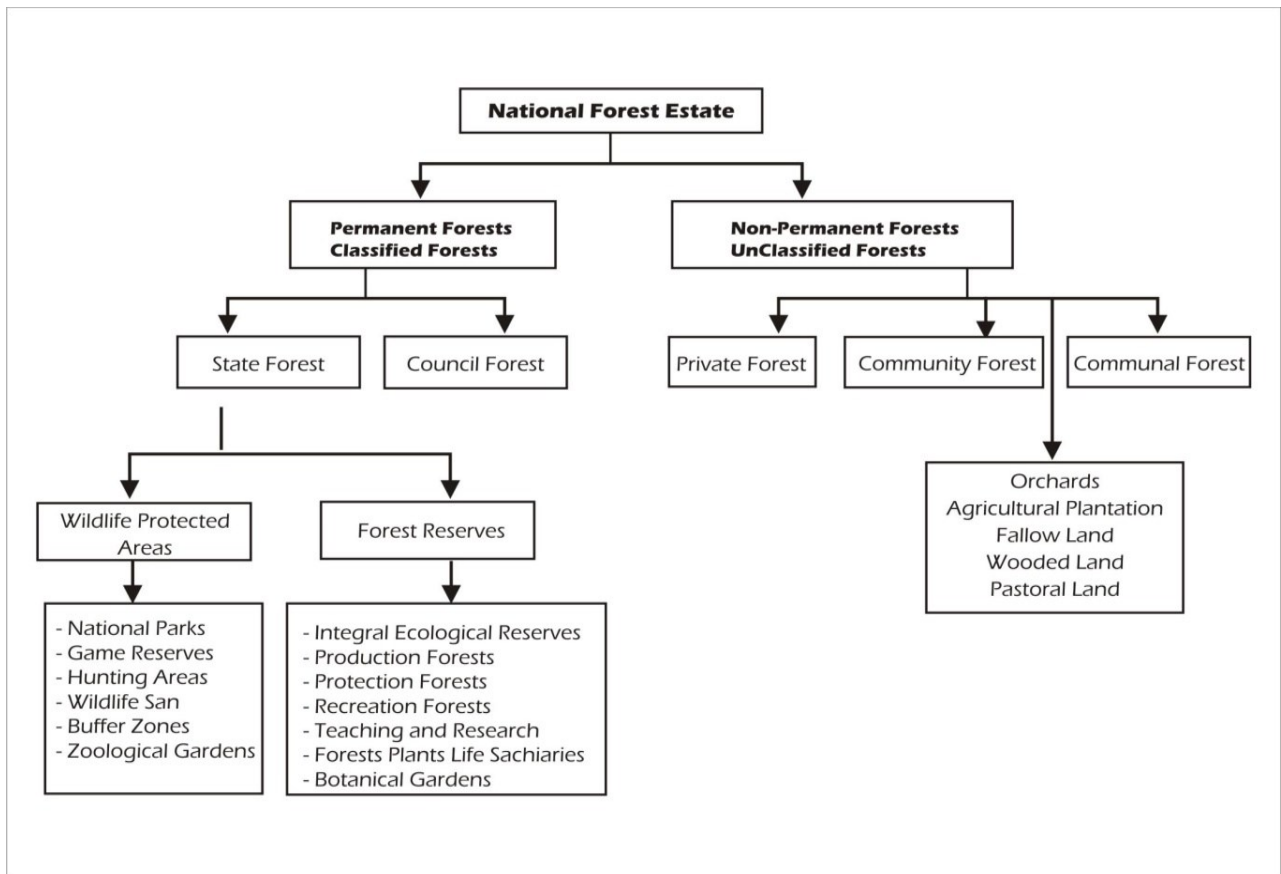
**Table 4.2: Cameroon Fauna Biodiversity**

Nature	Number	Endemic	Threaten
Mammals	409	11	40
Reptiles	230	NA	19
Amphibians	381	63	NA
Fishes	451	57	NA
Birds	850	22	43
Insects	2084	NA	NA
Snakes	150	NA	NA

NA: means is not available

**Source: Cronin et al. (2014)**

The current 1994 Forestry Law was a major action of the Cameroon government to boost effort toward conservation of forest resources. As a way to conserve forest resources, the Bimbia-Bodadikombo Community Forest (BBCF) was created in the year 2002 and Takamanda National Park (TNP) in the year 2008. In the first Part Section 1 of the 1994 law states that wildlife, forestry and fishery regulations must adhere to the general objectives of forestry and integrated management in order to ensure sustainable conservation of forest resources and preservation of the ecosystems. Section 2 of the law further explains that a forest is defined as any land covered predominantly with trees and/or shrubs. Section 3 states that wildlife that belongs to any natural ecosystem or any animal species in their domestication should be protected. Section 4 laid the groundwork for protection of fishery resources and Section 5 referred to the protection of the environment. Section 20 (1) states that the estate of National Forest shall be comprised of permanent and non-permanent forest. Takamanda National Park is classified under the law as a permanent forest protected area, while Bimbia-Bonadikombo Community Forest is classified under non-permanent forest.



**Figure 4.2. Classification of Cameroon Forest**

**Source: Egute (2012)**

Section 20 (2) declares that permanent forests shall be comprised of lands used mainly for forestry purposes and the habitation of wildlife, while Section 20 (3) states that non-permanent forests shall be comprised of forestlands that may be used for other purposes than forestry. As can be seen in Figure 4.2 Section 21 (1) states that permanent forest estate shall be classified further under Section 21(2) as (a) state forest and (b) council forest. Section 24 (1) of the Law ensures that state forests shall be (a) protection space for wildlife such as the national park, wildlife sanctuaries, buffer zones, and zoological gardens belonging to the state. Section 24 (1) (b) declares that part of forest reserves shall include “integral ecological reserves, production forests, protection forests, recreation forests, teaching and research forests, plant life sanctuaries, botanical gardens.” Section 25 (1) of the law states that state forests shall be privately own by the government. Section 25 (2) declares that the state forest shall be classified using a statutory instrument that shall defined geographical boundaries and domain. This might mean that some lands could be declared

multipurpose, for either production or recreation. Section 25(3) states that these state forests shall consider the ecological plan for land use. Section 26(1) states that the social environment of the local population shall be considered by giving them rights such as logging, and how such rights may be reduced if they are opposite to the purpose of the forest. According to Section 29 (1), a management procedure shall be drawn up for this state forest that according to the conditions laid down by the decree and its rules and management objectives for each forest. In accordance with Section 20 (2), the Takamanda National Park was originally created in 1934 as a forest reserve under the British colonial administration, with its main objective being to preserve the forest for future logging. The land officially became a national park under Prime Ministerial Decree No 2008/2751/PM of 21 November 2008. This study will examine the Takamanda National Park to see if it has achieved the main objective of its creation.

The non-permanent forests were established following Chapter 11 of Law No 94/01 of 20 January 1994, which lay down the conditions for the implementation of wildlife regulation. Following this law, the Bimbia-Bonadikombo was created in 2002. According to Section 34, unclassified forests will fall into the category of non-permanent forests. The non-permanent forest maybe (a) communal forest; (b) community forests; and (c) forests belonging to private individuals. The context of the community forests is defined in Section 37 (1) as having primarily local village communities responsible for the management of the forest itself. Nevertheless, an acceptance shall then be signed among the two parties: the technical assistance; village communities free of charge. On the behalf of the communities, management plans shall be laid down according to the decree Section 37(4), which states all forest products obtained as a result of the community's forestry work shall belong to the village communities concerned. This study will examine whether the local people comply with the 1994 Forestry Law, and what might be done to improve the laws.

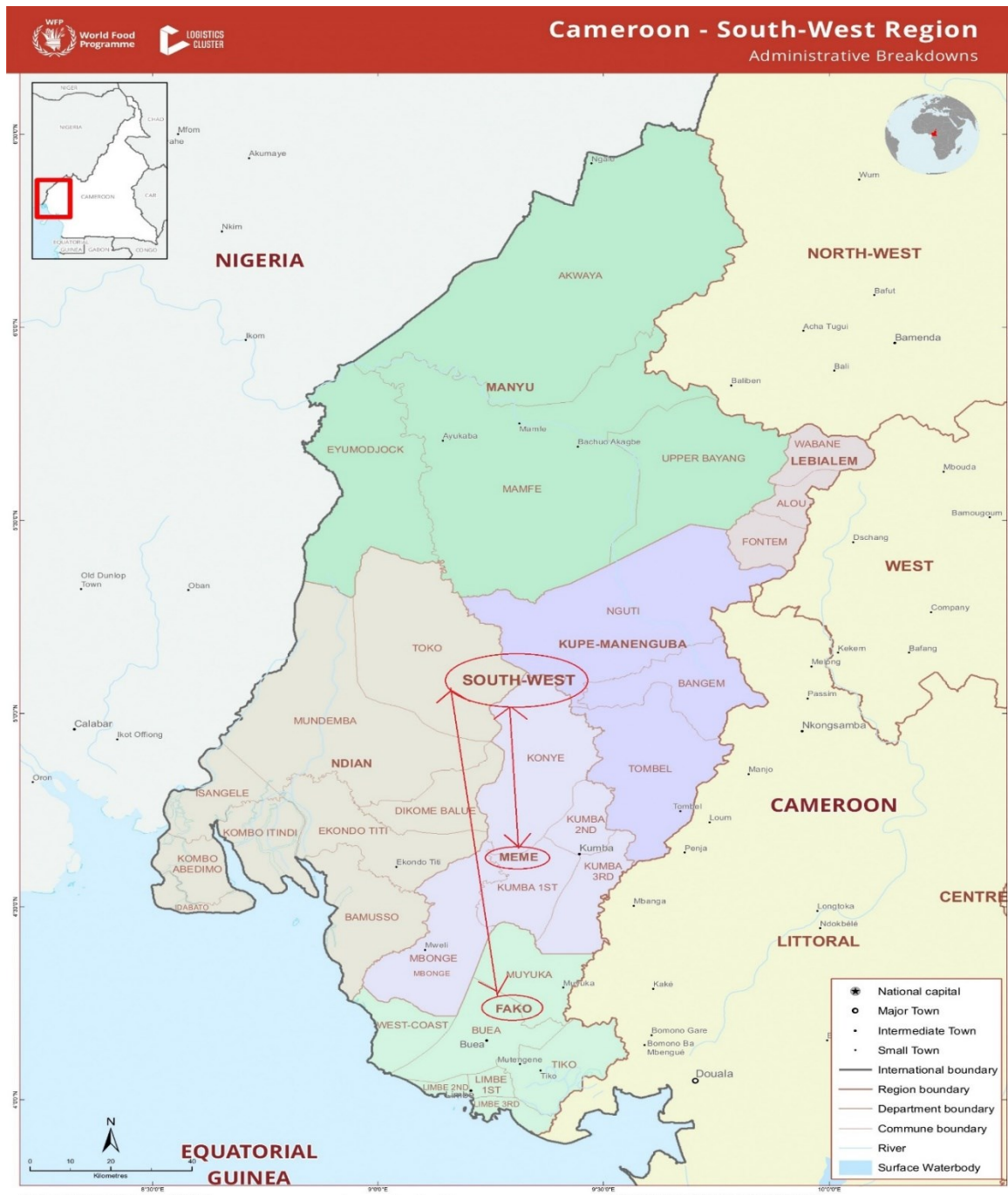
### **4.3 Location of Study Area Takamanda National Park (TNP) in the Southwest Region of Cameroon**

This study was carried out in two areas in the southwest region of Cameroon with two forest management systems. The Takamanda National Park area (state forest) and Bimbia-Bonadikombo Community Forest are both situated in the southwest region of Cameroon with administrative headquarters in Buea. The Takamanda National Park is situated in the Meme Division, 05° 59'-06° 21' N; 09° 11'- 09° 30' while Bimbia-Bonadikombo is situated in the Fako Division (Figure

4.3) in Akwaya Sub-division, sharing a boundary with Western Nigeria. It's very difficult to access the various villages. The road network is so bad that the villages are mostly access by foot trekking<sup>32</sup>. There are some protected areas within the study areas which are illustrated in figure 4.4 below.

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<sup>32</sup> In this context, foot trekking means that the local people have to travel from one village to another, sometimes with a cumbersome head-load of goods, to access local markets. Notable schools are so far that children are sometimes unable to trek the long distances to attend classes in villages outside their own. There are some "Arm Schools" in the villages of Kekpani and Nfakwe but they are understaffed, unequipped and have very poor infrastructure.



**Figure 4.3. Map Showing the Study Areas Division in the Southwest Region Cameroon**  
Source: (WFP, 2018)

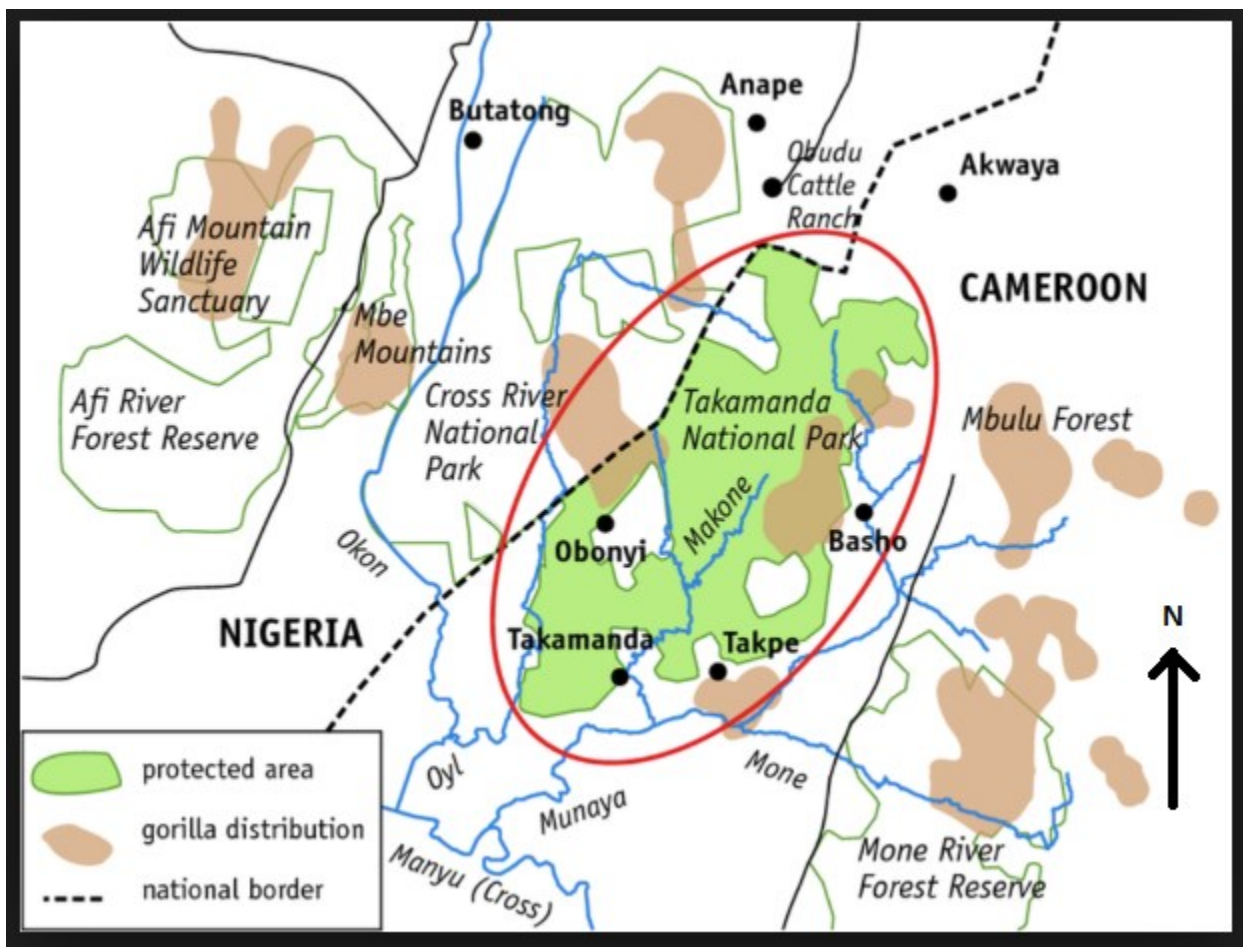
The southwest region of Cameroon has some protected sites that are reserved for conservation. This includes Takamanda National Park (TNP) and the Bimbia-Bonadikombo Slave Trade Market. TNP is linked to Kagwene Gorilla Sanctuary, which is situated further to the east through a mosaic forested landscape (Figure 4.4). There are different important protected areas in the region mostly to the south that have remote links to TNP. This should enable the park to share some management ideas with and benefit from Mount Cameroon National Park, Rumpi Hills Forest Reserve, Nta-ali Forest Reserve, the proposed Andoka Mangroves National Park, Korup National Park (KNP), Banyang-Mbo Wildlife Sanctuary, Bakossi National Park FMU 11-002, Southern Bakundu Forest Reserve and FMU 11-003 (Figure 4.4). Within this protected forest, there are national forests which are interrupted with other categories of classified forests included into four Technical Operation Units (TOUs): Bakossi, Banyang-Mbo, Mount Cameroon, and Takamanda Mone. Takamanda Mone and Mount Cameroon are considered by the ministerial decrees as having financial benefits to their conservation of the forest and its resources.



**Plate 4.1. Signboard Leading into Former Slave Trade Market Bimbia**

**Source: Author's Collection**

These benefits stem from Cameroon-German cooperation through the Development Bank of Germany (KfW), as well as the government of Cameroon under the PSMNR-SWR. The TNP, does not only benefit from financial support, but also from support and technical expertise from different international conservation and other partners organizations, including GIZ, the WWF and the WCS. The Bimbia Slave Trade Site (Plate 4.1) falls under the Mount Cameroon Project, which also enjoys financial support from the government of Cameroon, the German Development Bank (KfW) and various technical experts.



**Figure 4.4: Protected Areas in the Southwest Region**

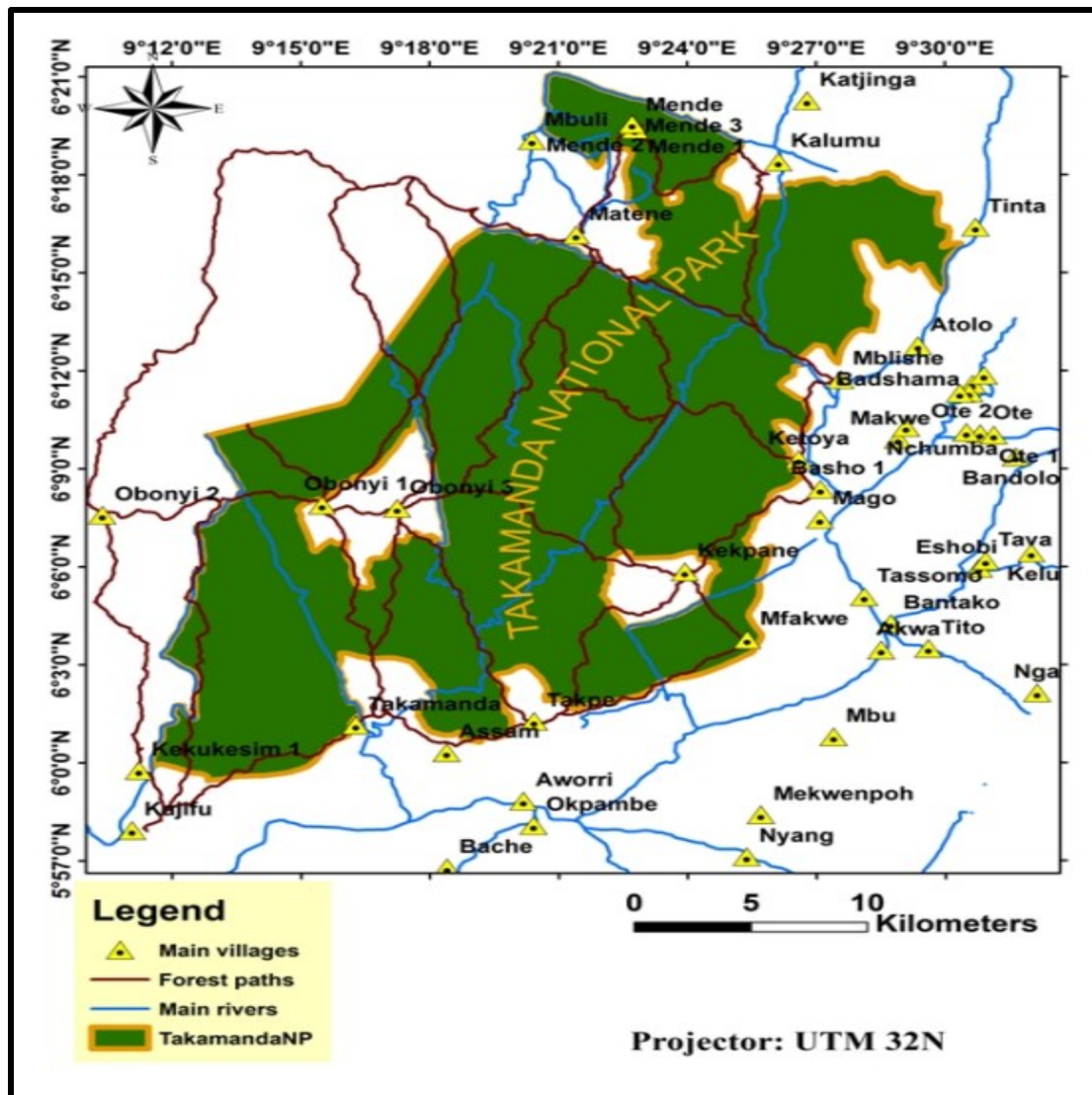
Source: Berggorilla et al. (2018)

#### **4.3.1 Study Area 1: Takamanda National Park (State Forest) its Location in Takamanda Area**

TNP was created on August 23, 1934 as a forest reserve by order No. 53, in Forest Ordinance Section 35 (Chapter. 95) Gazette supplementary No. 44. It was created by the British colonial administration as had been stipulated in forest ordinance (Article 75) order, in 1954 on August 1, 1953. The objective of its creation was to have a reserve of production forest that could be used in the future for logging. After being protected for this reason, it was observed to be a hotspot for biodiversity, containing critically endangered endemic species, partly due to its position as a cross-river basin watershed. Following this discovery, the area was then changed to a national park by prime ministerial Decree No. 2008/2751/PM of 21 November 2008 to ensure conservation and protection of the forest.

The National Park of Takamanda (05<sup>0</sup> 59'-06<sup>0</sup> 21' N; 09<sup>0</sup>11- 09<sup>0</sup> 30') has a land area of 67,599 hectares and is situated in South-West region of the Akwaya Sub-Division of Manyu Division. The National Park stretches from the eastern border of Nigeria, and this border makes up most of the northwestern and western boundaries (Figure 4.5) of the national park itself (PSMNR-SWR, 2014).





**Figure 4.5: Location of Takamanda National Park**

Source: Ngwasina (2016)

### 4.3.2 Peripheral Zone its Boundary and management of the Park

The TNP peripheral zone comprises of 32 villages and 19 of these villages directly impact the national park. In this zone, there are other protected areas like FMU 11-004, FMU11-003, Kagwene Gorilla Sanctuary and Mone Forest Reserve. There is ongoing timber exploitation in the FMUs. The Cameroon-Nigeria boundary coincides with the western boundary of TNP. Due to influence of the villages on the other side of Nigeria, the management calls for a trans-boundary collaboration between the two nations. Given the fact that the creation of the National Park has

displaced people from their normal activities, PSMNR-SWR has created community development measures within the peripheral zone. The implementation of 17 peripheral village zones requires elaborate development plans. Both internal and external boundaries are known within the National Park. The internal perimeter boundary is about 53 km and the external boundary has a 200 km perimeter boundary<sup>33</sup>. At the Beacon 1 begins the international boundary Pillar BP. 102 in the Magbe River, the Kalweg of Okwa road. It follows the Megbe River up to the source, passing through Kalumo, where it continues southwest to Obonyi 11, Kekukessim 1, Kajifu, Takamanda, Assam, Takpe, Nfakwe Basho 11, Mbilishi, Atolo and Tinta, back to the starting point, following the Cameroon-Nigeria international boundary.

The TNP management is carried out under five programmes: the park protection; the administration and finance; participatory management; research and monitoring; and transboundary conservation. Finance and administration are carried out through the Divisional Delegation for Manyu and WCS, respectively, within the framework of the PSMNR-SWR. There is some field equipment allocated to manage the National Park (NP), which includes Global Positioning System (GPS), compasses, tents, two cyber trackers, two motorcycles and one vehicle which has been procured for use with a conservator. They are in need of more protective equipment like arms, uniforms, satellites and phones to facilitate the eco-guard's task.

Protection of the national park is carried out by the newly recruited eco-guards, with the assistance of some eco-guards from the Technical Office Unit (TOU) and Divisional Delegation staff, with supervision and planning from the WCS. The Delegation in Mamfe runs monthly anti-poaching patrols of 15 to 21 days to cover the entire park. As of now, the eco-guards do not have the military training to control via firearms. Conservation education teaches participatory management, which comprises the community development activities of WCS within the PSMNP-SWR framework. Conservation education activities are made during regular visits to schools and communities around the TNP, involving mobilization and sensitization of the communities to participate in conservation actions. WCS, Centre for International Forestry Research (CIFOR), and other independent individuals and mostly students carried out research and monitoring in the forest.

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<sup>33</sup> Despite the strike boundaries effort set up by the park authorities around Kalumo and Tinta, there have been illegal on-going grazing practices in the northern part of the park (TNP-MP, 2010-2014).

Nevertheless, little has currently been done outside the encroachment and mammal surveys that update previous reports, and future planning is being carried out based on the limited information of the previous research. It's necessary to fill these information gaps. MINFOF services in collaboration with WCS and Nigeria have performed trans-boundary management, anti-poaching patrols and several exchange missions. There is also a trans-boundary area with the Rangers of Okwagwo Division and TNP eco-guards.

#### **4.3.3 Climate, Geology, Geomorphology and Drainage**

Two distinct seasons are known in the Takamanda area: rainy and the dry seasons. The rainy season lasts from mid-March to mid-November, with most of the rainfall occurring during April to October. The total annual rainfall is between 2,500 and 3,500 (TNP-MP, 2010-2014). During November to April, the climate is very dry, with January to February having no rain at all. The mean annual temperatures are usually very hot during the rainy season. There is a biting cold during the early dry season from December to January (hamates), when the clouds are intense during the nights and very early in the mornings. The majority of the lowland forest sits between 100 and 400 m within the southern and central part of TNP. The terrain in the lowland is rolling, but sharply increases to around 1,500 m in the northern part of the park, an area which contains extreme slopes. Small hills are approximately 725 m and can be found north of the villages of Obonyi, Basho and Kekpani. There is a complex basement of gneisses, granite, schist and quartzite, which gives rise to steep but sedimentary shallow soils. According to Van-Vliet, (2010) the Makone drains<sup>34</sup> and the Matene highlands run southwards through the park into the Munaya River further south out of the park. The Munaya (Ebe) River is one of the early tributaries of the Cross River. Major streams in the park include Missinyi, Manyu, Makwali and Makili, all tributaries of Makone; Oyoshie and Mapu at Matene in the north west that flow into Magbe and Maku in the south east that flows into Ebe.

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<sup>34</sup> The general direction of the Makone drainage pattern is from north to south. Oyi is on the Nigerian side of the border and flows from Matene through Nigeria before curving back to Takamanda.

#### 4.3.4 Fauna, Fisheries and Vegetation

Information Baseline (Ndah et al., 2012) identified high levels of richness and diversity of species endemic of the TNP. Most importantly of the native fauna are the large Mammals, Avifauna, Herpetofauna, Lepidoptera<sup>35</sup>(dragonflies and butterflies), and fish. The small mammals and other insects are not well known in the TNP. According to Ndah et al. (2012), 22 large mammals are native to the TNP. These species are identified in six families, which include the critically endangered cross-river gorilla (*Gorilla gorilla diehli*), the drill (*Mandrillus leucophaeus*), the endangered Gulf of Guinea chimpanzee (*Pan troglodytes ellioti*), the forest elephant (*Loxodonta Africana*), the guenon (*Cercopithecus preussi*), the red vulnerable-eared guenon (*Cercopithecus erythrotis*), the yellow-backed duiker (*Cephalophus silvicultor*), the blue duiker (*Cephalophus monticola*), the forest buffalo (*Syncerus caffer nanus*) and the crown guenon (*Cercopithecus pogonias*). Frequent bush meat-hunting has reduced the species to lower levels and sparse distributions. This is one of the biggest ecological problems plaguing the TNP.<sup>36</sup>

The cross-river watershed, which comprises an extensive network of waterways, drains into the Takamanda. More fish species are reported to be in the cross River than any other hydrologically comparable river basin in West Africa (Van-Vliet, 2010). It presents an extremely rich array of ichthyofaunal<sup>37</sup>. There are over 54 species of fish, belonging to 22 families. About four of these fish species are found to undergo breeding migration within the TNP. TNP is rich and diverse in forest vegetation, which is enriched by the preponderance of microhabitat types with a unique representation from montane (highland) and lowland forest. More than 1,000 plants species are recorded in TNP with about 113 families and 953 species (Van-Vliet, 2010). Many of the species are of high conservation value. TNP vegetation can be classified into five different main habitat

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<sup>35</sup> For the insect order that constitutes butterflies and moths, about 96 different families are noted in the TNP area.

<sup>36</sup> As the TNP management plan from 2010-2014 reveals, it is very difficult to meet up with these challenges because local hunters residing in the park's vicinity prefer to hunt large-bodied animals because the prices of large bushmeat is higher than smaller game in neighboring Nigeria.

<sup>37</sup> Fish species native to a specific region. The fish species that are found in TNP are unique to Africa and Cameroon, with the national park itself having most of these types.

types: high-altitude grassland, montane forest, mid-elevation forest, lowland ridge forest and lowland forest.

#### **4.3.5 Resource Tenure Settlement, Land Tenure and Ethnicity**

There exist three enclaves within the TNP: the enclave of Obonyi has three villages (Obonyi 1, 11 and 111), and the Onal and Kekpani enclaves each have a village. However, Onal is a settlement on the traditional Matene territory with Kalumo settlers exclusively. In TNP, there are 19 villages - Obonyi 11, Obonyi 111, Obonyi 1, Kekukessim 1, Kajifu 1, Takamanda, Assam, Takpe Kekpani, Nfakwe, Basho 11 (Ketoya), Mbilishi Atolo, Tinta Kalumo and Matane. Some share land boundaries with TNP, while other villages like Basho1 (Mileyony) and Kajifu 11 are inseparable from Basho11 and Kaiful. Six villages - Okwangwo11, Okwagwo1, Okwa11, Okwa 1, Mengbe, and Beletege - carried out illegal activities around the international boundary which is a big threat to conservation and biodiversity. According to PSMNR-SWR (2014), the human population in and around the TNP area is estimated to be about 15,700. The population comprises of mostly youth (about 50%), which has the potential to threaten conservation and biodiversity in the future, depending on unemployment and economic status. Boki in the southwest, Basho in the east, Beletege (Vande) in the northwest, Becheve in the north, Asumbo in the northeast, and Anyang in the south and central constitute the ethnic groups around TNP. New Nigerian immigrant groups, the Fulani (Bororo)<sup>38</sup> and Aku, now intersperse the Asumbo and Becheve ethnic groups in the north of the park grasslands. Denyang, Boki Vande and Becheve are the main local languages spoken in the park area. There is a close cultural tie, which is well known between the various villages. This includes common festivals, intermarriages organization of common annual dances. There are strong cultural ties among these ethnic groups to their forest and forest resources. This has enabled them to come up with traditional mechanisms to control access like the Ekpe and Makpo societies.

The TNP indigenous people have certain user rights around the park surroundings to their communities, like people elsewhere in Cameroon. In the creation of the Takamanda Forest Reserve

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<sup>38</sup> A sect of Muslims from Nigeria, who are involved in cattle rearing. They usually move from place to place, in search of vegetation for their cattle to graze. These nomads pose a big problem to the park authorities since they do not have any one settlement to call home.

in 1934, local people were given traditional rights to the land. This enables them to utilize forest resources for subsistence and grants the additional permit of passage between villages through the park. The indigenous people are aware that the land within the traditional context limits of each village is joint land and is by law under the custody of the local chief and the traditional council. Ordinance No. 74/1 of 6 July 1974 to establish rules governing land tenure provides that obtaining land for farming does not involve any formal procedure. The indigenous people are able to enter the forest and choose a piece of land, which they can clear for their farming or building activities. They only need to inform the chief or village council if conflict occurred among the local people. This can be done only at the park surrounding. After working the piece of land for about five years, the land then become the private property of the individual, which can then be inherited by his or her descendants, based on Law of 17 June 1959 on the organization of state property and land ownership. However, conditions vary from village to village. Strangers must consult the chief or traditional council for approval, and if they fulfil the agreement, then they are allowed to carry out farming in the forest. In the TNP area, generally there is no land use within the national park. Nevertheless, the planting of cocoa and palm has been introduced as permanent economic tree crops, and this is gradually alerting people to know about land use system. Currently, the trans-boundary area faces some illegal practices like hunting, fishing, harvesting of NTFP, collection of firewood, logging, and killing endangered animal species. It is necessary to assess these activities and implement appropriate laws so that biodiversity can be conserved.

#### **4.3.6 Agriculture and Economic Activities**

The TNP economy is dominated by agriculture, followed by collection of NTFPs, hunting, fishing and fuelwood collection with only minor, insignificant collection of timber. Petite trading and livestock-rearing are also beginning to contribute to household income significantly. The weekly Friday market in the village of Kalumo is an important socioeconomic event, as attending for a few hours enables people to acquire provisions and basic food supplies from itinerant petite traders. There is no other routine market in the TNP area. Many people acquire their weekly needs from Mamfe far outside of the TNP, or from Amana and Ikom. It takes four to five days trekking and head-loading to shop from these shopping centers in Mamfe or Nigeria because of the distance and difficulties involved. However, there is a provision store in the bigger village of Kajifu 1 operated

by a “petite trader”<sup>39</sup> but the cost there is high. During the rainy season, trekking to the far-off markets of Nigeria and Mamfe is always difficult due to heavy rains, flooding and muddy roads. Banking and credit facilities are absent in the TNP area like as is typical of rural settings. Nigeria’s Naira is readily accepted everywhere and even preferred in some villages but the currency in use is the usual Cameroon Francs CFA.

In the TNP area, smallholdings for crops characterize agriculture. Food and cash crops like palm, cocoa and cassava are most popular. Agriculture contributes to 41.16% of total household income the primary methods used are slash-and-burn and shifting cultivation. The absence of significant marketing facilities for the food or cash crops is likely a big contributing factor to the low income of the local people. However, the development of the Mamfe-Kajifu road and the Mamfe-Akwaya road is gradually changing the present situation. In the northern part of the TNP area, grassland is exclusively confined to the fertile zone for livestock grazing. This activity has been noted as having started more than thirty years ago and has increased to ten times its original size in the last decade. Naturally, it’s having a strong negative impact on local biodiversity and conservation efforts. As a matter of fact, about 28 grazers - mostly Nigerian homesteads - with a total of about 2,500 cattle exist within the 2 to 5 km from the national park. Burning is uncontrollable during the dry season and is one of the biggest hindrances to conservation. Soil erosion and landslides have increased in recent years (PSMNR-SWR, 2014). Ogbara, Mendi and Kalumo are well known as villages for graziers.

#### **4.3.7 Fishing, Hunting and Exaction of Non-Timber Forest Products (NTFPs)**

In the TNP area, fishing is an important economic activity for many inhabitants. There is a local ban on some methods used in fishing practice, such as the use of pesticide Gammalin 20<sup>40</sup> to kill fish in large numbers, which is prevalent for fisher folks in this area. Women also prepare and

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<sup>39</sup> Petit traders are involved in the buying and selling of small amounts of goods from Mamfe Town and sometimes from the Nigerian border to resell them to the people in the villages who could not access the market. They buy these goods and stock them up in small stores, reselling daily to the villages.

<sup>40</sup> Gammalin 20 is a poisonous insecticide that is directly absorbed into parasites. The local women of TNP usually use this insecticide to target large fish in the River Ebe. However, the government of Cameroon have banned this method of fishing. <https://edudrugs.com/G/Gammalin%2020.html>. Last accessed 09.02.2017.

disperse natural chemicals on fish. From *Omphalocarpum procerum*, the fruit of *Randi asp*, the bark of *Piptadeniastrum africanum* and the leaf of the Trephosin tree (Van-Vliet, 2010) they are able to extract these natural chemicals, which are then used for fishing. Despite the prohibition of poisons in fishing, it's still relatively common. However, there prefer cleaner methods of fishing like cast net, hand nets, drift net, floating, baited hooks, gill net, poles and hook foul hooking, long-lines and a variety of traps made of wire, bamboo and cane. In village common, a dammed part of a stream is often used for fishing (TNP-MP 2010-2014) estimated that there are about 5,329 people involved in fishing activities in the Takamanda area, which accounts for about 30% of individual in each household. In the TNP area, a number of surveys of bush meat trade routes and hunting-related studies have been conducted. Fuashiet al. (2014) reveal that hunting is done indiscriminately without respect for sex, season or species of animal, despite having hunting regulations legally in place. Order No. 0565/A/MINEF/DFAP/SDF/SRC set the list of animals out as Class A, B and C, and states that the rate of killing these animals must be distributed and legalized with a hunting permit. However, local hunters kill animals of every class in spite of the legal specifications. Hunting is both a cultural and an economic activity. More than 70% of the inhabitants use bush meat as a main source of protein. Hunting is a major contributor to loss of biodiversity. The species which are noted to be increasingly found as hunting game in the TNP area include all monkey species, bush pig (*Potamochoerus porcus procus*), bush-tailed porcupine (*Atherurus africanus*), pangolins (*Manis spp*), duikers (*ephalophu spp*) and water cherotain (*Hyemoschus aquaticus*).

In the TNP, no permit for timber extraction has been granted since it became a forest reserve in 1934. This helps greatly in the protection of biodiversity. Where the forest cover remains intact, the unique transition from lowland rainforest to montane forest can still be seen. Nevertheless, illegal exploitation of timber still is carried out in the adjacent forest in the southern portions of TNP, but at insignificant rate. When water levels are higher, it is common to see hundreds of pieces of sawn wood floating downstream on the Manyu River into Nigeria, in the high-water levels of the rainy season. Ecological assessment reveals the diversity of NTFPs, with respect to forest types (Ingram et al., 2010). Some species, like the bush mango (*Irvingia spp*), Yoruba stick (*Masularia acuminate*), and Hausa stick (*Carpolobia spp*) are uncontrolled. This has a negative effect on the species population. About 26 different species of NTFPs were identified (TNP-MP, 2010-2014).



Produce like eru <sup>41</sup>and Njangsa,<sup>42</sup> bush mango <sup>43</sup>ranked as the highest contributors to the income of the household. From April to August, the Takamanda-Amana trade route enables more than 50% of the trade associated with TNP. The lack of available markets is the biggest limiting factor when it comes to increasing household income through harvesting NTFPs.

#### **4.3.8 Ecotourism Communication and Transport**

There are multiple types of forest vegetation in the park: the lowland rainforest, savannah grassland, mid-altitude forest, sub-montane forest, and montane forest with the accompanying gallery forest like the rolling hills. In addition, the German artefacts, the diversity of wildlife species, the waterfalls and the diversity of the cultural inhabitants are some of the biggest draws of ecotourism in the TNP area. However, the ecotourism in the Takamanda National Park area still needs to be developed for tourists. Poor roads and limited tourist infrastructure in the area demonstrate the need for great investment in the domain. A 41 km road runs between Mamfe and Okpambe in the southern sector of the park. Due to the unreliable functioning of the on the River Ebe, the 36 km Mamfe-Kajifu road is often interrupted in the Ebinsi area. The 60 km Mamfe-Akwaya road aims to link the south eastern, eastern and north-eastern support zone areas of the park, but unfortunately lacks bridges in the Mamfe-Nyang section, which is exceptional.

During the rainy season, the state of these roads can be nightmarish. Despite some effort having been made to make the area more accessible, more than 90% of the TNP area is only accessible on foot. There's a dire lack of reliable road networks in the area. The official TNP area is cut off from national radio and Television (TV) networks. Most of the radio signals come from Nigerian radio stations. The area receives only two local FM stations in Mamfe: Munaya-Broadcasting corporation-MBC and Voice of Manyu-VOM. These two local radio programs from Mamfe

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<sup>41</sup> Eru is a local vegetable that is widely eaten in the southwest region. It grows on trees, and usually only the leaves are harvested either for home consumption or to sell in domestic markets. It is usually prepared during special occasions like weddings, death celebrations or cultural festivals.

<sup>42</sup> Njangsa is a nut that is harvested from the tree. This forest product requires a great deal of processing before the nut is ready to eat.

<sup>43</sup> Bush mango is a fruit grown in trees. During the season of high production, only the fruit itself is harvest and saved for the period of scarcity. There is a seed inside the fruit, and it's only this seed that is eaten.

Broadcast Centre, (MBC) and Voice of Mamfe (VOM) in Mamfe animate the whole TNP area, and sometimes relay national news. Regarding mobile telephone signals, Kekukessim and Kajifu receive MTN mobile from Cameroon. However, some sections of the park like Matene, Obonyi and Kalumo receive signal from GLO, from Nigerian mobile phone suppliers.

#### **4.3.9 Education Health and Electricity**

There are eleven primary schools in the TNP area: Assam, Kajifu, Basho 1, Takamanda, Kekukessim 1, Obonyi 11, Obonyi 1, Matene, Tinta, Obonyi 111 and Kalumo. Kajifu has one secondary school. However, community “Arm Schools” operate notably in the villages of Nfakwe and Kekpani area, to accommodate young kids who can’t go far from their neighborhood. These schools have poor infrastructure, staff and are usually unequipped. The TNP area does not have dispensaries or health facilities, apart from Kajifu, which has a health facility. Aside from the government-integrated center in Kajifu, there is a Cameroon Baptist Convention Medical Board, which is found in Tinta village. There is one other government dispensary in the Akwa village. The local people trek five to seven hours to reach the nearest health center. Because of the poor medical facilities, the people in the TNP area depend mostly on traditional plant medicine (TNPMP, 2010-2014) to cure of all forms of diseases. There is a lack of vaccination among kids, or it is limited to special national campaigns like that against poliomyelitis, which reached relatively very few children. A pipe-borne water scheme is found only in Kajifu, and even this has not yet been completed. None of the communities in TNP have access to pipe-borne water or electricity. When people want to purchase diesel or gasoline generators, they often go to nearby Nigeria where they are cheaper. A few individuals buy these generators and use them occasionally in village town halls during festivals (TNP-MP, 2010-2014).

#### **4.4 Location of Study Area BBCF in the Southwest Region**

As mention before Bimbia-Bonadikombo is situated in the Fako Division in the Southwest region of Cameroon (Figure 4.3) with Latitude of 525’ 25 00”, Longitude of 920’ 00”, with an altitude of 700 km, land area of about 25,410 km<sup>2</sup> (9,811 m<sup>2</sup>) and a population of 1,481,433, as estimated in 2013 (Wikipedia, 2017). It has a population density of 58/km<sup>2</sup> (150/sq.). Bimbia-Bonadikombo is situated in Limbe, which can be accessed by car and very narrow, non-tarred road through the various villages that can be accessed by motorbike during the rainy seasons.

#### 4.4.1 Case Study 2: Bimbia-Bonadikombo Community Forest and its present management

Cameroon can boast of a rich historical heritage evolution, tracing back well before the colonial era that could not have happened without the Bimbia-Bonadikombo community. According to Minang (2007), in the 18<sup>th</sup> century, the Bimbia-Bonadikombo was a coastal tribe. They were among the first tribes to be influenced by the colonial master. Due to its rich volcanic soil, the Bimbia-Bonadikombo became an important German station after the declaration of the Kamerun Protectorate in 1884. Bimbia played a predominant role in fostering civilization west of the Mungo. During the 16<sup>th</sup> and 17<sup>th</sup> centuries, the Portuguese, French, English and Dutch made Bimbia-Bonadikombo the door to the Western World from which they exported goods such as palm kernels, ivory, palm oil, ebony and slaves.



**Plate 4.2. Trail Found in Lowland Rainforest of Bimbia that Used to Transport Slaves**

**Source: Njumbe, 2015**

Bimbia's<sup>44</sup> ideal situation along the coastline unfortunately made it one of the main ports for exporting slaves to the Western world (Plate 4.2). The lucrative business of importing sugar to England and manufactured goods back to Bimbia required development and labor in the Western world particularly America. When Merrick Joseph established a mission at Bimbia in 1844, there

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<sup>44</sup> According to ethnographers, the indigenous tribes of the Limbe people are the Isubu. They share a common ancestry with the people of Wovia, Batoke and the Balongs, who settled in Victoria. They later migrated to Bimbia where they live till today.

were 113 slave shackles in the house which he occupied, as it had already been used by a Portuguese slaver (Njumbe, 2015). Alfred Saker found his way into Bimbia in the 19<sup>th</sup> century, around 1844 under the rule of King William. He established the first school, Christian outpost and a printing press. King William gave Alfred Saker a piece of land, which was named after the Queen of England, Queen Victoria. The name was later changed, and today it's known as Limbe. The establishment of cocoa, palm, rubber, and banana plantation in the Bimbia-Bonadikombo area encouraged huge immigration from the western part of Cameroon into this area. This weakened traditional power structure of the native Bakweri tribe<sup>45</sup>. The hierarchy today constitutes the paramount chief, village chief and quarter heads (Minang, 2003). It is difficult to control forest management in these heterogeneous settings.

The Bimbia-Bonadikombo community is pre-urban in nature and is located on the Limbe (Victoria) fringes. The settlement of Limbe as well as the surrounding areas constitutes a population of about 123,900 inhabitants. The community is a highly diverse and comprises of many villages and plantation workers' camps (Minang and Mccall, 2006). Since mid-2002, the community has been managing a 3,735-ha chunk of land as a community forest. An elected forest management council has been managing the forest on behalf of the community. As a result of a document signed between the government and the community, they report information yearly to the government concerning forest decisions. According to Ashu (2016), Lydia et al. (2016) and Nuesiri (2015), the BBCF management takes on a complex role of development in which biodiversity, livelihood and conservation issues are interacting in an unusual way. Forest conservation has shown some positive impact in the current management approach (Oyono et al., 2012; Nkemnyi, 2016). However, due to the extreme difficulty of resisting the demand for fuelwood, hunting, fishing, farming and collection of NTFP from the Limbe population, the council efforts toward sustainable management will ultimately be unattainable. In order to ease management, the Bimbia-Bonadikombo Community Forest is divided into nine compartments: Mawoh/Motondo (229 ha), Bimbia (252 ha), Liwanda (286 ha), Bamukong (741 ha), Moliwe Hills

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<sup>45</sup> Bakweri tribe are the natives that form the Buea and Limbe communities. The Bakweri are traditional, spiritual and maintain their cultural values. They are involved in agricultural activities, and their region is very fertile because they reside at the slopes of Mount Cameroon (Mt Fako). On the coast, they are close to the Sawa people in Douala. <https://kwekudee-tripdownmemorylane.blogspot.de/2014/09/bakweri-people-ancient-fierce-fighters.html>.

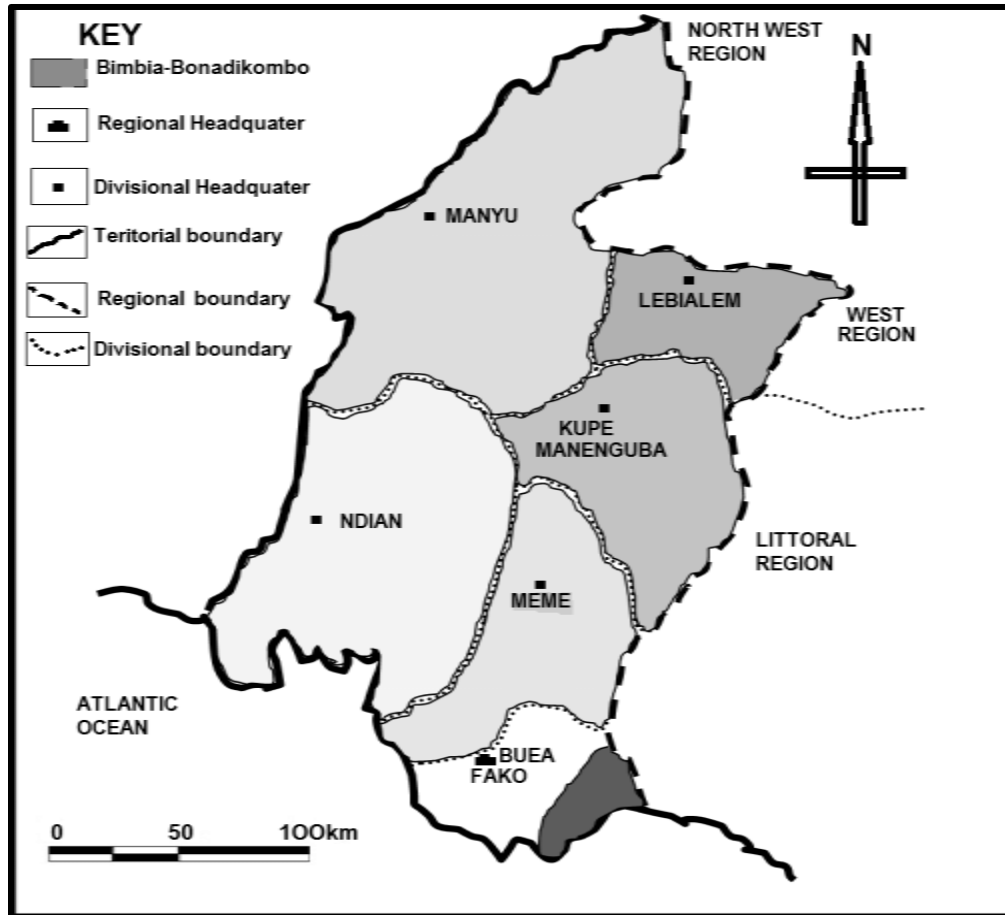
(565 ha), Bonadikombo (400 ha), Likomba la Mbenge (334 ha), Dikolo Peninsular (250 ha) and Likomba Lelu (645 ha). In each of these compartments, there is a management objective based on the resources available. These objectives often consider restoring and maintaining biodiversity, as well as improving the livelihoods of local people.

#### **4.4.2 Physical Environment, Climate and Vegetation**

The Bimbia-Bonadikombo forest is located West of Limbe in the Fako Division and on the Western foothills of Mt. Cameroon (Figure 4.6). The southern part has been kept for conservation purposes with about 1,229 ha of land. The total area of the forest is 3,735 ha (Minang 2003; Minang et al., 2006; Nuesiri, 2015). The geology consists primarily of old volcanic rock, while the soil is old and lateritic. The ridges, and steep slopes and valleys that extend from south to north are common in the Bimbia-Bonadikombo area. However, these valleys are drained by separate seasonal and permanent streams, with four main rivers: The Elephant, Esuke, Mabeta and Mamba Rivers, all of which flow eastwards. At the mangrove at Dikolo Bay, two other rivers run southwards. The southern part of the BBCF is of high ecological value, principally for its diverse, rare flora and its endemic, endangered species of plants. The plant oxygen traindra is found in BBCF site and this is the only area that still harbors the plant in Africa. Due to excessive hunting, most of the plant and wildlife are destroyed, but the area still retains multiple butterfly faunal species, interesting birds and two monkeys, threatened species of monkey: the red-eared guenon and the putty-nosed guenon (BBCF-SMP, 2002-2027).<sup>46</sup>

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<sup>46</sup> The sample management plan of the BBCF is an internal document which is used to run the day to day management of the community forest. This document is kept in the possession of the forest manager. It can be accessed in the office of BBCF in down beach Limbe. This plan has all the management plans produced from 2002-2027. However, it can be subjected to some modification as time goes on.



**Figure 4.6 Map showing the Location of Bimbia-Bonadikombo in the Southwest Region Cameroon**

**Source: Lydia et al. (2016)**

In the Bimbia-Bonadikombo, the yearly temperature, humidity and rainfall are high. Annual rainfall is between 4,000 and 5,000 mm. Between December and February, a short dry season occurs. In the Bimbia-Bonadikombo area, humidity is usually between 75 and 80%. This hot climate attracts a lot of tourists into Bimbia (Ashu, 2016). There are different types of vegetation in Bimbia: evergreen, mangrove, littoral, freshwater swamp forest, lowland rainforest and riverside vegetation, which consist of degraded forest plantation and farmlands (Ngalim and Simbo, 2016). These multiple types of vegetation make the richness in biodiversity both in plant and wildlife. In 1992 to 1997 BBCF have the last vegetation types that were unique. This was between the coastal area forest of Douala and Limbe. About 1,500 collections of specimens are located within the southern part of the forest, with about 24 endemic specimens and 43 rare species and at least one population of elephants left (Minang and McCall, 2006). These figures are extremely high in

comparison to the Amazon basin. This shows the significant forest conservation in regard to the expectation of the discovery of other new species.

#### **4.4.3 Animal Species and Land Use**

Due to rising population and the dependence of local people livelihood, in recent years there has been loss in wildlife species in BBCF (Ngalim and Simbo, 2016). However, there are still some species of drills. Nevertheless, there are still some last chimpanzee which were recorded in 1992. Putty-nosed species were recorded in 1994 (BBCF-SMP, 2002-2027), and are still within the forest. The Mona monkey is very common, but hunters frequently hunt this species. Other local species like cane rat, brush tail porcupine, blue duiker, African civet viper, monitor lizard, and squirrel. There are a few extinct species which include the lion, antelope and Elephant. (BBCF-SMP, 2002-2027). In the BBCF area, the forest land is divided into compartments with some of the land given out for lease to the Cameroon Development Cooperation (CDC). The Southern part comprises the rubber plantation and in the Northern area, they are some palm. Local people who are closer to the forest such as Bonangombe have some customary right in this part of the forest. In 1988 to 1991, the Limbe Botanical Garden and Rainforest Genetic Conservation Project (LBGRCP) clear the boundaries, concerning management access rights. The government wanted to create a forest reserve in Bimbia-Bonadikombo (BB) (Ekoko, 2000; Nuesiri, 2015). No one follow the process because the forest was later converted into a community forest.

#### **4.4.4 Human Environment and Socio-Economic Activity**

The BBCF has a complex system of many villages (Ashu, 2016): Dikolo, Bamukong Mabeta, Mbonjo, Chopfarm, Bonagombe, Bonabile, Moliwe CDC camps, Bimbia and Bonadikombo (BBCF-SMP, 2002-2027). Many groups of people contribute to the demand on the forest, which threatens conservation. People who are involved in the utilization of the forest are mostly migrants from the Western and Northern Region of Cameroon and the indigenous Bakwei, who are less involved in the utilization of the forest. According to Nuesiri (2008) and Nuesiri (2014), the increase in population and the dampening economic climate in the surrounding of BBCF call for increased demand in forest exploitation. Due to the increase in human activities like farming, chainsaw operation, hunting, firewood-collecting, most of the forest is relatively degraded, particularly in the northern part of Moliwe. The Cameroon Development Corporation (CDC) has

leased most of the land from BBCF. However, in certain areas some individuals have claims that reflect the conflicting notions of who does and does not have the right to land tenure in this area. Shifting cultivation is the main farming system implemented, with few other forms of agricultural practice. The main dominant crops here are cocoyam and plantains, while older farms sometimes grow cassava<sup>47</sup>. Fallow periods have drastically reduced over the time and are still disappearing (Nuesiri, 2014; Ngalim and Simbo, 2016). BBCF has been noted for timber exploitation, specifically from small-scale timber exploiters who own chainsaws. This leads to a reduction in high quality timber such as mahogany and iroko, which are now relatively scarce. Since high quality timber is disappearing, the exploiter has resorted to secondary species such as *Staudtia stipitata* (small leaf). Exploitation of the ironwood tree in order to produce charcoal also became a main use of the BBCF resources. The domestic market in Limbe sits in close proximity to the forest.

The occupations are diverse and distributed in the Bimbia-Bonadikombo community. There are plantation workers, who work with the CDC that owns huge plantations in the vicinity. There are farmers, fishermen, and some who commute to urban jobs in the city of Limbe. In forest extraction activities, there are many local people involved in the processes, which include timber exploitation, charcoal burning, fuelwood collection, farming, hunting and collection of NTFP, as well as other activities including traditional rites and research (Minang, 2007; Nuesiri, 2008).

#### **4.4.5 Transport and Communication**

There are no roads that link the various villages in the BBCF area. Many road maintenances projects have been carried out to rehabilitate the dirt road that links most of the sub-division. The necessity of such projects cannot be over-emphasized, since the population depends on the dirt roads for travel and transportation of goods. Construction of new roads would greatly improve the lives of the local people by enabling them to more easily reach the nearby town of Limbe.

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<sup>47</sup> Cassava (*Manihot esculenta*) is a woody shrub plant native to South America and Africa. It is mostly cultivated as an annual crop in the tropics and subtropics. The roots are full of starch and it is a good source of carbohydrates. In Cameroon, both the roots and leaves are edible.



Poor road conditions often mean that car stake longer to reach the town (Njumbe, 2015).



**Plate 4.3. Over loaded Car with goods to Limbe market**

**Source: Author's Own Collection**

The communication network is still very remote. There is a Cameroon Radio Television (CRTV) Station Antenna at Chop Farm Bimbia<sup>48</sup>. It provides television images for the population living in the vicinity.

#### **4.4.6 Water Supply Electricity and Education**

The absence of a fresh water supply is a major preoccupation of the council, as well as between the communities and the ministry of energy and water resources. Some areas such as Mabeta benefit from water from catchments. The council envisages the construction of boreholes (mechanical or solar-powered) to provide potable water to the existing population. This is paramount to the success of the community, as water is essential to life. For the communities within the creeks, there is no nearby water supply at all. Some areas of the municipality already benefit from electricity supply, including Bimbia and Mabeta. Most inland villages have electricity

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<sup>48</sup> This is a small quarter around the community forest where most of the natives are found. It's only a small migration of people who come from the northwest region of Cameroon to carry out agricultural activities.

to light up houses and the general community. The villages in the creeks, Mboko I & II, Mbomo I & II, Ijaw-Mabeta, Kange, and others are still dependent on individual generators for electricity, with numerous fire incidents recorded. Solar electrification is expensive but would be most appropriate for these areas (Njumbe, 2015). There are some primary schools, namely: Government Primary School Mbonjo, Government Primary School Man 'O War Bay, Bonangombe-Bimbia, Mabeta Fishing Port, Mbomo, Mboko and Kange and a Military Primary School at Mbonjo. Other private and missionary primary schools exist in Mabeta and Kange. Due to the limited number of secondary schools, as well as the long distance from other secondary schools in the metropolis, most children end their education at the primary level. Therefore, through the council's impetus, the government created a Government Secondary School at Mabeta in 2013. This is not highly effective, considering the number of pupils who graduate out of the primary schools each year. The municipality therefore needs many more schools, preferably technical or vocational, to train young men and women in various trades and careers. If there is a low level of education, this will negatively influence the exploitation of forest resources.

## **Chapter 5 : Materials and Methods**

### **5.1 Chapter Introduction**

The detailed methodology of this research is presented in this chapter. The chapter elucidates and justifies why this research sites and approaches were used for the study. The research data is from primary and secondary sources. It highlights the indicators and criteria used in identifying the extent of forest sustainability. It also presents a methodological framework which was developed for this study. The content analysis of the 1994 forestry law and literature review constitutes one of the methods used in this study. The chapter ends up with the study's data analysis procedure.

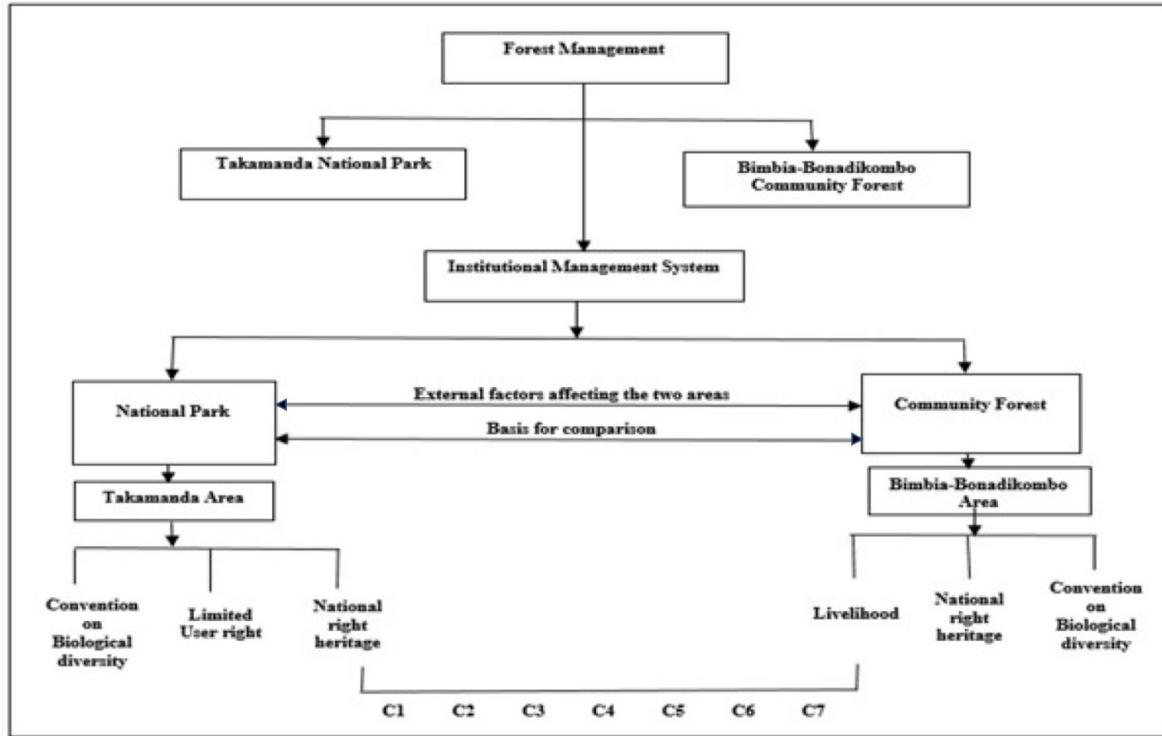
### **5.2 Research Approach**

- 1) The study was carried out in the southwest region of Cameroon in the Takamanda National Park and Bimbia-Bonadikombo Community Forest. TNP was created in 2008 following Decree No 2008/2751/PM from the Ministry of forestry Yaounde of 21 November 2008 to help protect and save the endangered cross-river gorilla. This park protects an estimated 115 gorillas and other rare species. This trans-boundary protection helps species roam freely between countries. Following the Convention on Biological Diversity (CBD), of which Cameroon is a member state, TNP was created to fulfill Article 22 (1) of the CBD which states that the “permanent forests shall cover at least 30% of the total area of the national territory and reflect the country's ecological diversity”. The TNP is one of the protected areas in Cameroon. The TNP is supposed to benefit from the genetic resources that are derived from the forest. However, Article 15 of the CBD is to make progress on how to deal with genetic products and benefit sharing with all the stakeholders. In this light TNP lost their rights to exploit the forest resources but only to benefit from the genetic resources which is not well developed by the forest department. This is why the local people living at the park area exploit the forest illegally. The main objective of this national park was as follows,
- 2) For conservation of biodiversity loss.
- 3) To assure optimum integrity and protection of the national park land.
- 4) To enhance participatory management and support alternative income generation activities for the local community around the national park to promote sustainable development.
- 5) To promote research, biomonitoring, and to ensure effective trans-boundary management

(TNP-MP, 2010-2014).

While the BBCF have the following objectives (BBCF-SMP, 2002-2027) Compartment 1 is the Dikolo Peninsular, comprising a land area of 250 ha. Its main use is for ecotourism and research as this area is considered to be a high conservation value forest, meaning that the local communities are not allowed to carry out forest exploitation in this area. Compartment 2 is known as the Likomba Lambenge, with a land area of 334 ha. Its main use is for research and beekeeping. The local communities are restricted to only the sustainable collection of NTFPs in this area like bush pepper, njangsang, bush mango, Indian bamboo and bush onion. Compartment 3, Likomba La-lelu, has a land area of 645 ha. Like Compartment 2, it's also primarily used for research and beekeeping. Local people are again restricted to sustainable NTFP harvesting of plants such as chewing stick, bush carrot and bush onion. Compartment 4 is dubbed Bimbia and has a land area of 252 ha. Its main use is for protecting the former slave trade center located there. In the BBCF, simple management plans govern these four HCVPs, forbidding local communities from hunting, harvesting timber or carrying out agricultural activities in these areas.

Of the non HCVP compartments, Compartment 5, Mawoh Motondo, encompasses a land area of 229 ha. Its main use is for charcoal burning and commercial fuelwood extraction. The local people are allowed to exploit this forest area by extracting fuelwood both for commercial and home consumption. Compartment 6 is called Liwanda and has a land area of 286 ha. Its main uses are for beekeeping, agroforestry and collection of NTFPs, as well as agricultural activities. Compartment 7, Bamukong, has a land area of 774 ha. This area is mostly used for beekeeping and collecting NTFPs. Compartment 8, known as Moliwe Hills, makes up a land area of 565 ha, primarily used for beekeeping, collection of NTFPs and some agricultural activities. Compartment 9, Bonadikombo, has a land area of 400 ha. This land is mainly used for timber exploitation, beekeeping, agricultural activities and wildlife harvesting. The BBCF was created with the primary intention of restoring and maintaining biodiversity while improving and upgrading the livelihoods of the local people. Below is the methodological framework of the two study areas.



**Figure 5.1: Methodological Framework**

Following Figure 5.1 above, which is the methodological framework of the present study, the two-forest management systems are compared. The Takamanda National Park (TNP) is classified (Figure 4.2) under permeant forest (state management), and Bimbia-Bonadikombo Community Forest (BBCF) is classified under non-permeant forest (community management). Takamanda forest was created in 1934 as a forest reserved to preserve timber for future logging. It was later considered a High Conservation Value Forest (HCVF). It was converted into a national park in 2008 following Decree No. 2008/2751/PM on 21 November 2008 to protect wildlife and endangered species. The forest conservator and some eco-guards head the national park. Presently, there are some NGOs like PSMNR-SWR, GIZ, WWF and WCS, who work in collaboration with MINFOF to promote conservation. In contrast, Bimbia-Bonadikombo Community Forest was created in 2002, following the law No.94/01 of 29 January 1994 to lay down forestry wildlife and fishery regulation to promote the local people’s livelihood. The community was advised to carry out sustainable management that would promote conservation of biodiversity. The community forest is managed by Bimbia-Bonadikombo BBNRMC and headed by a forest manager. The institutional management systems within the two forests are different. TNP is managed by the state

while the community manages the BBCF. The Takamanda area is located in Meme Division, far away from the town of Mamfe. The Bimbia-Bonadikombo area is in the Fako Division, closer to Limbe town. The TNP communities have no user rights over forest resources, at the area surrounding the national park. Within the BBCF, four compartments are identified as HCVF: Dikolo, Likomba LaMbega and Likomba Lelu, and Bimbia community forest (BBCF-SMP, 2002-2027). These areas are reserved for eco-tourism, research and environmental education. The local communities are forbidden to exploit the forest in these areas. In Figure 5.1 above, C<sub>1</sub>, C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub>, C<sub>6</sub> and C<sub>7</sub> illustrate the criteria that set the basis for comparison of the two forest management systems. However, some external factors might influence the results. These factors are classified under socio-economic factors, political factors and environmental factors, and are presented in Tables 5.1, 5.2, and 5.3 below.

**Table 5.1: Socio-Economic Factors**

TNP	BBCF
Settlement problem with villages inside the national park	No settlement problem
Typical village setting mostly native origin	Few native and non-native
Located far away from urban town (Mamfe)	Located in a pre-urban town (Limbe)
Poor social amenities, like hospitals, schools, water supply and electricity	Better social amenities like hospital, schools, water supply and electricity
Poor road network	Better road network
No alternative means of living since they are in a typical village setting	Alternative means of living since they are in a pre-urban area
Limited access to users' rights only road passage within the park	Enjoy users' rights to forest resources
No participation to decision making	Promote participation in decision making
Limited access to local markets	Access to local markets
Mostly trading with Neighbouring Nigeria	Trading mostly within local markets
Finance by the states and some NGOs (PSMNR-SWR, GIZ, WWF and WCS)	Finance by common funds by the forest communities

**Table 5.2 Political Factors and Administrative Factors**

<b>TNP</b>	<b>BBCF</b>
Headed by forest conservator appointed by MINFOF	Headed by a forest manager appointed by BBNRMC board
Head office in Kajifu 1	Head office in Limbe Town
Access to environmental education	Limited access to environmental education
Under permeant management by the state	Under non-permeant management by community
Illegal exploitation cases reported to courts	Illegal exploitation cases reported to BBNRMC board
Eco-guards paid by the state	Eco-guards paid by the community
Sometime consider local chiefs in conservation	Marginalisation of local chiefs

**Table 5.3 Environmental Factors**

<b>TNP</b>	<b>BBCF</b>
Conservation of biodiversity resources	Sustainable management of forest resources
Access to environmental education	Limited access to environmental education
Access to farmers education	Limited access to farmers education
Train in new breed of cash crops like cocoa, cassava, and oil palms	Limited access to new breed of cash crops

The research makes use of two approaches: the quantitative and the qualitative. The former is a sampling technique which may be presented numerically and is amenable to analysis, while the qualitative technique is designed to reveal a target group, which ranges in behavior with respect to a specific subject or issues at stake. Amaratunga et al. (2002) and Carrie (2007) affirm that an objective measure of reality is provided in a quantitative approach, while the qualitative approach understands the complexity of a phenomenon by the researcher. The qualitative approach is used in this study to understand the behavior of local people and the various ways of behaving with respect to forest resources and conservation. This research uses in-depth knowledge of small groups of local people with respect to the specific issues at stake. This research makes use of existing data, from the Bimbia-Bonadikombo Community Forest Management Plan (BBCF-SMP)

and the Takamanda National Park Management Plan (TNP-MP),<sup>49</sup> in addition to archives, documents and other related works. When data were unavailable, data were considered from different areas that have similar characteristics and structure of the current study area. Community forests in Cameroon operate under same rules and regulations and differ from the operation of National Parks. This research made use of comparative analysis by comparing two forest management systems, that of Takamanda National Park (state forest) and that of the Bimbia-Bonadikombo Community Forest (community forest) to know which management system better fulfils the characteristics and conditions of conservation and sustainable forest usage. The following activities were identified: farming, hunting, and fishing, collection of non-timber forest products, timber exploitation, fuel-wood collection and charcoal production. Services (teachers, nurses, doctors, small businesses, public workers) were partly taken into consideration because they can indirectly influence forest management. The following local criteria were selected based on the existing activities of Takamanda National Park and Bimbia-Bonadikombo Community Forest in order to compare the management of two systems. The criteria are presented below.

### **Indicator 1. Farming Systems**

**C<sub>1</sub> The two management systems are to be compared by means of the criteria and evaluated for sustainability**

- Shifting cultivation farming system
- Slash and Burn farming system
- Fallowing farming system
- Livestock farming system
- Use of chemicals in farming system

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<sup>49</sup> TNP-MP is a document that guides all the actions that are stated in a given time period. In this plan, all the goals and objectives are stipulated as they were drawn up by the forest department. This document guides and controls the management of the conserved area, which is protected for biodiversity loss. It is like an internal document of the TNP. It is in the possession of the forest conservator.



- Access to capacity building in chemical and farming system

## **Indicator 2. Traditional Hunting Practices**

**C<sub>2</sub> The two management systems are to be compared by means of the criteria and evaluated for sustainability**

- Classes of species harvested, classes A, B, and C
- Methods use in hunting
- Factors influencing hunting
- Sustainability of hunting activities

## **Indicator 3. Traditional Fishing Practices**

**C<sub>3</sub> The two management systems are to be compared by means of the criteria and evaluated for sustainability**

- Seasonality in fishing
- Frequency in fishing
- Method used in fishing
- Sustainability in fishing

## **Indicator 4. Non-Timber Forest Products (NFTPs)**

**C<sub>4</sub> Harvesting of Non-Forest Timber Products (NFTPs)**

- Factors influencing the harvest of NFTPs
- Methods used in harvesting NTFPs
- Management regulation of NTFPs
- Sustainability of harvesting NTFPs

## **Indicator 5. Fuelwood collection**

**C<sub>5</sub> Fuelwood collection**

- Regulatory framework in fuelwood collection

- Factors influencing fuelwood collection
- Different methods used in fuelwood harvesting
- Sustainability of fuelwood collection

## **Indicator 6. Intra-community related factors**

### **C<sub>6</sub> Intra-community related factors**

- Promote social inclusion
- Consider traditional belief and cultural value
- Promote participatory decision-making
- Environmental education
- Ensure collaboration within and amongst stakeholder's group
- Provide financial incentives to local people/ Benefits sharing allocation

## **Indicator 7. Policy and Regulatory Framework**

### **C<sub>7</sub> Policy and Regulatory framework**

- Respecting and enforce forestry law
- Paying fees for recreational activities
- Evaluation of conflicting laws
- Defining and telling the local people about the legislation
- Protecting illegal and authorised activities
- Adequate forest staff to carry out forest activities
- Adequate money to sustain management system

- Implementing management plan approve by the government
- Challenges face in implementing forest management system

### **5.3 Sampling Technique and Choice of Criteria**

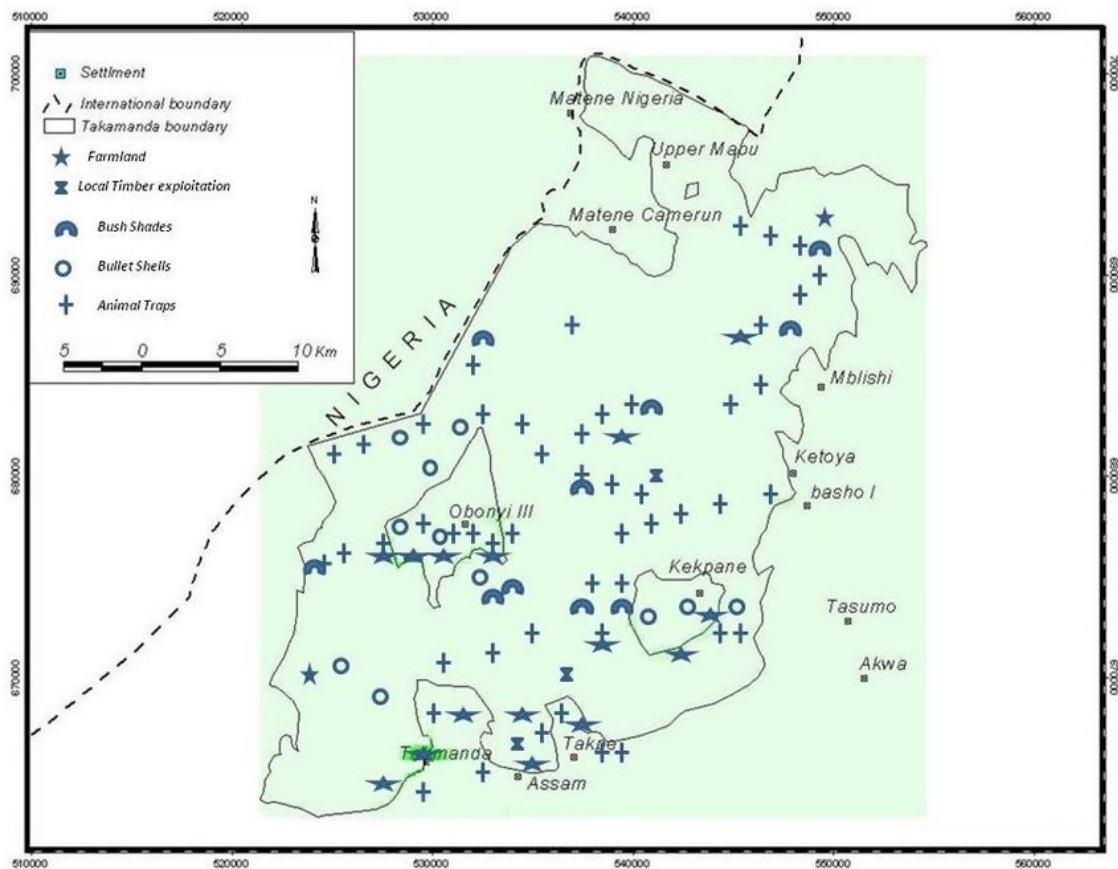
This section provides insight on the sampling technique and criteria choice. An equal group of respondents were chosen from all the sampling villages, and those respondents were dependent on the forest for livelihood. Due to the political situation in Cameroon, the country is divided into regions, followed by divisions, sub-divisions, districts, villages and clans. A traditional ruler (chief)<sup>50</sup> heads each village. A divisional officer governs the divisions and sub-divisions, while the governors rule the regions. The TNP, which is situated in the Southwest Region of Cameroon, is in the Akwaya Sub-Division of Manyu Division. Presently, there are 16 villages in the TNP area: Matene, Kalumo, Tinta, Atolo, Mbilishi, Basho 11, Ketoya, Nfakwe, Kekpani, Takpe, Assam, Takamanda, Kajifu 1, Obonyi 11, Obonyi 1 and Obonyi 111. In this research, nine villages were selected as a sample: Kajifu 1, Atolo, Obonyi 1 and Obonyi 11 and Obonyi 111, Kekpani, Takpe, Assam, and the Takamanda village. These are all known to have direct and indirect impact on the national park. The direct dependence of these villages to obtain their livelihood from the forest was taken into consideration.

The total population of Takamada National Park area is estimated at about 15,700 people (TNP-MP, 2010-2014). This population is dominated by the youth, who account for about 50% of the population, and could pose a threat to forest conservation if these young people do not find jobs when they grow up. Another fact to support the sampling of villages was that, when the Takamanda Forest Reserve was created in 1934, the indigenous people were given certain user rights in the adjacent forest. When it was converted to a national park, all the user rights were lost, except the right of movement within the park and the rights of those communities that are residing within the borders of the park itself. This poses a serious problem of illegal exploitation of forest resources. The villages of Obonyi 1, Obonyi 11 and Obonyi 111 were selected for their hunting activities, even though hunting is represented in all the nine sampling villages in the park area. The villages

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<sup>50</sup> Traditional rulers (chiefs) are rulers of indigenous people, villages, communities or clans. They are usually addressed formally in a status and superior rank. <https://en.oxforddictionaries.com/definition/chief>. Last accessed 08.11.2016.

of Kajifu 1 and Atolo were noted for fishing and farming. The villages of Takamanda, Kekpani Takpe, and Assam, are mostly involved in farming activities. All the activities are represented in all the villages. The villages which were chosen represented activities that have been going on for more than ten years in those locations and the local people who have broad knowledge on the activities. Hunters who were chosen from the villages of Obonyi, 1 Obonyi 11 and Obonyi 111 had more than ten years of experience selling bush meat to neighbouring villages in Nigeria. All the nine villages were chosen for fuel-wood collection, given the fact that, nearly every household uses fuelwood for domestic and subsistence use. It should be noted that all the activities taking place within the national park are illegal activities. Following Section 26 (3) which states, “public access to State Forests may be regulated or forbidden,” TNP was created strictly for biodiversity conservation.



**Figure 5.2: Sampling Communities in the Takamanda National Park**

Source: Njoh et al. (2013)

Bimbia-Bonadikombo, the second area of study, is located in the southwest region. In the Fako Division and in Limbe sub-Division, the community is a pre-urban area, which is located on the fringes of the Limbe (Victoria) urban community (Figure 5.3). Bimbia-Bonadikombo has about twelve villages: Bonadikombo, Bonabile, Bonangombe, Liwanda, Dikolo, Bimbia, Moliwe, Bamukong, Dikolo, Likomba lelu, Motondo-Mawoh. Nine villages were selected for this research, to get an insight into conservation and sustainable use of forest resources: Bonadikombo, Bimbia, Bonabile, Bonangombe, Liwanda, Dikolo, Bimbia Moliwe and Bamukong. The selected villages were chosen because the people have direct influence on the community forest for their livelihood. The total population of Bimbia-Bonadikombo is about 123,900 inhabitants (Minang 2007), about 60% of which are youth. The villages of Bimbia, Dikolo, and Bonadikombo were selected because of their prevalent fishing activities. The population of Bonadikombo is mostly immigrants from Nigeria and the Northwest region of Cameroon. It is a multicultural village setting. The villages of Bonangombe, Liwanda Moliwe and Bamukong were noted for their hunting and farming activities as most of the area's plantations are found in these villages. All the villages were highly involved in fuelwood collection and charcoal production. Most of the heads of household were taken into consideration. An equal number of respondents were taken in all the villages to get insight about resource use and conservation. The chosen respondents must have been carrying out activities and living in the community since the time the community forest was created.

#### **5.4 Selection of Research Field Assistants**

Educational level was taken into consideration before the selection of those who assisted with the collection of data during field research. Those who have some knowledge about forest resources were considered. In selecting, those who could explain in Pidgin English and the native language of the respondents who could not read or write were considered. With the existing questionnaire, the field assistants were trained on how to collect and record information from the local people. The researcher and the field assistants visited some respondent for informal conversation.

#### **5.5 Cultural Consideration**

Due to the fact that this research was conducted in a typical village setting, we should note that, they were some sensitive questions at stake. Permission was obtained from the chiefs of the selected communities, to keep the local people informed about the reasons for the research, as well

as how the research would be conducted. There was even one situation where a village chief was provided with a bottle of wine so that he might motivate the community. The acquaintance of the researcher to the Bimbia-Bonadikombo Community Forest area made data collection easier since the researcher had been there many times.

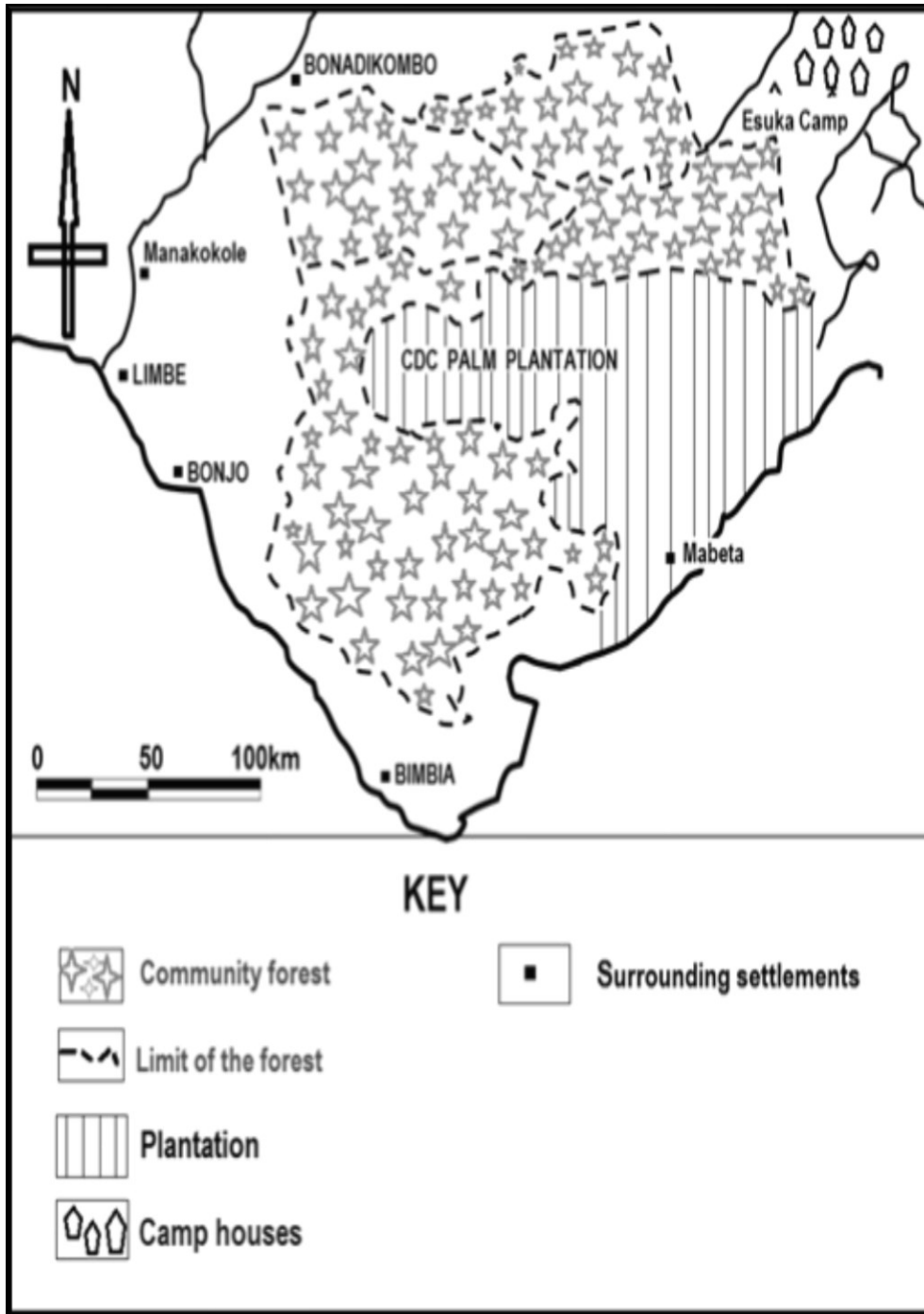


Figure 5.3. Map of Bimbia-Bonadikombo Community Forest

Source: Fondufe et al. (2016)

## **5.6 Primary Data**

Primary data for this research were collected and supported both qualitatively and quantitatively. Data were based on the review of secondary data to identify gaps. The collection of primary data tools was prepared and designed to bridge the gaps of identified knowledge. The collection of primary data took place between the months of November to December 2014 and January to February 2015. The primary data were designed to bridge the gap between the secondary data. It ranges from farmers, hunters, fisher folks, and non-timber forest collectors, fuel-wood collectors, forestry experts, NGOs, head of household and small-scale timber collectors. Most of the data were collected in the evenings after the respondents returned from their daily activities, and on Sundays, after church service. For the fishermen, the interviews were held primarily at the bank of the river when they return from fishing, whereas for hunters, they were interviewed upon returning from hunting in the forest or during local community meetings. Interview guides were used to get in-depth knowledge from respondents. It helped the researcher to gain an understanding of the world from the point of view of the respondents. The researcher has an understanding of their experiences and way of thinking (Austin and Sutton, 2014; Sutton and Austin, 2015). Focus group discussion was held in all the villages with key personalities: local chiefs, village councilors, some key heads of households, and other prominent local stakeholders were interviewed during the focus group discussions. The main idea was to get an insight about the unsustainable nature of forest exploitation and conservation methods.

## **5.7 Questionnaire Design**

Questionnaires were developed based on background information of the research (Appendix 1). To get justification of responses, a closed-ended questionnaire was developed. To begin with the questionnaire administration, about 20 questions were tested among some students in the University of Buea, to find out if some difficulties would arise. This enabled the researcher to rephrase questions if there was a difficulty in the respondents' ability to understand them. After the process of testing questionnaires, 300 questionnaires were distributed to the two communities, making a total number of 300 copies. In total 280 copies were returned, scoring a return rate of about 93%. The reason for the high return rate was because the Bimbia-Bonadikombo community is accessible via motor bike, so it was very easy for both the researcher and the research assistants to administer and collect the copies. The fact that all the research assistants were native to the



Takamanda area also constituted an added advantage in easily administering and collecting the questionnaires. The questionnaires were equally distributed within the villages among the respondents. In each of the villages, consideration was taken to choose those who have been living in the community for more than ten years, so that they would have adequate knowledge concerning the problem at stake. The researcher and the field assistants personally administered copies of the questionnaires to the respondents. For more complex questions and in the case of illiterate respondents, the researcher or the research assistants used Pidgin English for clear understanding. Since Pidgin English is one of the languages mostly used in these areas, focus group discussions and semi-structured interviews were mostly carried out in Pidgin English, thus minimizing the potential for research errors related to miscommunication between researcher and respondents.

Section A starts with background information about the respondents' demographic and social characteristics. Section B continues by listing which methods they used in the various activities in which they were involved. Section C was designed to focus on the respondents' policy implementation and their frequency in forest exploitation. Section D was designed to find out respondents' views on law enforcement and the implication of the law. Section E focused on the intra-community's relation with forestry department. Some questions leave the option for more than one answer. There was a scaling technique that asked respondents to follow up "yes" or "no" answers with explanations. The questions targeted mostly respondents who have about 95% involvement in the forest for their livelihood. While administering the questionnaires, the researcher also took some special trips to important sites like the Slave Trade Site at the Bimbia-Bonadikombo, the charcoal pit and Takamanda Ebe River which flows into Nigeria, to gain first-hand information concerning forest exploitation. Pictures and videos were taken, most of which were used to supplement this writing.

## **5.8 Semi-Structured Interviews**

In both study areas, structured interviews and focus group discussions (Appendix 2) were held in Kajifu 1, which is the headquarters of Takamanda National Park and Limbe at Down Beach, which is the office of the Bimbia-Bonadikombo Natural Resource Management. The local chiefs and key informants (like heads of households) were targeted because of their longevity in the village, which began before the creation of the community forest. The Takamanda conservators and forest guards,

village councilors, the BBNRMC, and forest manager were all interviewed. The staff was also interviewed at the delegation of forestry and wildlife in Buea. NGO officials and GIZ staff were also targeted in the semi-structured interviews. This took place to gain in-depth knowledge about sustainable forest management and conservation. Additional information was gained during informal conversations with the local respondents and inhabitants during the course of the field study. The field assistants took notes while the researcher asked the key informants standard questions. This exercise included questions about the constraints to forest management and conservation, as well as the reason why some local people do not comply with the government policy on the forest. Field assistants took notes in every village so that the researcher could critically analyze the findings recorded there.

### **5.9 Secondary Data**

Information and literature on conservation and sustainable management of forest resources in BBCF and TNP is scarce. Much of the data used were taken from different study areas that have the same structure and institutional setting. For this reason, the researcher relied on the collection of published articles and unpublished reports from the Ministry of Forestry and Wildlife, Takamanda National Park, Management Plan (TNP-MP 2010-2014), Bimbia-Bonadikombo Community Forest, Sample Management Plan (BBCF-SMP, 2002-2027), as well as the following institutional libraries: BTU Cottbus-Senftenberg, Germany; the University of Buea (UB), Cameroon; the regional Delegation of Forest in Buea Cameroon; Limbe Botanic and Zoological Gardens (LBZG); and the WWF office in Limbe, Cameroon.

### **5.10 Data Analysis Procedures**

The majority of the collected data was both qualitative and quantitative. The data from the questionnaires was collated, computed and analyzed with Microsoft Excel, which helped in the generation of column frequency tables and charts. The qualitative data was obtained mostly through focus group discussion and semi-structured interviews. Those results were presented using descriptive statistics, which comprise frequency counts and simple percentages. A systematic discussion directly followed the results presentation. In addition, the data was also presented using text, which was then compared to similar studies. Relevant text like the Law No. 94/01 of 20 January 1994, which lays down forestry wildlife and fishery regulations, was critically examined. Related international agreements

leading to conservation of biodiversity, like the Rio Declaration and Agenda 21, were analyzed. The Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Fauna and Flora 1973 (CITES) were reviewed with respect to conservation and forest management resources. The main aim of this study is to compare the two forest management systems in Cameroon: the non-permanent forest (community forest) and the permanent forest (state forest). Its main objectives are: (i) evaluate the extent of sustainability of Bimbia-Bonadikombo Community Forest and Takamanda National Park management systems and identify traditional management systems in maintaining sustainability of both forest areas. (ii) Evaluate the extent to which both forests are managed according to the various management plans approved by the ministry. (iii) Evaluate the challenges faced in using the two forests management systems. (iv) To assess forest management system used in BBCF and TNP in relation to national forest heritage and principles to implement the convention on biological diversity. To improve comprehension, the above aspects of the central objective are articulated in two thematic chapters presented as follows: Chapter 6 presents an analysis of findings with respect to sustainability and identifies the role of traditional management systems in maintaining sustainability. Chapter 7 dwells on the management plan approved by the ministry, challenges faced by forest management systems, and lastly, management systems following the principles in keeping with the CBD. Ultimately, Chapter 8 discusses the findings of the study in relation to literatures and theories on forest conservation. It also draws major conclusions and recommendations on policy and strategies to promote conservation and sustainable management of forest resources in BBCF and TNP specifically, and Cameroon in general.

## **Chapter 6 : Results and Discussion Part I**

### **6.1 Chapter Introduction**

This chapter presents the first part of the research findings, organised into two main sections: identifying the various forest exploitation activities carried out in the Bimbia-Bonadikombo Community Forest (BBCF) and Takamanda National Park (TNP), and analysing their effects on forest sustainability, as well as the effectiveness of traditional sustainability management practices. This is in line with the first study objective: to evaluate the extent of sustainability of the BBCF and TNP management systems and identify traditional management systems in maintaining sustainability of both forest areas. The chapter begins with demographic and social characteristics of the respondents and followed with an assessment on the extent of sustainability of those practices. It further analyses the use of chemicals on farmland, traditional hunting and fishing practises and NTFPs and fuelwood harvesting practises. The second part of the chapter identifies traditional management systems in maintaining sustainability of both forest areas. This was realised through respondents' opinions on traditional conservation methods, which the respondents outlined as totem beliefs and taboos about wildlife and plants.

### **6.2 Demographic and Social Characteristics of Respondents**

In order to take an accurate sample to deduce the perception of sustainable forest management, a total number of 280 respondents from the two areas effectively answered the questionnaire, out of an initially 300 predetermined respondents (Table 6.1). As noted in Table 6.1 below, 69.43% of the respondents in the BBCF and 53.66% in TNP were female, while 30.57% of the BBCF respondents and 46.34% of the TNP respondents were male. Traditionally, women are more involved in the collection of NTFPs, fuelwood and farming, while men are more often involved in hunting, fishing and occasionally timber exploitation. The targeted surveyed population ranges between the ages of 14 to over 60 years old. In the 30 to 39-year-old age group, 33.12% of the targeted population lived within the BBCF, while 34.15% were within the TNP. Out of the respondents between the ages of 14 and 29, 15.92% were in the BBCF and 30.08% were in the TNP. Out of those between 40 and 49 26.11% were from the BBCF and 20.33% from the TNP.

The high number between the ages of 14 years to 49 years indicates more exploitation of forest resources, since this is the most active portion of the population. The age group between 50 and

**Table 6.1: Gender, Age Group and Respondents' Educational Level**

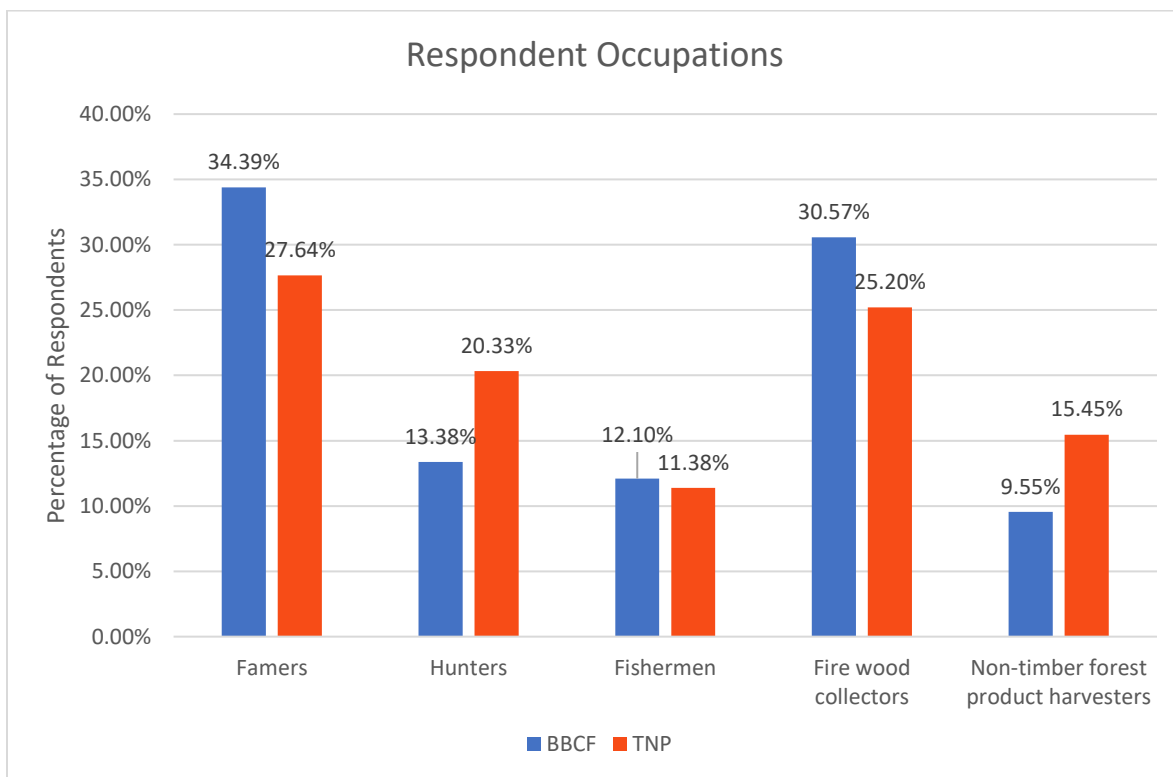
Items	Bimbia-Bonadikombo Community Forest (BBCF)		Takamanda National Park (TNP)	
	Frequency	Percentage, %	Frequency	Percentage, %
Gender				
<b>Male</b>	48	30.57	66	46.34
<b>Female</b>	109	69.43	57	53.66
Total	<b>157</b>	<b>100</b>	<b>123</b>	<b>100</b>
Age Group				
<b>14-29 years</b>	25	15.92	37	30.08
<b>30-39 years</b>	52	33.12	42	34.15
<b>40-49 years</b>	41	26.11	25	20.33
<b>50-59 years</b>	29	18.47	10	8.12
<b>60years and above</b>	10	6.37	9	7.32
Total	<b>157</b>	<b>100</b>	<b>123</b>	<b>100</b>
Educational level				
<b>No formal education</b>	36	22.93	69	56.10
<b>Primary School</b>	81	51.59	45	36.59
<b>Secondary School</b>	15	9.55	6	4.88
<b>High school</b>	11	7.01	2	1.63
<b>University education</b>	9	5.73	1	0.81
<b>Vocational training</b>	5	3.18	0	0.00
Total	<b>157</b>	<b>100</b>	<b>123</b>	<b>100</b>

59 years old constituted 18.47% (BBCF) and 8.12% (TNP), while the 60 and above group accounted for 6.37% (BBCF) and 7.32% (TNP). This aging population tends to contribute the least to forest exploitation. Regarding education level, 51.59% of the respondents in the BBCF and 36.59% of those in the TNP have a primary education. Most of the respondents within the sample

villages have just a basic education. Of the BBCF respondents, 22.93% have no formal education, compared to 56.10 % in the TNP; this indicates that there will be a need for special environmental education. Among the BBCF respondents, 9.55% have a secondary education, while 4.88% have a secondary education in the TNP. Only 7.01% of respondents in the BBCF have completed high school, compared to 1.63% in the TNP. In the BBCF, 5.73% of the respondents have university education, compared to 0.81% in TNP. 3.18% and 0% of the respondents have vocational training in the BBCF and the TNP, respectively. This lack of education leads to greater exploitation of forest resources.

### 6.3 Respondent Occupations

To come up with sound conclusions, data collection was carried out via questionnaire. The targeted groups were farmers, hunters, fishermen, fuelwood collectors and NTFPs collectors. They were asked: *what is your occupation?* The data results are presented in Figure 6.1 below.



**Figure 6.1. Respondent Occupations**

As seen in Figure 6.1, the majority of the respondents from both forest communities were farmers, with 34.39% in BBCF and 27.64% in the TNP. Following the creation of the TNP, by Decree No. 2008/2751/PM of 21<sup>st</sup> November 2008, farming activities are forbidden inside the national park. The farming activities are carried out primarily in the area surrounding the park. There are a limited number of designated farming areas within the TNP, all created with the intervention and supervision of Programme for Sustainable Management of Natural Resources South West Region (PSMNR-SWR). The majority of the forest exploiters are farmers, followed by fuelwood collectors. Fuelwood collectors account for 30.57% in BBCF and 25.20% in the TNP, the reason being that fuelwood is the dominant energy source in Cameroon. The BBCF has a higher percentage of fuelwood collectors than the TNP because most of the fuelwood collectors use their findings to produce charcoal, which the traders in Limbe then buy for roasting fish<sup>51</sup>. After fuelwood collection, hunting accounts for 13.38% of occupations in the BBCF and 20.33% in the TNP. That number is higher in the TNP because hunting is a crucial economic activity in the Takamanda area for both domestic and commercial reasons, even though it is illegal inside the national park. According to PSMNR-SWR, (2014), TNP hunters sell a variety of large animal carcasses from a number of multiple species in different bush meat markets in Nigeria. Hunting is followed by NTFPs collectors, making up 9.55% of respondent occupations in BBCF and 15.45% in the TNP. Fishing accounts for 12.10% and 11.38% of occupational activities in the BBCF and TNP respectively.

#### **6.4 Extent of Sustainability of Two Forest Management Systems**

This section is based on the first study objective, which is to evaluate the extent of sustainability of the forest management systems in the BBCF and TNP. In order to accurately assess the study areas, it was imperative to take into account the various occupational practices within those regions. Since the farmers, hunters, fuelwood collectors, NTFPs collectors and fishermen are directly involved in the forest exploitation for their livelihood; it was necessary to know the manner

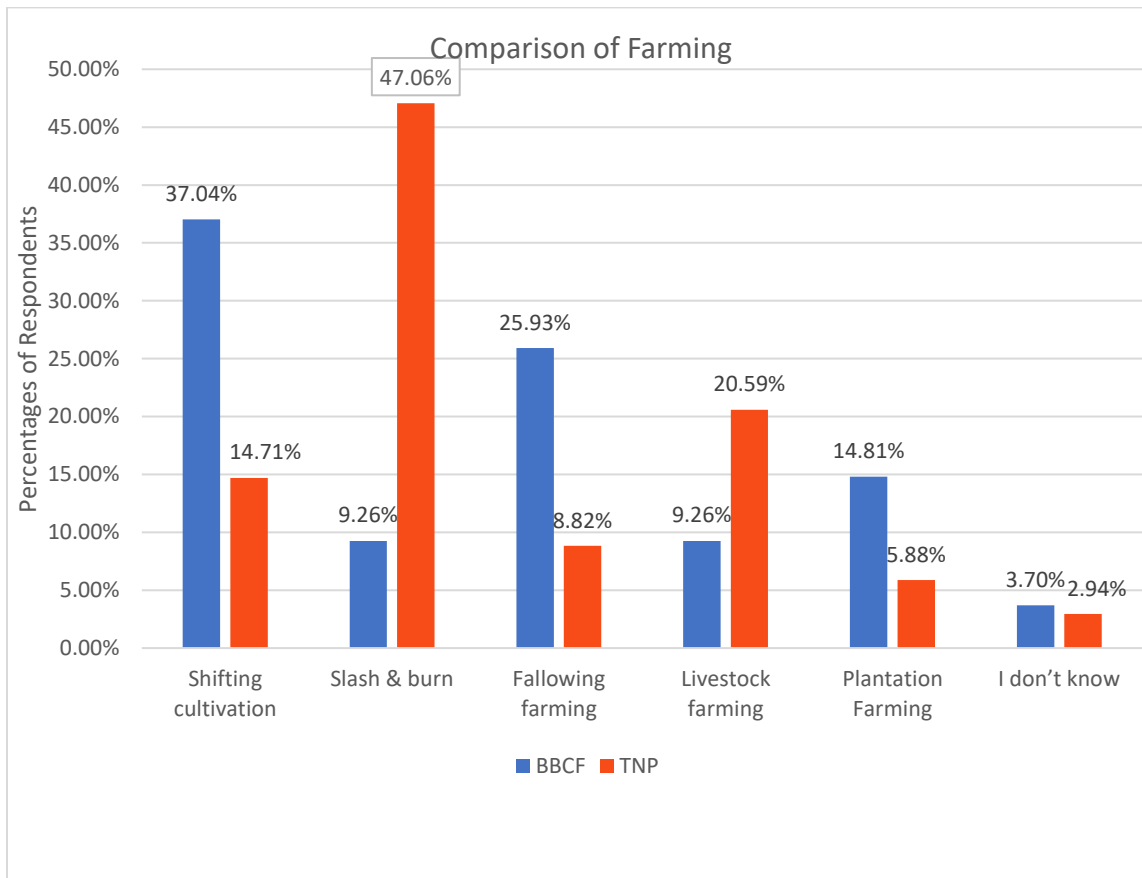
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<sup>51</sup> Fish roasting in this context means that the women in the BBCF buy fish from the fisher people from the banks of the river and roast them at the sidewalk mostly in the evenings. Sometimes they usually roast and sell on the banks of the sea in down beach Limbe for tourists who are visiting.

of exploitation in order to determine which forest management system is more sustainable and come up with a sound recommendation for improvement.

### 6.4.1 Comparison of Farming Systems Used in BBCF and TNP

The following question was posed to the respondents: *what system of farming do you use on your farmland?* They were then able to select from many answers: shifting cultivation, slash and burn, fallowing farming, livestock farming, plantation farming and ‘I do not know.’



**Figure 6.2. Farming Systems Used in BBCF and TNP**

As seen in Figure 6.2 above, 37.04% of the farmers in the BBCF were involved in shifting cultivation compared to only 14.71% in TNP. As a community forest, the BBCF provides more flexibility for farmers, who can shift from one farmland to another. A farmer can cultivate a food crop for a period of three to four years, then when the soil is no longer fertile, they can shift to another farmland to cultivate those same food crops. In contrast, the farmers of the TNP reported



that the national park authority converted most of their farmland into national park, where farming is prohibited. 25.93% of respondents in the BBCF are involved in fallowing farming compared to 8.82% in the TNP. As mentioned earlier, since the farmers in the BBCF have the opportunity to shift from one farmland to another, they can allow the previous land to fallow and can only return when it is fertile. The TNP has much more limited farmland because most of its land is designated for biodiversity conservation. According to Njomgang et al. (2011); Kafle, (2011), shifting cultivation is a farming system that enables assorted varieties of crops to interact with natural fallow within a short period of time frame. In shifting cultivation, natural fallow recycles elements of nutrients for soil fertility and suppression of pests, weeds and diseases. This system remains efficient in soil management and sustainability of the forest land, so long as the population pressure is low. A study of shifting cultivation practices and management of forest resources within Cameroon evergreen forest (Nounamo and Yemefack, 2000) shows that about 80% of the farmers involved in shifting cultivation practices considered it to be their first priority farming system. The present study (Figure 6.2) reveals a higher percentage of shifting cultivation in the BBCF. Mertz et al. (2008) have carried out a study in shifting cultivation that concluded “shifting cultivation should be accepted as a rational land use system and that earlier calls for bringing a “Green Revolution” to shifting cultivators and still relevant to achieve intensive and sustainable production”.

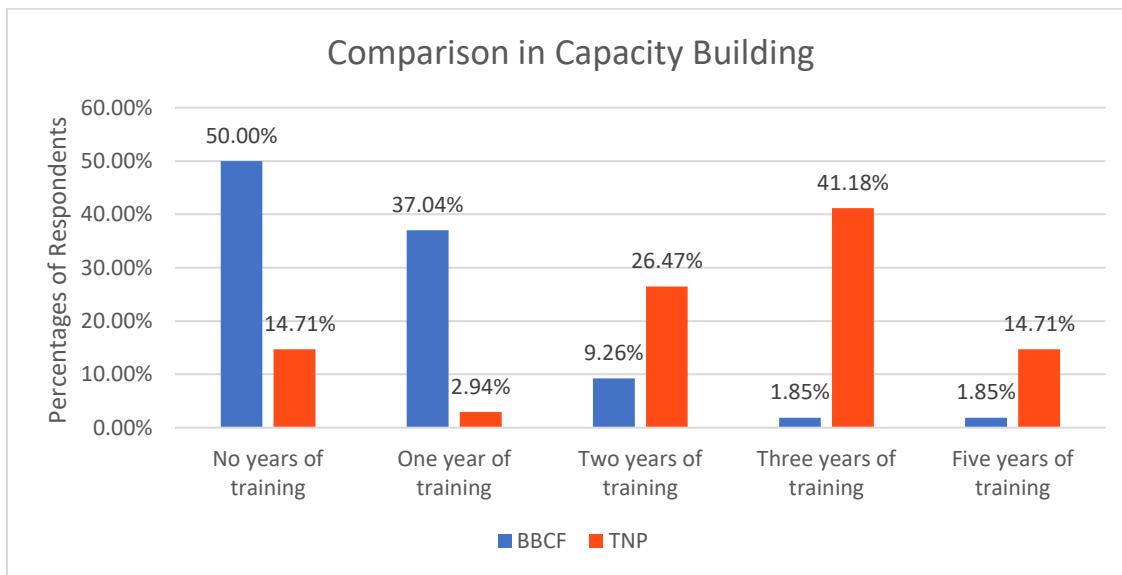
With shifting cultivation being virtually impossible, farmers within the TNP turn toward slash and burn farming instead. 47.06% of TNP farmers engage in this practice, compared to only 9.26% among BBCF farmers. Slash and burn is one of the biggest contributing factors to forest degradation and loss of biodiversity (Styger et al., 2007; Thomaz, 2013). The presence of periodic fires makes it virtually impossible to reverse landscape degradation. The more degraded the land, the more difficult it is to reclaim it (Styger et al., 2007). Ketterings et al. (1999) carried out a similar study in Indonesia, which revealed that the Indonesian president renewed the ban on slash and burn farming (first enacted in 1984) due to the fact that fire had burnt a large part of the country’s forest and left the land infertile. As for livestock farming systems, only 9.26% of respondents in the BBCF and 20.59% in the TNP were involved in livestock farming. The reason for that number being so much higher in the TNP is that the Takamanda region borders with Nigeria, where pastoral nomadism is prevalent. As for plantation farming, 14.81% of BBCF

respondents were involved in this activity as compared to 5.88% in the TNP. Plantation farming activity is higher in the BBCF because of the Cameroon Development Co-operation (CDC) plantations. Plantation farming has a long history in the coastal part of southern Cameroon and is rising at an alarming rate, adversely affecting the nearby forest land (Ajonina et al., 2014). According to Ajonina et al., (2014) in a similar study carried out in the southern part of Cameroon, between 1986 and 2000, the forest landscape dwindled from 67,792 ha to 14,032 ha, a loss of 79% of forestland. These studies are similar to the present study, which shows that if the BBCF farmers continue to clear down the forest, due to lack of control mechanism and the presence of CDC in this region, the forestland will increasingly disappear. Better plantation farming practices and some policies to stop further loss of biodiversity are necessary to protect the forestland. Respondents that did not know which type of farming techniques they utilised made up 3.70% of those polled in the BBCF and 2.94% of those in the TNP.

#### **6.4.2 Capacity Building (Training) in Various Farming Systems**

To evaluate the extent of sustainability between the two forests, it was necessary to compare the number of years in capacity building (training) in the farming system, which respondents used on their farms. As shown in Figure 6.3 below, 50.00% of respondents from the BBCF have no capacity building in their farming methods, compared to 14.71% from the TNP. The number with no training is higher in BBCF because there are no effective training programmes laid out for them and they are the designated forest managers. In the TNP, farmers are under stricter rules. The impact of capacity building or management system training is typically non-linear, which explains why most desired results of input and outcome are not achieved (Posthumus et al., 2012). In the BBCF, 37.04% of farmers have one year of training as compared to 2.94% in TNP. According to Gordon and Chadwick (2007), the conclusions of most projects suggest that capacity building is very successful in improving the individual capacity when it is planned for the long-term with multiple levels of targets. Klerkx et al. (2009) affirm that if capacity building is implemented in an appropriate manner that the targeted group and organisations can utilise effectively, the built capacity will produce results. The higher number of one-year of training in the BBCF is because of the presence of the Mount Cameroon Forest Project (MCFP) founded in 1988, which helps train farmers in the cultivation of some food crops, like new breeds of cassava. 9.26% of farmers in the BBCF have two years of training, while this number is 26.47% in the TNP. Only 1.85% of

respondents from the BBCF have three years of as opposed to 41.18% in the TNP. Also 1.85% of farmers polled from the BBCF had acquired five years or more training, and 14.71% of respondents from the TNP had. Part of the reason for this is that the Programme for Sustainable Management of Natural Resources South-West Region (PSMNR-SWR) is able to contribute to capacity building in farm management in the TNP region by providing technical knowledge in areas such as cassava, cocoa and plantain cultivation. PSMNR-SWR does this through Farmer Field School (FFS), the aim of which is to build and reinforce farmers' capacity for good agricultural practices. In 2014, about 18 FFS's were established to train farmers from 16 villages in and around the TNP and Korup National Park in new farming skills for a duration of nine months. Upon their graduation, a ceremony took place in each of the 16 villages (Batiig, 2015). If they practise what they have learned, this educated group of farmers will help future conservation efforts, ensuring that forest exploitation is done in a sustainable manner and thereby improving and securing the livelihoods of the communities that live adjacent the national.



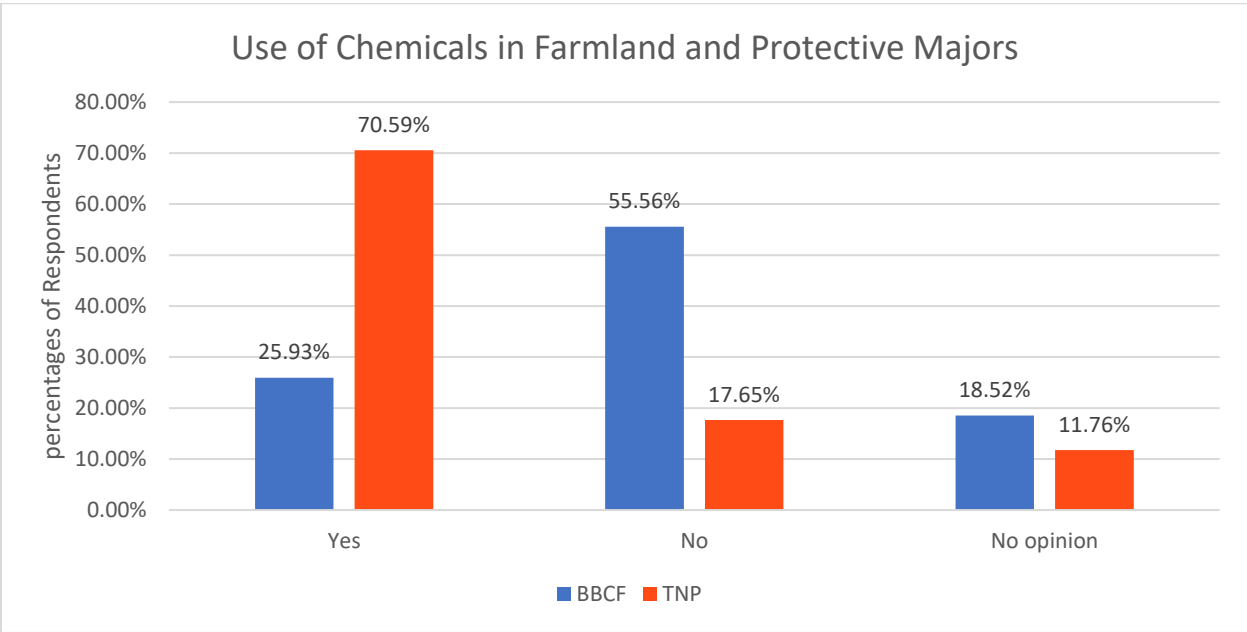
**Figure 6.3. Years of Capacity Building in BBCF and TNP**

Unfortunately, some of the farmers in the BBCF and TNP who have acquired training reported that they do not want to put their new skills into effect because they lack the equipment and financial resources to do so. In addition, it is cheaper and easier for these farmers to resort to

alternative less sustainable means of exploiting the forest. This holds true with findings from the Tropical Biology Association (TBA), which affirms that if groups, institutions and organisations want to sustain appropriate capacity building over a long period of time, they need new approaches and financial backing. They further elaborate that there must be a strong commitment of senior managers and staff to think critically about the adoption of new management systems or structures (Australian Center for International Agriculture Research, 2007).

### **6.4.3 Use of Chemicals on Farmland and Protective Majors**

To get a full and accurate analysis, it was necessary to know if the farmers used chemicals on their farms and whether they were trained to use these chemicals. The use of chemicals is a major contributing factor to soil degradation and environmental pollution. The use of pesticides and fertilisers has generated a lot of public health concerns and environmental pollution issues (Asogwa and Dongo, 2009). Tandi et al. (2014) and Afari-Sefa et al. (2015) confirm that farmers who are involved in chemical usage with limited knowledge of safety can suffer exposure that will result in an adverse health effects. In an effort to determine chemical usage among BBCF and TNP farmers, they were presented with the question: *do you use chemicals on your farmland? Moreover, do you have any protection while using the chemicals?* The respondents had three options: yes, no and no opinion. The presentation of the results can be found in Figure 6.4 below. Out of the total number of farmers interviewed in the BBCF, 25.93% of the farmers admitted to using chemicals as compared to 70.59% in the TNP.



**Figure 6.4. Use of Chemicals on Farmland and Protective Majors**

A similar study carried out by Tandi et al. (2014) in Buea Southwest Region of Cameroon revealed that out of the 150 farmers interviewed, 47.6% confirmed using chemicals on their farmland, and 83.8% of those farmers said they use no protection while handling the chemicals. Another study carried out by Afari-Sefa et al. (2015) in the Ashanti and Western Regions of Ghana found out that out of 437 farmers interviewed, only 15.6%, of the farmers who used pesticide took full protection measures during spraying. 38% wore partial protective clothing, while 46.4% wore no protective gear whatsoever, putting them in direct contact with the chemical. The results are much similar in the BBCF and TNP. In the BBCF, 25.93% of the respondents reported using chemicals on their farms without protection, while that number was 70.59% in the TNP. 55.56% of respondents in the BBCF and 17.65% in the TNP reported not using chemicals on their farmland. In the BBCF, 18.52% of the farmers responded with no opinion as compared to 11.76% in TNP. Chemicals used on farmland over the years become more specific and less toxic but environmental pollution still exists (Asogwa and Dongo, 2009; Mokwunye et al., 2012), and so this present study aims to discover the extent of capacity building or training which farmers in the BBCF and TNP receive before applying chemicals to their farmland.

#### 6.4.4 Access to Capacity Building before Using Chemicals on Farmland

Out of the farmers that admitted to using chemicals on their farmland, it was necessary to know if they had been trained by agricultural staff or extension workers, or if they were just using the chemicals based on their own knowledge. The resulting presentation is organised in Figure 6.5 below 14.71% of the farmers in TNP said ‘No,’ they have not attended any training course in using chemicals on their farmland compared to 35.19% with no training in the BBCF region. The number is higher in the BBCF region because as a community forest, they have more right to use the forest when and as they choose. In the TNP, 50.00% said ‘Yes,’ they have obtained one year of training on how to use chemicals properly, while only 29.63% of respondents in the BBCF had obtained one year of training. This increase in training in the TNP occurs due to the influence of PSMNR-SWR, working in collaboration with the Ministry of Forestry and Wildlife (MINFOF) through the regional delegation, who help train farmers on improved methods of farming. They work in partnership with the German International Co-operation (GIZ), the World Wide Fund for Nature (WWF), and the Wildlife Conservation Society (WCS). This helps divert the attention of farmers to alternative means of farming and create awareness for the relationship between the environment and the use of chemicals. Soil fertility and land degradation are the most important constraints on food security and the environment in Cameroon and Sub-Saharan Africa (SSA). The problem of nutrient deficient soil leads to soil infertility (Omotayo and Kukwuka, 2009; Vanlauwe et al., 2015).

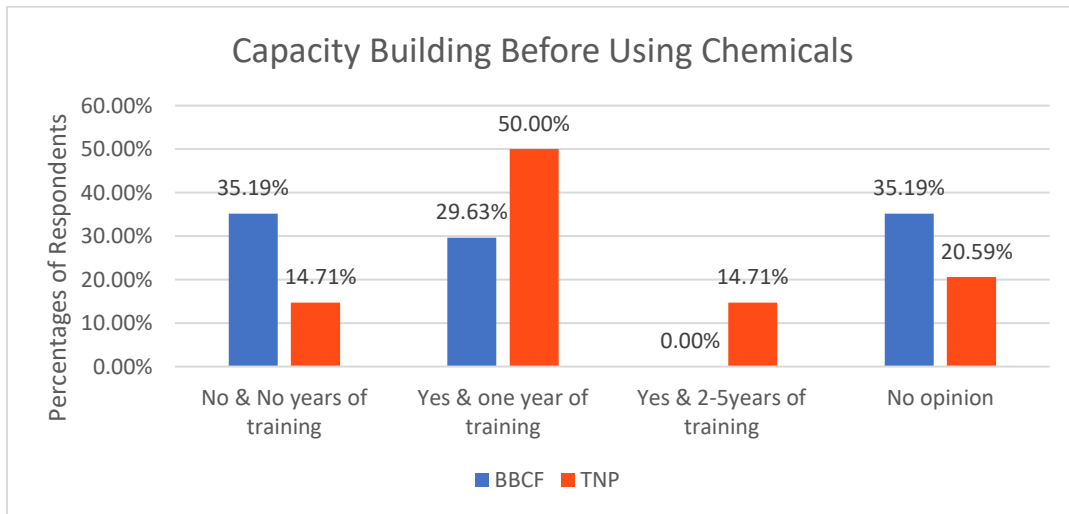


Figure 6.5. Access to Capacity Building before Using Chemicals on Farmland

According to Toenniessen et al. (2008) and Kimaro et al. (2015), to increase the productivity, profitability and sustainability of local farms, farmers need greater access to affordable and well-adapted seeds and improved methods that consider soil fertility. Currently, both sets of local farmers reported a lack of affordable and well-adapted seeds, and an inability to effectively implement forest regulations, thus they turn to chemical means of managing pests and supplementing soil fertility. In the BBCF area, 29.63% of the farmers said ‘Yes,’ they have one year of training. This is due to the presence of the Mount Cameroon Forest Project in the Fako Division. They help educate the farmers on how to use chemicals. This programme is largely ineffective because the farmers lack the necessary resources to put into practice what they have learned. The results also revealed that 14.71% of the farmers in TNP said ‘Yes,’ they have attended two to five years of training as compared to 1.00% 0.00% of farmers in the BBCF region. 35.19% and 20.58% of respondents from the BBCF and TNP respectively responded with ‘No opinion’ in regard to being trained to use chemicals on their farmlands.

## **6.5. Traditional Hunting Practices**

Farming isn’t the only practice which influences forest sustainability. To determine which forest management system is more sustainable than the other, it’s also crucial to examine hunting practices. This study sought to communicate directly with the hunters whose livelihoods depend on the forest. Hunting carried out in the TNP is mostly illegal poaching and bush meat hunting. Following the creation of the TNP, Decree No. 2008/2751/PM of 21 November 2008 stated that all class of animals inside the national park are prohibited for harvesting. According PSMNR-SWR, (2014), there is illegal poaching in the Southwest Region for the bush meat trade, including in the TNP area. The bulk of those animals being illegally hunted are mammals, which contributes to the compelling evidence that many species are negatively affected by such practices. In the TNP area, there is so much over-exploitation in large bodied, slowly reproducing animals that the International Union for Conservation of Nature (IUCN), (PSMNR-SWR, 2014) has classified many species as threatened or endangered, and national legislation prohibits the hunting of these animals. Following Section 86 of the Law No 94/01 of January 1994, which lay down forestry, wildlife and fisheries regulation, hunting is completely forbidden in a state forest or areas protected

for wildlife conservation. However, there are still illegal hunting activities taking place in the TNP area.

In the BBCF, hunting of Class ‘An’ animal is forbidden. The main exception to that rule is when “animals constitute a danger or cause damage to people and/or property, the service in charge of wildlife may undertake them down” (Section 82 of the 1994 Forestry Law). Class ‘B’ species are partially protected. A hunter can only hunt this class of animal following Section 87 of the 1994 Forestry Law, which requires a hunting permit or licence. Class ‘C’ animals can be harvested wisely for home consumptions only in the main BBCF area, not inside the national park or in the protected areas within the community forest. In assessing traditional hunting practices, it was important to know which type of animals the hunters frequently hunt, given the fact that most of the hunting is done illegally. It was also important to find out the methods used in killing these animals, the frequency of hunting, and other factors that influenced hunting and the sustainability of hunting in these forest regions.

#### **6.5.1 Types of Animals Harvested by the Hunters within Three-Month Period**

To accurately assess the degree of sustainability within the two forests, it was necessary to determine which class of animals the hunters harvested most. The classes of animals were subdivided (Appendix 3 and 4) following Section 78 of Law No. 94/01 of 20 January 1994, which states that the species of animals living within the space of a protected area and in a national territory are classified as Class A, Class B, and Class C. Animals species belonging to Class A are totally protected and no one has the right to kill them, except following Sections 82 and 83 of this law. If caught harvesting animals of this class, you may be charged with a fine of between 3,000,000 CFA (4,500 Euro) and 10,000,000 CFA (18,000 Euro) or imprisonment as described in Section 158 of the 1994 Law. Class B species are partially protected, meaning that wherever they are found, they can only be hunted with a special hunting permit. Animals of Class C species are also partially protected. They can only be harvested wisely, so that their population is maintained. The study took into consideration the existing list of animals (Appendix 3 and 4) from past research and from the BBCF and TNP management plans. Questions were posed to the hunters as follows: *please indicate the type of animals that you harvested most for the pass three month.* The presentation of the results can be found in Figure 6.6 below.



## 6.5.2 Hunted Protected Species

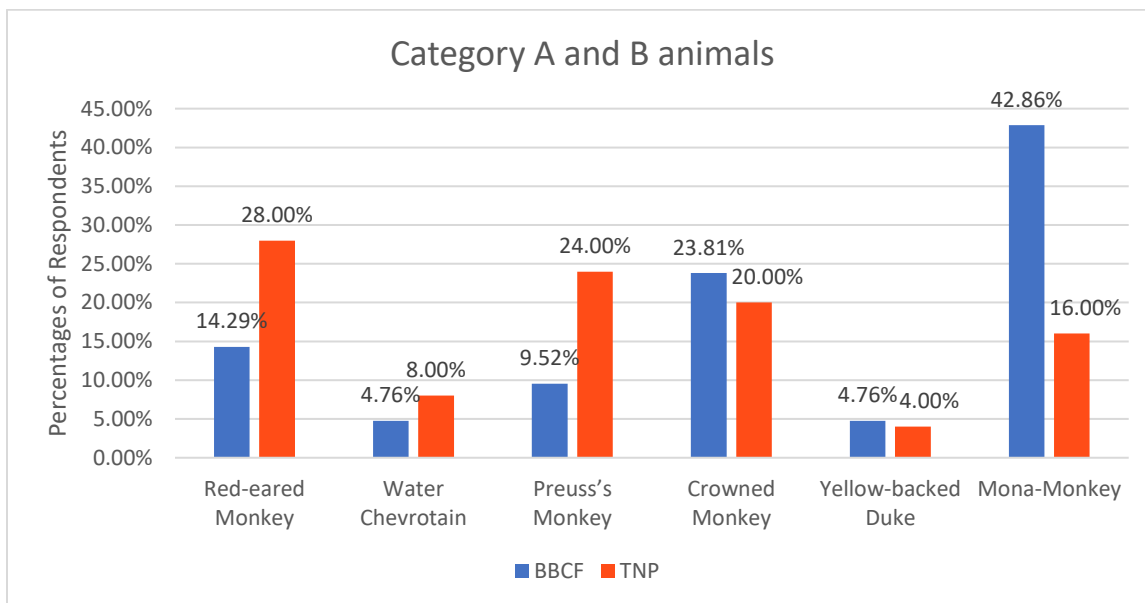
In Cameroon, all forests belong to the government, even the community forest (although the community is allowed to manage the forest sustainably for a period of 25 years (Article 27(4) of Decree No. 95-531-PM of 23 August 1995). The community forest can only be renewed for two terms, after which the forest is returned to the government. Following Section 78 (2) of the 1994 Law, all protected, threatened and endangered species in both the BBCF and TNP are protected and listed on the IUCN Red List. No matter their class, the animals dwelling within those regions are not supposed to be hunted. As indicated in the questionnaire, regardless of the law, some hunters still indicated killing these types of animal. The list of the animals was presented to them using the animal's common names (Appendix 3 and 4). This provides clear evidence that large-bodied animals are being illegally hunted in the TNP area (PSMNR-SWR, 2014). It is highly possible that the number of hunted protected species indicated during the field study period is low because some of the hunters must have refused to accept that they usually kill protected species. This is supported by the fact that, during the field study period, in an informal consultation with a hunter, he said "Are you from the forest department? Or an agent of the government to collect information? Please let me know because I will not give you any information."<sup>52</sup> As presented in Figure 6.6, it was noted that, 14.29% of BBCF respondents and 28.00% from the TNP indicated killing red-eared monkey. The number is higher in the TNP area because the hunters there carry out hunting both for commercial and domestic purposes as opposed to the BBCF where hunting mostly for home consumption. The higher number in the TNP may also be because the weapons used for hunting are purchased from neighbouring Nigeria. Hunting in this area is a local way of life. Regardless of restrictions, hunters will still seek out means to hunt. 9.52% of BBCF hunters admitted to hunting Preuss's monkey, a number which more than doubles to 24.00% in the TNP. The crowned monkey was almost the same in both regions: 23.81% in the BBCF and 20.00% in the TNP. The BBCF scored very high in the Mona monkey: 42.86% as compared to 16.00% in the TNP. The reason for the Mona monkey being more commonly hunted in the BBCF is because the people in this area use the bush meat to cook "pepe soup"<sup>53</sup>, which is then sold to the local market

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<sup>52</sup> Conversation with Tabi Charles on 18.03.2015 in the village of Obonyi 1 in the Takamanda forest area.

<sup>53</sup> Soup prepared with bushmeat and made hot and spicy with hot pepper.

in the area. Water chevrotain and yellow-backed duiker scored less than 9.00% in both the study areas. According to Sodhi et al. (2009), most human actions over the two past centuries have precipitated a global extinction crisis. They further point out that large-bodied species with a restricted distribution tend to pose a greater risk of extinction from humans because of their high habitat specificity or small population density. Rare species are more quickly extinct than common ones. This statement holds true in the present study because animals like gorillas, chimpanzees, drills/sumbo elephants, forest buffalo, bush pig, leopard and many other protected animal species were not indicated in the questionnaire because they are already locally extinct.



**Figure 6.6. Category A and B animal's species**

The present study is similar to a study carried out by Selier et al. (2016), which found that human populations are leading to a drop-in elephant population numbers, but that ecotourism could help enhance the presence of large-bodied animals like the elephant. Unfortunately, at the moment, the study area cannot benefit from ecotourism because this sector is not well developed. Selier et al. (2016) point out that the government should develop more coordinated legislation and policies to improve on the land use planning so that impact of increasing human population on large-bodied animals should not be so detrimental. They later conclude that where the harvest of wildlife is common, conservation plans should be increased, focusing on the size of the reserves and the rate of hunting in that area. Abugiche (2008) estimated that 16,232 animals, including protected

species, were killed over a 6-month period in the Banyang-Mbo Wildlife Sanctuary in the South-West Region. At this rate of animal harvesting, it will be impossible to meet conservation and sustainability needs.

### **6.5.3 Partially Protected Animals Species**

According to Section 3 (1) of the 1994 Law, Class B species are partially protected and can only be harvested or captured with a hunting permit or license. Section 87 (2) of the 1994 Law also states that hunting licences and permits are personal and not transferable. The law further states in Section 90 that hunting licences and permits may be issued to individuals who are in accordance with the regulations on possession of firearms. These rules are not applicable to hunters within the TNP, as they cannot obtain permits or licences to hunt animals of any kind within the borders of the national park. Figure 6.6 above shows that of all the animals hunted within the TNP in the three months before the questionnaire was administered, 16.40% of those animals were Mona monkey. In the BBCF, only three hunters indicated having hunting permits or licences out of the 21 hunters who answered the questionnaire. The Mona monkey harvested in this area accounted for about 40.91% of the total hunted animals. The higher number in the BBCF compared to the TNP might be because hunters are less restrained when they have the proper permits and licenses. It also might have to do with the fact that the meat of the Mona monkeys is used to cook “pepe soup,” which is then sold in the town of Limbe, as mentioned earlier. Given that the BBCF hunters have the right to apply for licences or permits, the number of hunters who indicated that they have such hunting permits was relatively small. This might be because according to Section 91 of the 1994 Law, the capture, keeping or killing of partially protected animals is prohibited and hunters found engaging in such practices will be subject to fines. The amount of those fines is fixed by the law and the issuance of a certificate of origin. This is good for conservation and management of forest resources, as it discourages hunters from killing the endangered creatures. However, in an informal conversation with a hunter in the TNP, he said “Licence or no licence, if I want to kill the animal I will do so. Licences are not written on a hunter’s face.”<sup>54</sup> If local people are not provided with alternative means of living they will continue to carry out illegal exploitation of bush meat.

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<sup>54</sup> Conversation with Agbor John on 18.03.2015 in the village of Obonyi 1 in the Takamanda area.

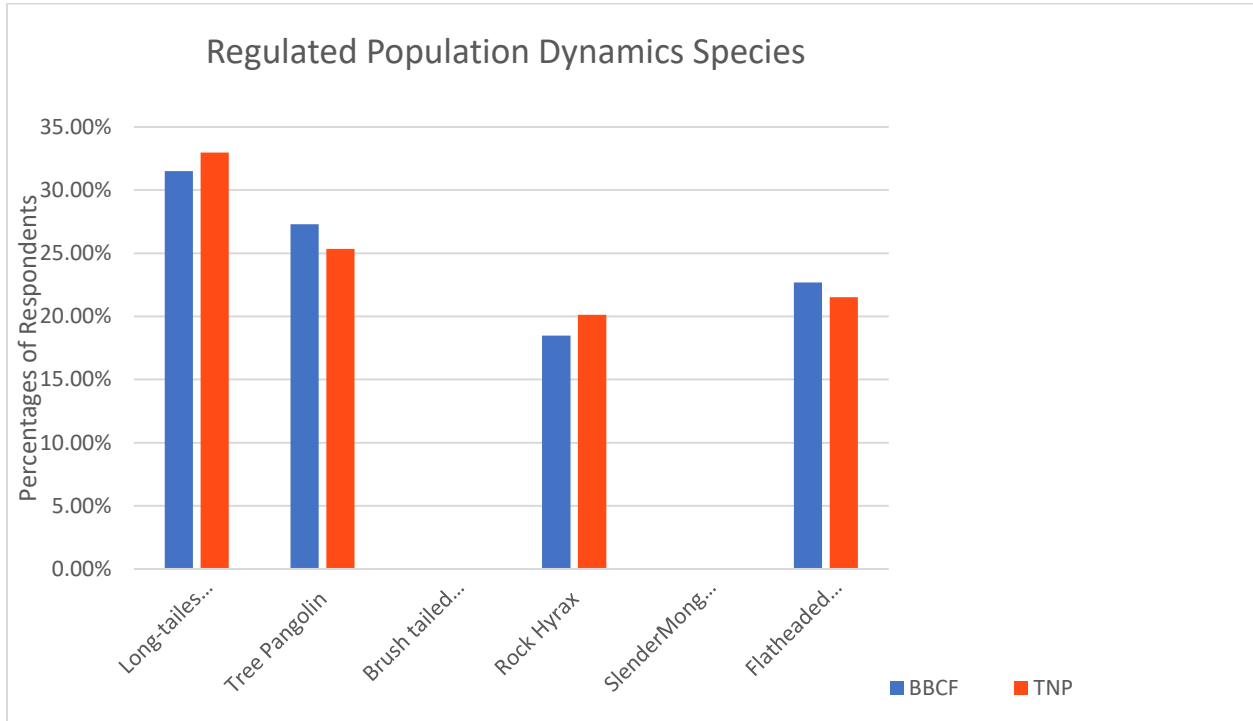
#### 6.5.4 Animals Regulated to Maintain the Population Dynamics

In accordance with order No. 0648/MINFOF of 18 December 2006, which contains the list of animals protected under Classes A, B and C, and the following Section 4 (1) of the 1994 Forestry Law, animal's species in Class C are partially protected so as to maintain the dynamics of their population. Wherever Class C species are found, they can only be hunted wisely for food by local communities. This does not apply in protected areas or national park, where hunting is strictly prohibited. The local people can only hunt these animals outside the park or in the community forest. These small-bodied animals are abundant in the forest, but when these creatures are hunted and traded continuously, they can also become extinct (Petrozzi et al. (2016). Figure 6.7 below shows that 75 (31.51%) long-tailed pangolins were harvested in the BBCF as compared to 95 (32.99%) in the TNP. This was most-harvest Class C animal species in either forest area, followed by the tree pangolin with 65 (27.31%) captured in the BBCF compared to 73 (25.35%) in the TNP. This animal class is easily harvested using local traps. The reason for the slight edge of these two animals harvested in the TNP is likely from the fact that the hunters bought most of these traps from neighbouring Nigeria, as discovered in an informal conversation with the hunters during the field study period. Actually, he testified that these traps were cheaper in Nigeria.<sup>55</sup> In the BBCF 54 (22.69%) flat headed cuisine had been harvested recently as compared to 62 (21.53%) in the TNP. Rock hyrax accounted for 44 (18.49%) animals harvested in the BBCF and 58 (20.14%) (in the TNP. Brush tailed porcupine and slender mongoose scored 0.00% in both areas. While the numbers of harvested animals were similar in both forests, the number was slightly higher in the TNP due to the fact that hunting is a cultural practice in the TNP, one on which local individuals depend for their livelihood. In fact, if the TNP were not a protected national park, it's likely that this number would be even greater. These hunters are professional who operate with the blessing of local residents, often using modern traps from Nigeria. In addition, all of these hunters are native to this region and usually pass their hunting legacy from one family member to another. In the BBCF, on the other hand, the hunters are both residents and non-residents, who hunt primarily for home consumption, and often in conjunction with other activities. Bobo et al. (2015) conclude that regulations should give priority to conservation of forest resources but must also take into

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<sup>55</sup> Conversation with Ndifon George on 18.03.2015 in the village of Obonyi 1 in the TNP area.

consideration the needs and interests of local people. If this isn't considered, local people will continue to violate the regulations in order to maintain their livelihood.



**Figure 6.7. Class C Animals Harvested within BBCF and TNP**

### 6.5.5 Methods of Hunting

To analyse the intensity of the class of animals that each hunter goes to the forest to hunt, it was necessary to know the methods used to harvest the animals. Thus, the following question was presented to the respondents: *which hunting method do you use?* The hunters were to choose from two choices: hunting with a gun or hunting with wire snare. The local people in the BBCF and TNP considered hunting as a cultural as well as economic activity. In fact, a proficient hunter may take much pride in providing bush meat to the community. During the fieldwork study, some hunters reported that Class A animals, or protected species, were targeted with the guns, since these large-bodied animals often exceed the size of wire traps, except the Preuss's monkey and red-eared monkey, which were killed using a wire snare. The weapons used in both the BBCF and TNP in hunting the small- and large-bodied animals were similar. Hunters commonly used short guns to kill Class A and B animal species. According to Canstantino (2016), due to the variation

of animal species within the forest, hunters have had the ability to choose which animals to hunt for decades. He later concludes that to promote sustainability of these animal species, local hunters must change their practices to coincide with regional, sustainable wildlife regulations. During an informal consultation in the field study period, some hunters <sup>56</sup>indicated that monkeys were commonly hunted using traps, and in some cases, monkeys were caught using guns and dogs in both study areas. Drills were a species that was commonly caught in a wire snare and using dogs. According to an informal conversation with a hunter, these species of animals invade farmlands and cause havoc to cultivated crops. Traps, guns and dogs were all involved in hunting non-primate mammals in both the study areas. Terrestrial animals were commonly caught using traps, mostly animals in the Class C species. Dogs were primarily used in hunting as a means of locating the animals, which the hunter would then carefully follow and kill using his gun. In an informal conversation with a hunter, <sup>57</sup>he explained that “A good case is the troops of drill, which dogs indicate their present in a particular location. I will chase them toward a tree and kill them.” This animal species does not have the ability to jump from one tree to another, so the hunter blasts the drills as they are grouped together. Most of the hunters favoured trapping, since it does not involve a lot of expertise and can be utilised without owning a gun. The method is also less tedious and less time consuming, since all the animals caught in both study areas were mostly ground dwelling animals.

### **6.5.6 Factors Influencing Hunting Activities**

Exploitation of bush meat by hunters has risen in recent years because of growing human population and undisturbed forest giving the hunter greater access to game. Hunting technology changes, scarcity of alternative protein sources, and the local preference of bush meat as food (Gill et al., 2012; Robinson et al., 1999) all place added pressure on the local animal populations. Now, an alarming one third of mammals are threatened and overexploited worldwide. The results of the present study show that more hunters in the TNP area, which was ironically created by Decree No. 2008/2751/PM of 21 November 2008 to protect the endangered cross-river gorilla and other

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<sup>56</sup> Informal conversation with Tabi Charles and Agbor John in the community of Obonyi 1 on 18.03.2015 in the TNP area.

<sup>57</sup> Conversation with Njoku Eric in the village of Liwanda in the BBCF area on 21.04.2015.

threatened species, are more involved in this illegal art and conservation malpractice. This is primarily because of the immediate needs of the local people who live adjacent to the park. The growing population and the lack of alternative means of living combined with the fact that there is a growing bush meat market with neighboring Nigeria, all attract more bush meat poachers into the national park. Even though the BBCF is also involved in hunting, even sometimes the protected animal species in the protected areas of the community forest, the animal harvesting of the BBCF is slightly lower than that of the TNP. Maybe the reason for the lower impact of animal harvesting in the BBCF stems from the fact that they are in a pre-urban area and the hunters may be diverting their attentions to different activities that can also contribute for their livelihood. Hunting has a long history in the TNP area, before the forest was created in 1934 to conserve trees for later logging. This forest became a national park in 2008 for conservation of biodiversity. Stricter laws are enforced in the national park but hunters still hunt in this area. Hunters here depend solely on hunting for their livelihood, unlike hunters in the BBCF that have alternative economic activities at their disposal. TNP hunters are usually in a typical traditional village setting and operate under the canopy of residents.

### **6.5.7 Sustainability of Hunting Activities**

A quantitative standard method of assessing the sustainability of animals harvested in both study areas is necessary to build a hunting model or method that can identify the total sustainable population of animals that can tolerate harvesting without causing harm to biodiversity or ecosystem. Weinbaum et al. (2012) found out that unsustainable wildlife harvesting is a major threat to global conservation and biodiversity and to the millions of people around the world whose livelihoods depend solely on wildlife for income and food. They further analyse that past studies have called attention to the fact that the common methods used to evaluate wildlife sustainability and hunting generally perform negatively, yet these methods are still used today. They later conclude that there are doubts and a lack of uniformity within sustainability measurements. Given the urgent need to conserve both food security and wildlife for rural people around the world, there must be vast improvements in sustainability indicators. The most common models indicate the maximum number of animals that can be harvested as bush meat within a certain period of time. However, dictating only the number of animals and not the number of animals within a certain species means that particular populations of species might be permitted to decline. Constructing a

better harvesting model will require extensive time and long-term demographic data. These types of data are usually difficult to obtain for large animals' species with longer life spans. However, in cases where data is available, it is usually unclear whether the estimated number of animals to be harvested could be accurately demarcated (Rao et al., 2010). Harvesting models are often influenced by the fact that each animal species is in isolation. When you look at the present study, both the BBCF and TNP are rich in animal biodiversity, but animals are distributed sparsely. A fair number of species are rarely encountered, and even less so now than in previous decades. In an informal conversation with a hunter, he said<sup>58</sup> “Before, some years ago, I can hunt bush meat behind my home and cook my food before heading out to carry out my daily activities, but now I travel miles and will not hear the voice of animals.” When you consider the number of animals from the study area, species such as drills appear to be sustainable at current levels, and with a higher number in the TNP, but this is extremely doubtful. Older hunters claim that in the past, drill troops numbered between 40 to 100 individuals moving together, but now if a hunter is lucky enough to see a troop it can only consist of three to five individual drills. This implies that the wild population of drills in both the BBCF and TNP has been drastically reduced and unsustainably managed. In this case, the few drills appearing in the harvest are the last remnants of the drill population and will soon be extinct from the BBCF and TNP. This is also true for African civets and red-eared monkeys. During the field study period, Njoku Eric a hunter also confirmed that leopards (*Pantherapardus*) had once been prominent in the mid-1970s and the giant pangolin (*Pangolin Manis gigantean*) had once been prominent in the early years of the 1980s, but have since been reduced to local extinction in the BBCF and TNP areas. This extinction is caused by high frequency of hunting, increased population pressure and lack of alternative means of living. Large-bodied animals like elephants and giant pangolins were once abundant and evenly distributed around the study areas, but have since been reduced (Tensen, 2016). These slow-moving animals are especially susceptible to hunters and their meat is preferred. If the current rate of hunting increases, it will cause severe and irreversible damage to the ecosystem (Lindsey et al., 2007). Unfortunately, it is almost certain to continue if there are no major commodities or efforts for social changes put into effect.

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<sup>58</sup> Conversation with Njoku Eric in the community of Liwanda in the BBCF area on 21.04.2015.



Animal species composition over time has changed in both BBCF and TNP. Large-bodied species like elephants, which protected and beneficial for the ecosystem, have changed in proportions. This decline in large-bodied species has an adverse effect on the population of smaller animals. The populations of small-bodied animals have been somewhat regulated to maintain their population dynamic, according to what hunters revealed in an informal consultation during the field study. The change in the animal harvest composition from large-bodied to smaller-bodied species shows that hunting of large-bodied animals is not sustainable. According to PSMNR-SWR (2014), TNP hunters are selling a large variety of carcasses in the bush meat markets of Nigeria. This indicate that the wild animal's population maybe moving towards total extinction, as seen in a similar study in northern Tanzania (Whitman et al., 2004). When examining the measures of hunting employed in this present study, hunting activities in both the BBCF and TNP are not sustainable, with the TNP being even more flagrant in the killing of protected animal species. Indication shows that all the animal species are under immediate threat, except Class C animal's species, which hunters claimed have increased. Even though protected animals' species are not supposed to be hunted by the hunters, more harvesting and potential extinction may occur in the near future if there is no alternative means of living provided for the local people. Presently, hunters do not perceive over-hunting as a problem. They believe God created animals as food for all humans and will still continue to provide. Nevertheless, some older hunters like Tabi Charles and Agbor John reported that there is a scarcity in recent years, but that it is not a problem because they claim there are other animal species in the forest to hunt.

## **6.6 Traditional Fishing Practices**

In addition to hunting practices, fishing has a strong influence on sustainability and conservation in both the BBCF and TNP. Fisheries in both the BBCF and TNP were located in the rivers, with BBCF fisher people sometimes fishing in the Atlantic Ocean, which runs through forest villages of Bimbria and Mabetta. Following the Law No.94/01 of 20 January 1994 Section 109, fishing is broken down into different categories: industrial fishing, semi-industrial fishing, traditional or small-scale fishing, sport fishing, fishing for scientific purposes, sea farming and fish farming. The fishing targeted in this study is traditional or small-scale fishing, which does not involve a fishing permit or licence. Men usually dominate fishing in these areas, with just a small number of women. The fishermen are usually involved in the small-scale gill-net fishing, targeting mostly catfish

during the low-water fishing period, which lasts from October to December and January to March. The target is to catch, smoke and store the fish for home use and occasionally to sell in small local markets to supplement family income. 19 BBCF fisher people answered the questionnaires, while eleven TNP fisher people participated. All of them consider fishing to be their official profession and fully participate in this economic activity. In the TNP area, the fisher people fish in the river that runs through the park and its surrounding areas, neighbouring Nigeria. In the TNP area, women dominate the fishing industry, focusing primarily on the water streams that permeate the forest area (Van Dijk, 1999; Oishi, 2005 cited in Brummett et al., 2010). In the BBCF, men dominate the fishing industry, focusing their efforts primarily in the river that runs through the community forest into the Atlantic Ocean. Both sets of fishing communities use canoes, drift nets, cast nets and gill nets. Via questionnaire, the field study was able to obtain firsthand information from the fisher people that depend on fishing for their livelihood. These questionnaires were administered on the banks of the river, after the fisher people had returned from their fishing. This provided the valuable opportunity to talk with the people about their personal observations and activities. The paragraphs below examine the manner in which fishing is practised and the impact and threat that it has on the environment.

### **6.6.1 Frequency and Seasonality of Fish Harvesting**

All the fisher people questioned in both study areas are 19 from the BBCF and eleven from the TNP had been fishing for more than five years. As mentioned earlier, fishing occurs during the dry season, when currents are slow and less variable than during the wet season. The frequency of fishing is higher in the BBCF: 60% as compared to 40% in the TNP during the period of October to December. Fishing is higher in the BBCF because people can sometimes fish in the ocean streams that run through the Bimbia and Mabeta villages within the forest. The high tourist rates in Limbe also lead to higher rates of fishing, as fish are caught, roasted and sold at local markets. Sometimes, the fisher people sell their catch right at the banks of the river. In an informal consultation with one fisherman, he<sup>59</sup> testified that fishing is usually profitable from October to December and January to March when the water level is low. During this time, the fisher people

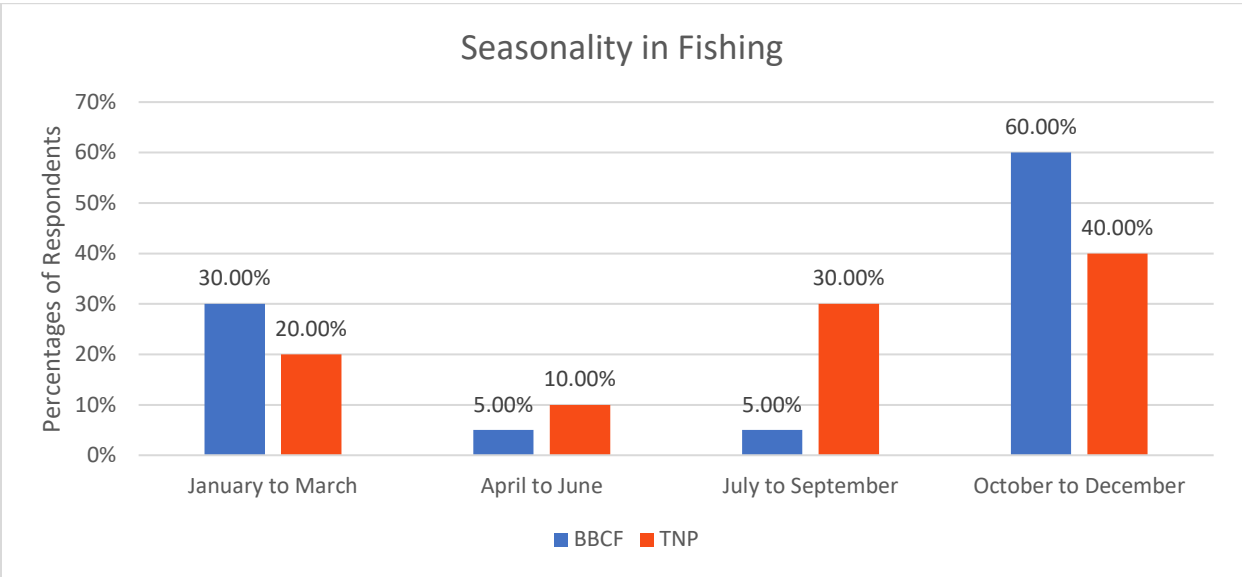
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<sup>59</sup> Conversation with Attah Joseph at down beach Limbe on 12.04.2015 in the BBCF area.

are using hooks and traps to harvest juvenile fish that hatched in large numbers during the rainy period.



**Plate 6.1. Fishermen Preparing their Nets for Fishing, BBCF**  
**Source: Author's Own Collection**



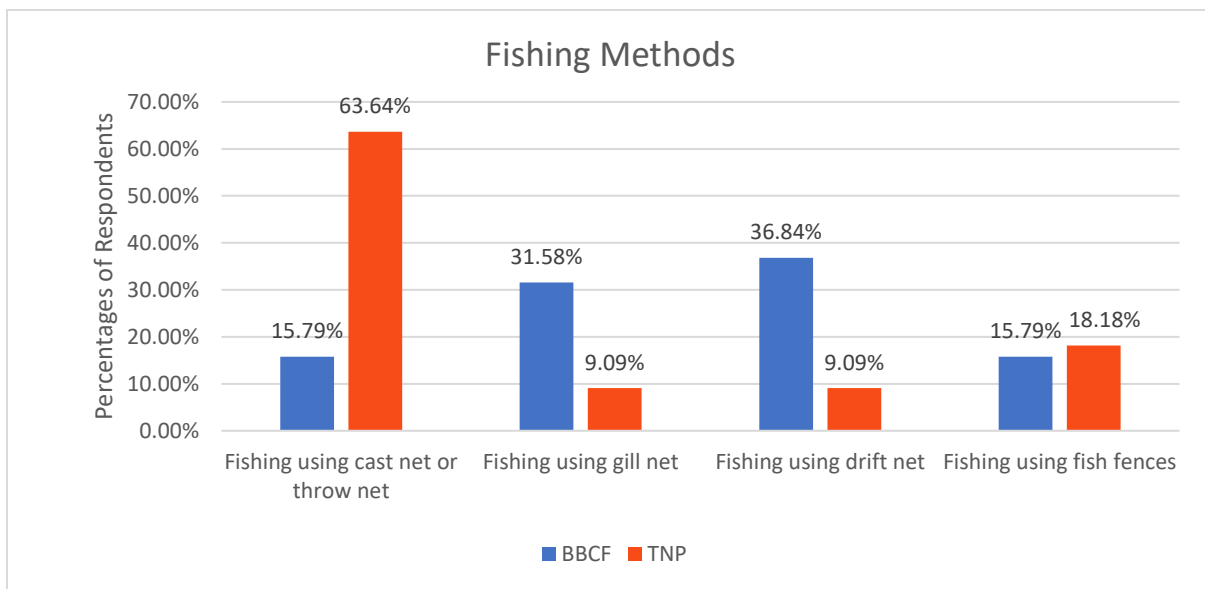
**Figure 6.8. Seasonality in Fishing within BBCF and TNP**

Figure 6.8 above shows that from the month of October to December, 60.00% of fishing in the BBCF and 40.00% of fishing in the TNP is carried out during this time. The number in BBCF is much higher because they are able to fish in the river and occasionally in the ocean as well as to sell to the local pre-urban population. Another reason to explain the high rate of fishing in the BBCF is that people from different parts of Cameroon and sometimes foreigners from Nigeria come to the area to fish during the dry season. The weather conditions make it easier to travel at this time. 30.00% of the BBCF fishing takes place between January and March, and 20.00% of that in the TNP. The higher number in the BBCF happens for the same reasons as mentioned above. In the period of July to September, there is a shift and only 5.00% of fishing occurs in the BBCF, but a solid 30.00% is accounted for in the TNP. The TNP is likely higher because most local marriages and festivals take place at this time. In the month of April to June, less than 12.00% in either region carry out fishing at this time.

**6.6.2 Fishing Methods used by Fisher Folks**

It’s imperative to know the methods used in fishing in order to determine the sustainability for future generations. The respondents were presented with the question: *what method of fishing do you use to catch fish?* They were to choose from the following methods, a) cast nets, b) gill nets c) drift nets and d) fish fences. These are the traditional methods and equipment favored by small-

scale farmers. Their livelihood depends on their knowledge of how best to use these tools, and if they are not utilised well, it can cause rapid depletion in the fish population, jeopardizing not only the environment but their future livelihoods as well. The method use in fishing will determine the best conservation and management practices of the forest eco-system and go a long way to sustain these resources for future generations. As noted in Figure 6.9 below, 15.79% (BBCF) and 63.64% (TNP) use cast net or throw net to catch fish. The TNP area scored high in this method because most of their catch is for home consumption. Cast nets, also called throw nets, are circular nets with weights distributed around the edge. They are thrown by hand and sink into the water. Fisher people can only assess the harvest when the nets have been pulled back. These small, weighted throw nets are better for catching the limited fish needed for home consumption, as opposed to the larger amount of fish needed for market sale, as is done in the BBCF. This method is generally considered safe for human and the environment, but if frequent harvesting occurs without control, it is not sustainable in the future. In an informal conversation with one fisherwoman, “Mary” she reported that this method is most preferred, so long as the water is free from obstruction.



**Figure 6.9. Fishing Methods within BBCF and TNP**

Gill nets scored 31.58% in the BBCF as compared to 9.09% in the TNP. The reason for this higher number in the BBCF may be due to their choice of fishing grounds in the river and occasionally ocean. Gill nets, made of three-inch mesh, can be harmful to the fish population. They can cause

blockages of blockage of upstream and impede breeding movement and migration, leading to capture of large numbers of juveniles. In an informal conversation with “Mary” fisherwoman, she testified that gill nets are popular because a large number can be captured at once. However, this method is not sustainable because it is mostly juvenile fish that have not yet reproduced that are captured, and this will pose a threat to future biodiversity. As for drift nets, 36.84% of fisher people in the BBCF and 9.09% in the TNP use this method. This fishing method should warrant concern depending on the amount of drift nets in the river or ocean. This method usually captures adult breeding fish, and if it is unchecked, it can effectively capture all the adults of a species and there will be no more fish to breed and carry on the species. This method is not sustainable for future fish harvesting. As for fish fences, the two areas scored almost the same: 15.79% and 18.18% in BBCF and TNP, respectively. This fishing method captures fish at all the various developmental stages during breeding migration. Accurate care must be taken and to determine number of the fish fences sites, or else there will be a negative impact on fish species in future. The BBCF area is more involved with unsustainable methods of fishing because the laws of the community forest are not as strict as those of the national park.

### **6.6.3 Sustainability of Fishing and Threats to the Environment**

Agricultural pesticides also threaten aquatic biodiversity. Farmers use agricultural pesticides in close proximity to water. This discharges sediment into the fishing water (Figure 6.4). The farmers are resigned to the prospect of using chemicals on their farmland. In an informal consultation, with a farmer, he<sup>60</sup> reported that they prepare chemicals and wash their spraying equipment on the banks of the river. This causes environmental harm to the fishes and humans. During the field study period, one fisherman claimed, “the catch of fish has declined over recent years, we have to fish for miles before coming home with some fish.” Slash and burn farming, deforestation and the rise of chemical levels in the water are all linked to the decline in fishery (Kamdem-Toham and Teugels 1999; Brummett et al. 2009). The fishermen in both study areas are expanding to new areas, which the forest department and village council have banned for fish exploitation. While this poses a threat to conservation, the use of chemicals: both from farmers and fishermen that occasionally

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<sup>60</sup> A conversation with Monda Tita in Dikolo village in the BBCF on 14.04.2015.

poison fish to capture them represents an even bigger danger. If these chemicals are used in the water, there is a clear-cut reason for the disappearance of some species of fish. Fungicides and insecticides used in the BBCF area, notably in palm oil and cocoa farming, are highly toxic and detrimental to aquatic life (Olu-Owolabi et al., 2013). During the field study period, local people from the BBCF provided testimonies to support the fact that areas surrounding cocoa plantations that had once been teeming with fish had declined over the last decade. As a community forest, there is not much control over the actions of the fisher people and farmers. This must be changed in order to protect the fishery resources for future generations.

## **6.7 Non-Timber Forest Products (NTFPs)**

Nearly all forest exploiters harvest some type of Non-Timber Forest Products (NTFPs). In order to determine a means of sustainable harvesting of NTFPs, it was important to determine the reasons behind the harvesting of these products.

### **6.7.1 Reasons for Harvesting Non-Timber Forest Products (NTFPs)**

The selection of NTFPs in the research is in line with the selection made by past researchers in the forest of Mokoko (Fuashi et al., 2011), located in the southwest region of Cameroon. In order to avoid confusion, similar NTFPs were chosen in both study areas. In the questionnaires and in discussion with respondents, the NTFPs were differentiated with common names in order to avoid confusion. Nine different types of NTFPs were selected: bush mango (*Irvingia gabonensis*), eru (*Gnetum africanum*), cattle sticks<sup>61</sup> (*Carpolobia alba*), chewing sticks<sup>62</sup> (*Randia massularia*), njansang (*Ricinodendron neudelotin*), bush pepper<sup>63</sup> (*Piper guincensis*), and bush onion<sup>64</sup> (*Afrostryax kamerunensis*), njabe oil<sup>65</sup> (*Baillonella*), rattan canes (*Laccosperma secundiflorum*) and fever bark (*Annickia*). The questions in this section were geared to assess everything from

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<sup>61</sup> Sticks used by older local people as a means of support for walking. It is harvested from the forest, dried and prepared for use.

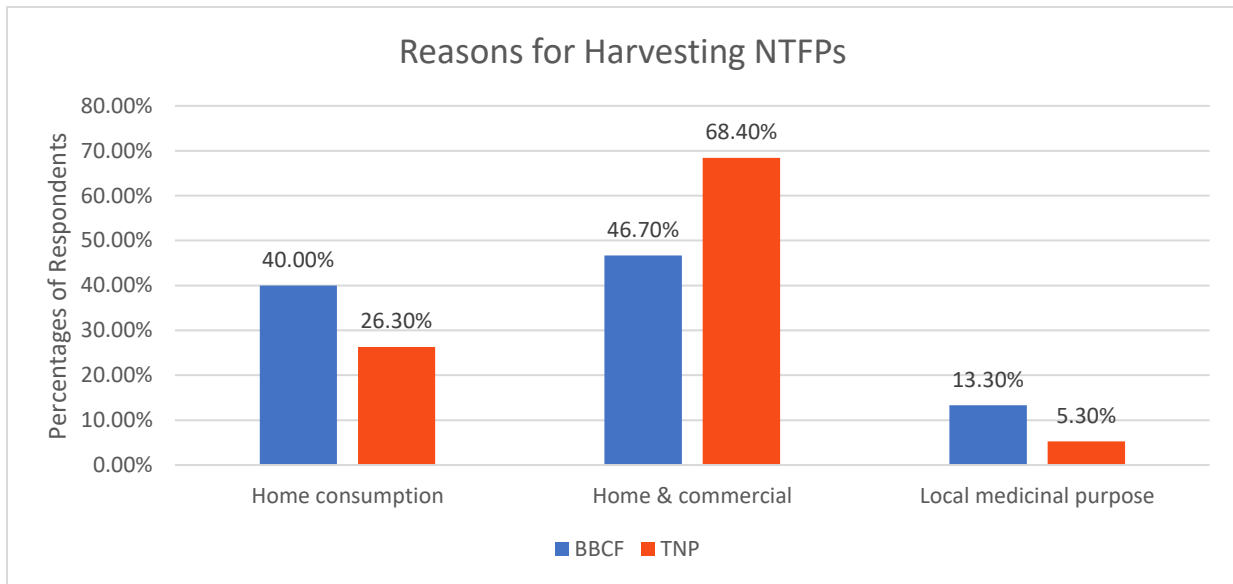
<sup>62</sup> Chewing sticks are tiny sticks used as a sort of tooth bush. They are harvested from the branches of a tree as small twigs. It is dried and prepared for use.

<sup>63</sup> Bush pepper is a local spice that is used to prepare food. Some is usually sold in local markets.

<sup>64</sup> Bush onion is also a local spice mostly used by the people from the southwest region to prepare food.

<sup>65</sup> Njabe oil is a local oil that is used on the skin by the local people.

harvesting the NTFPs to the difficulties involved in related legislation. The following question was presented to the respondents: *why do you harvest NTFPs?* They were to select from the following answers: home consumption, commercial purposes, local medicinal purposes and I do not know. Figure 6.10 below presents the results.



**Figure 6.10. Reasons for Harvesting NTFPs within BBCF and TNP**

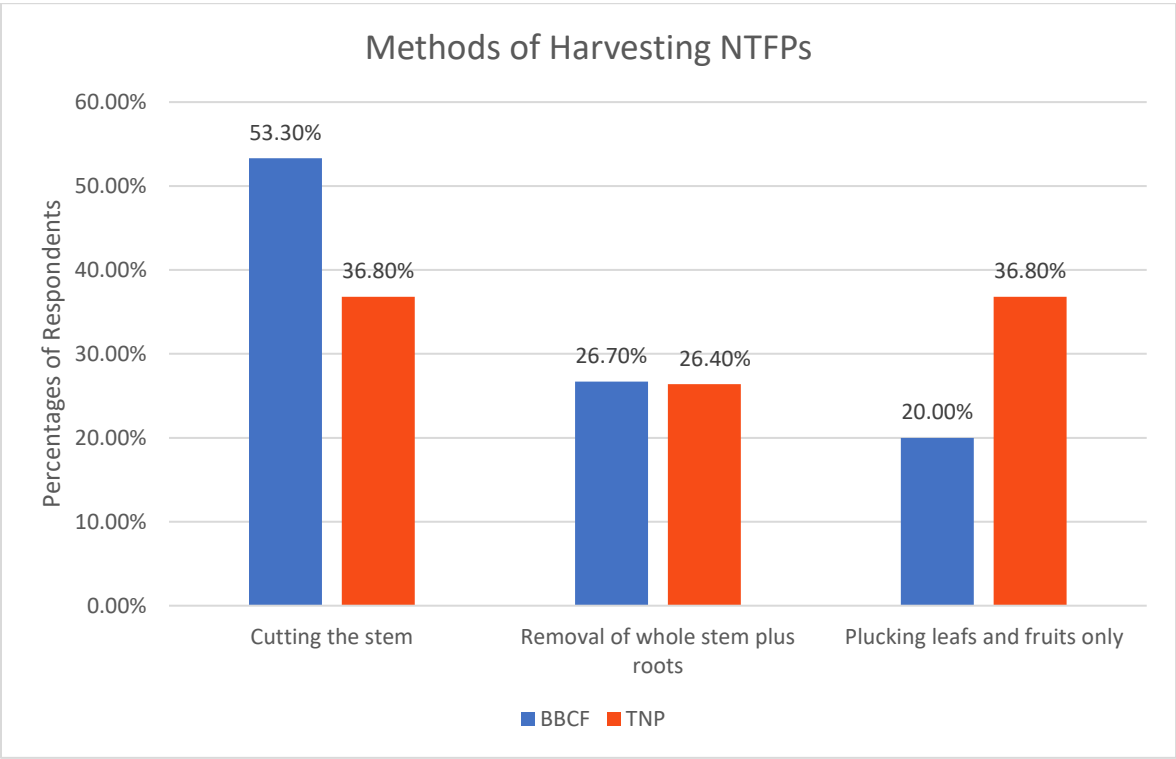
As noted in Figure 6.10, 40.00% and 26.30% in BBCF and TNP respectively harvest NTFPs for home consumption. The reason for the higher number in the BBCF is because they are considered a pre-urban area. BBCF residents engage in a multitude of other economic activities, primarily farming, and tend to need NTFPs more for home use than for commercial reasons. TNP dwellers don't have the same amount of options available to them for generating income, which explains why 68.40% admitted to harvesting NTFPs for home and commercial use, while only 46.70% did so in the BBCF. With the introduction of PSMNR-SWR, TNP harvesters have been trained in sustainable harvest practices of bush mango (*Irvingia spp*) in the area surrounding the park. A study carried out by Sunderland et al. (2003) in the Takamanda Forest found that the harvest and sale of NTFPs contributes significantly to household income in the Takamanda area. These findings are consistent with the present study. If the TNP community continues to harvest NTFPs for home and commercial purposes without regulation, this will not be sustainable for long. The biggest issue here is that the money gotten from selling NTFPs is insufficient to sustain local communities



and is usually difficult to document in forest legislation policy (Fuashi et al., 2011). In the BBCF area, 13.30% of respondents reported harvesting NTFPs for local medicinal purposes, while only 5.30% in the TNP reported doing so. The reason for the low level of medicinal harvesting in the TNP area is that individuals are required to have a specific permit in order to harvest plants for medicinal purposes and according to Article 56 of the 1994 Forestry Law, such permits are not granted within the national park.

### **6.7.2 Methods of Harvesting NTFPs**

It's extremely common to fell an entire tree in order to collect the NTFPs from it, particularly with bush onion, bush mango and eru. This method, while popular, is unsustainable and will eventually account for lower density and distribution of that NTFP in the forest. Removing the mature trees will prevent the population from regenerating, and in the long run, will require more trees to be planted. Due to the commonality of such harvesting methods, it was important to find out how else collectors went about harvesting NTFPs. Respondents were presented with the question: *which method do you use in harvesting NTFPs in your area?* They could then choose from the following answers: cutting the stem, removal of whole stem plus root, plucking leaves and fruits only. The results are presented in Figure 6.11 below.



**Figure 6.11. Methods of Harvesting NTFPs**

Figure 6.11 shows that 53.30% and 36.80% of exploiters in the BBCF and TNP respectively exploiters cut the stem of the products during harvesting. Removing the entire stem plus root was about equal in each community, being practiced by 26.70% of BBCF collectors and 26.40% of TNP collectors. In the BBCF, 20.00% admitted to plucking only leaves and fruits, while that number was slightly higher in the TNP at 36.80%. It makes sense that TNP collectors would be inclined to practice more sustainable collection, since there are stricter forest patrols and more game guards in the TNP area to check their harvesting methods. Any harvesting done within the TNP is illegal, so it is surprising that some collectors were still engaged in the malpractice of removing the whole stem, including roots, in harvesting the NTFPs. According to Fandohan et al. (2010), the reduction of juvenile trees in woodland and farmlands may have negative long-term effects and reduce viable population. In fact, in order to maintain sustainability, it has become necessary to introduce juvenile trees into farmland and forestland. Even so, in an informal

conversation, one respondent<sup>66</sup> stated: “I prefer to harvest adolescent trees, which are usually 4 to 6cm, because it makes my harvesting faster, and I am sure that I will return home with a good amount of the product.” The damage and loss of these juvenile trees threatens the future availability of NTFPs.

In an information consultation with the harvesters,<sup>67</sup> they acknowledged that they now have to travel further into the forest than they once did in search of mature stems of some NTFPs. For instance, one respondent Mercy Tabi testified that chewing sticks (*Randia massularia*) were once abundant outside of their homes but have now been so intensely harvested that the collectors have to go far away to find this product. This decreased chewing stick population has a negative impact on biodiversity (Fuashi et al., 2011). After knowing the method utilised by NTFPs harvesters, it was necessary to examine the forest department policies related to the control of NTFP harvesting.

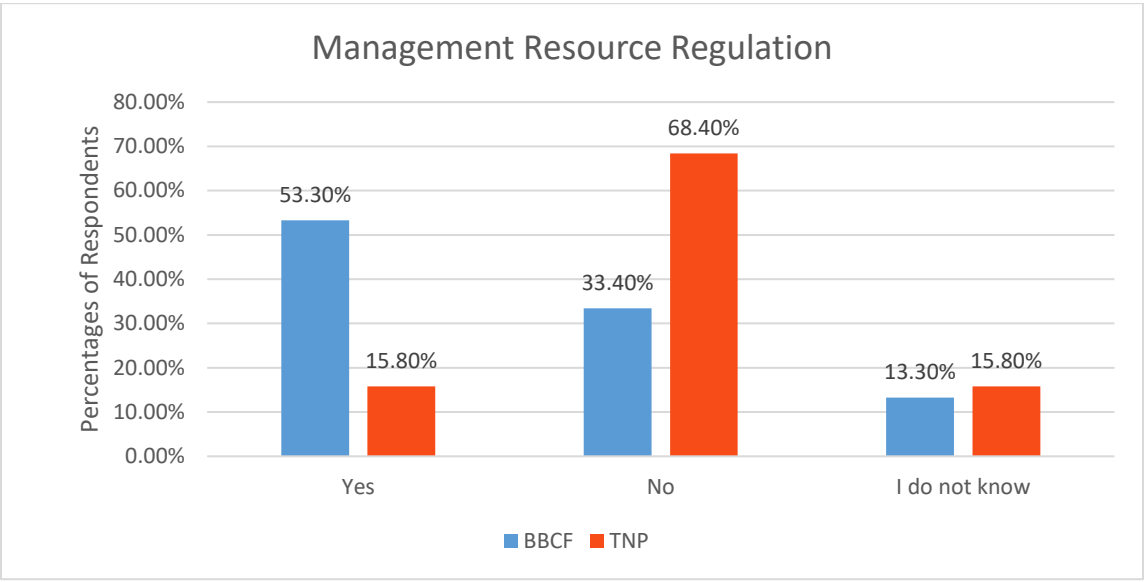
### **6.8 Regulation of Resource Management in Accordance with the 1994 Forest Law**

Following the creation of the Takamanda Forest Reserve in 1934, the community enjoyed user rights to harvest NTFPs within the forest for home consumption. There was some regulation in the harvesting of eru (*Gnetum africanum*) and bush mango (*Irvingia gabonesnsis*) (Ingram and Schure, 2010). Following the creation of the national park in 2008, the community lost the right to harvest NTFPs inside the national park.

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<sup>66</sup> Conversation with Ebai Nadine in Bonadikombo on 29.04.2015 in the BBCF area.

<sup>67</sup> Conversation with Ebai Nadine and Mercy Tabi on 29.04.2015 in the BBCF area.



**Figure 6.12. Resource Management Regulation**

In contrast, following the 1994 Forestry Law, the BBCF communities retained their users’ rights to harvest NTFPs for home consumption, so long as they do not encroach on the protected areas within the community forest. In either study area do the NTFPs exploiters abide by this regulation? Insofar as commercialisation of NTFPs is concerned, the 1994 Law on Forest and Wildlife No. 94/01 and the 1995 Decree No. 95/53 fixes the modalities of the application on the forest regime. The law states that any individual intending to commercialise NTFPs first needs to have a permit, which must be approved by MINFOF in Yaoundé. The procedure for obtaining such a permit is long and arduous. There is a fee of 150,000 CFA (228 Euro) to file a form necessary to obtain the permit. Permits cannot be obtained to harvest NTFPs inside the national park. The results in Figure 6.10 show that all exploiters in the TNP are violating the law because all NTFPs collection activities inside the national park are forbidden. If an institutional structure is put in place, it will help guard the harvesting of NTFPs. The respondents were presented with the question: *do you respect the 1994 Forest Law that regulates the management of the harvesting of NTFPs in your area?* They were to select from the following answers: Yes, No, and I do not know. As displayed in Figure 6.11, 53.30% in the BBCF and 15.80% in the TNP responded that yes, they respect the new regulations. The reason for the higher percentage in BBCF is likely because the harvesters exploit NTFPs mostly on their own farmland, which is not in violation of the law. TNP harvesters

are in a more difficult position when it comes to complying with the law, as the only forest adjacent to them is protected national park land. They will always be in violation of the law when harvesting NTFPs in their local area. 33.40% and 68.40% in the BBCF and TNP respectively responded that no, they do not respect the regulation in the harvesting of NTFPs. This is unsurprising in the TNP, as the inevitably wind up breaking the law to earn a living. A similar number of respondents around 13.30% and 15.80% in the BBCF and TNP respectively answered 'I do not know.' In an informal conversation one harvester, Mercy Tabi reported that the forest management is supposed to involve the harvesters in the development of laws, but this never happens. A study carried out by Belcher and Schreckenber (2007) found that the main reasons for the lack of community involvement in forest management decision is that most of the local communities do not know the real market value in monetary terms for most forest products. Thus, it's crucial that local people should be educated on this issue (Khadka, 2017). Such findings are consistent with the present study, for in examining the BBCF, which harvested the majority of its NTFPs for home consumption, it is extremely difficult to assess the market value of this activity. In a field study report, the harvesters expressed a general desire to enter the formal market in both the BBCF and TNP areas to increase their family income but lacked adequate credit facilities to go commercial. Another study carried out by Tieguhong et al. (2015) found out that traders who wanted to apply for a permit to commercialise NTFPs in Cameroon must pay around 2.5 to 3 million CFA (3,811 to 4,573 Euro). This process is time-consuming, taking between six to ten months. Few local harvesters can afford that amount of time, which is partly why they have no choice but to exploit the forest illegally. Once all this information was deduced, it was important to determine whether NTFP collection is or could be sustainable in the future.

## **6.9 Sustainability Issues Involved in Harvesting Non-Timber Forest Products**

As noted in Figure 6.11 above, the methods used by the BBCF and TNP harvesters in the exploitation of the NTFPs will determine its sustainability for future generations. Harvesting that is destructive, such as the cutting the whole stem, may pose a threat to individual trees, but not to the species or the population as a whole. As for the method of removing the whole stem including roots, which accounted for 53.30% in the BBCF and 36.80% in the TNP, this is clearly unsustainable and detrimental to conservation. In conservation terms, a product with naturally occurring low density and population distribution can be further exacerbated by over-exploitation.

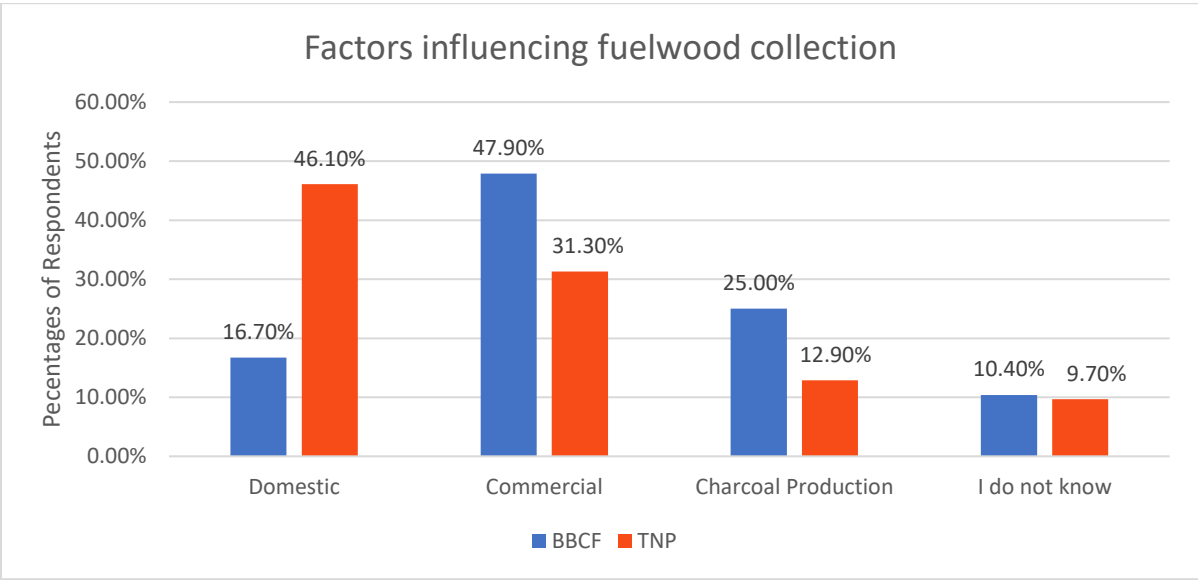
When it comes to species like chewing sticks (*Randia massulara*) and cattle sticks (*Carpolobia alba*), of which the mature individuals in a given area have disappeared, this may threaten the local population. In this case, the removal of the mature, reproductively viable individuals has a significant impact on the regeneration potential and may cause harm to the population. In fact, this will drastically increase the amount of time it takes for the species to replace itself. It is very important to note here that this practice is wholly unsustainable not only for the forest, but for the harvesters as well, because the product will be scarce in future. As mentioned earlier, one harvester in the TNP testified that she had to travel for miles before finding chewing sticks (*Randia Massularia*) and cattle sticks (*Carpolobia alba*) to harvest. This scarcity came about as the result of the previously discussed unsustainable harvesting practices of removing the whole stem and root of the plant. This study shows that both the BBCF (26.70%) and the TNP (26.40%) engage in this malpractice. Based on personal observation while visiting both study areas, the biggest issue is that the harvesters cut the stem of the forest product below the swollen root collar and sometimes remove the root entirely to harvest the product. The damage is severe and there is little or no sign that the tree can regenerate again for coppicing and re-shooting. As mentioned above, in the case of some products, like eru (*Gnetum africanum*), the harvester prefers to harvest the immature tree completely, leading to the death of many trees before they reach maturity. These plants will need long-term potential population recruitment through seed production in order to repopulate the damaged and destroyed juveniles. As for plucking only leaves and fruits from NTFP sources, only 20.00% (BBCF) and 36.80% (TNP) chose to engage in this practice. The removal of leaves and plucking of fruits is the only “non-destructive” method of NTFP collection. For instance, bush mango harvesting can be relatively sustainable in the long term as there is some assurance that the existing population is not going to decline within a given amount of time even despite constant harvesting of the fruits. Nevertheless, there must be checks and balance so that the harvesters do not abuse this method. The forest department must step in and provide the local people with environmental education; otherwise the forest guards will continue to arrest the local people. In this light they need to be more involvement in forest management policies, or they will continue to be more arrests.

## **6.10 Fuelwood Collection and Regulatory Framework**

In Cameroon, following the Forestry Law No. 94/01 of 20 January 1994, to carry out any forest exploitation, you must comply with the law. The regulatory framework for the fuelwood sector is enshrined in the Decree No. 95-531-PM of 23 August 1995, to determine the conditions of implementing forestry regulation. Some related laws regarding sustainable production and energy are embedded in the Environment Law No. 96/12 of 5 August 1996 Relating to Environmental Management. In Cameroon, under the 1994 Forestry Law, all trees are owned by the government, except those on private land belonging to individuals or those growing in community forests. The user rights for the sustainable use of trees are included in Section 37 (5, 6, and 7) of the 1994 Forest Law. To carry out fuelwood collection for commercial purposes, one must obtain a permit in accordance with Decree No. 95-531-PM of 23 August 1995, which determines the conditions of implementation of forestry regulation. Following the 1994 Forest Law in Section 37 (5, 6, 7), BBCF locals enjoy the user rights to collect fuelwood, except in protected areas, and only for home use. In addition, following Decree No.2008/2751/PM of 21 November 2008, the TNP community does not enjoy that user right to collect fuelwood from within the national park. They can collect fuelwood only from the area surrounding the park. In fact, any fuelwood collection that is taking place within the national park or protected areas within the community forest is illegal. With such serious regulations, it was important to understand what motivated the fuelwood collectors to violate these laws.

### **6.10.1 Factors Influencing Fuelwood Collection**

Fuelwood makes a crucial contribution to household wellbeing and occasionally income. Fuelwood collection mostly takes place during the agricultural slack period, after planting and before harvesting period.



**Figure 6.13. Factors Influencing Fuelwood Collection**

Respondents were presented with the following question: *which factors influence you to collect fuelwood?* They were able to choose among the following response: domestic use, commercial use, charcoal production and ‘I do not know.’ Figure 6.13 presents the results of this questionnaire. In the BBCF area 16.70% of respondents and 46.10% in the TNP area were involved in fuelwood collection for domestic use. The collectors who indicated that they collect fuelwood for domestic use mostly collected from agricultural forest clearings. This can either be done by the individual who owns the farmland or by a third party who encroaches on the farmland. The field work research revealed that one-third of domestic fuelwood collection originates from agricultural activities. As part of the shifting cultivation cycle, agricultural farms are reopened for bush fallows, and collectors have the opportunity to harvest the wood that is down. In this regard, farmers take advantage of clearing their farms as an opportunity to collect fuelwood. Since the BBCF farmers can shift from one farmland to another, they are in a good position to collect fuelwood. In contrast, the TNP community does not enjoy this right to shifting cultivation and the subsequent fuel collection.

As for collecting fuelwood for commercial use, 47.70% and 31.30% in the BBCF and TNP respectively were involved in this activity. Following Decree No.95-531-PM of 23 August 1995, all individuals who wish to harvest any forest product for commercial purposes must obtain a



permit. In the BBCF and TNP, nobody has a permit to collect commercial fuelwood. Therefore, any fuelwood collection and charcoal production carried out for commercial purposes is illegal. As mentioned above, the TNP collectors do not have the right to collect any fuelwood within the national park, even if they could obtain a permit of which it will not be granted. The fuelwood preferred for commercial purposes is not the same as that agriculturally linked wood that is commonly used in homes. In an informal conversation with one of the harvesters, he<sup>68</sup> explained that “if you want to collect fuelwood for domestic use, there is some on agriculture land. But for commercial use we prefer forest fuelwood, generally, because it is provided from more and larger trees that are good to sell”. The increase number of fuelwood collectors in the BBCF is likely due to the fact that they are in a pre-urban area with a greater demand for the energy that fuelwood can supply. In addition, the cocoa farmers in the BBCF use fuelwood to dry their cocoa in ovens, as the palm-oil produces use fuelwood to cook their nuts. These puts added pressure on the commercial fuelwood industry in the BBCF, which in turn puts a strain on conservation. The proximity of farms to the market road also increases demand for fuelwood in the BBCF, since the fuelwood is easily transported from the forest to the market, unlike in the TNP area, where the road network is difficult to access. 25.00%of respondents in the BBCF were involved in charcoal production, with only 12.90% in the TNP. The BBCF’s status as a pre-urban area can also contribute to this demand for charcoal, as more tourists come to the town of Limbe and small businessmen and women buy the charcoal to roast fish and other food items. This contrasts to the TNP community, which makes up a typical village setting with only the town of Mamfe, far away from the villages. The few collectors who are involved in charcoal production sell it to Nigeria, with a great deal of transportation difficulty. Charcoal production requires tough and dirty physical labor, but it can quickly supply cash. This led to its popular name “intervention rapide.”<sup>69</sup> Charcoal production is one of the options through which fuelwood collectors can generate cash income for their families.

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<sup>68</sup> Conversation with Moses Njoba in the BBCF on 13.05.2015 in Bonadikombo village.

<sup>69</sup> The quick harvesting of wood for charcoal production that leads to quick money.



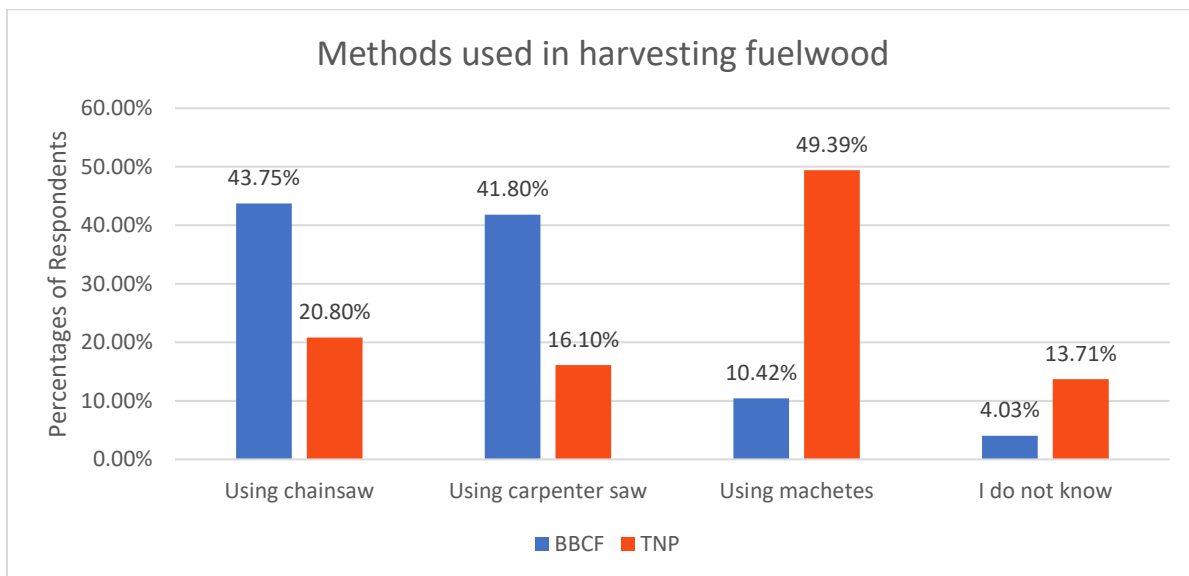
**Plate 6.2. Researcher Visiting a Charcoal Pit in BBCF**

**Source: Author's collection**

Fuelwood collection is also beneficial to those who carry out agricultural practices, for both sources remain the primary methods of subsistence living for local people. The respondents, who selected 'I do not know' option, account for less than 12% of respondents in both areas. A study carried out in the Democratic Republic of Congo by Schure et al., (2014) indicated that 82% of those who were involved in charcoal production and 65% of fuelwood collectors that were harvesting wood for both domestic and commercial purposes were able to meet their basic needs and invest in daily activities. These activities go a long way to address poverty. They further conclude that fuelwood commercialisation with an aim toward reducing poverty should be part of forest and energy policies. However, the present study acknowledges that while the fuelwood collection and charcoal production in the BBCF and TNP areas are economically beneficial for local communities, they are detrimental to conservation. There are other factors like migrants from neighbouring Nigeria, unemployment from growing population of the youth lack of alter means of living that contribute to forest degradation.

### 6.10.2 Different Methods Used in Harvesting Fuelwood

As revealed above, fuelwood was collected for various reasons: domestic, commercial and for charcoal production. Ironwood was collected for both domestic and commercial use. Commercial fuelwood collectors will log ironwood (Large number of woods that have a reputation of hardness) with a diameter greater than 40 cm because they can later use this wood for charcoal production. In a personal visit to the charcoal pit in the BBCF (Plate 6.2), the method used here involved chainsaws to cut down this wood. In contrast, those who collect fuelwood for domestic and subsistence use: for making furniture, fences, smoking cocoa, smoking fish, and cooking palm-nuts usually use machetes and carpenter saws to cut this wood. Respondents were presented with the following question: *Which method do you use in collecting wood?* They were to choose from among the following possible answers: chainsaw, machetes, carpenter saws or ‘I do not know. As noted in Figure 6.14 43.75% of BBCF respondents and 20.80% of TNP respondents reported using a chainsaw to collect fuelwood. As mentioned above, commercial fuelwood collectors generally use chainsaws to cut large trees of 40 cm in diameter, hence the need for chainsaws. The subsistence collectors of the TNP are able to collect sufficient fuelwood with machetes and other simpler tools.



**Figure 6.14. Different Methods Used in Harvesting Fuelwood**

A study carried out by Athuell et al. (2009) in the Douala-Edea Reserve in Cameroon found out that the majority of the fuelwood collectors (60%) harvest wood for commercial purposes as a principle source of income, while 85.83% collect fuelwood for domestic and subsistence use (Some collectors engage in both commercial and domestic harvesting, hence the reason for a total of greater than 100%). These findings hold true in the present study because most of the respondents in the BBCF collect fuelwood for commercial purposes, while those in the TNP community collect fuelwood primarily for domestic use. 41.80% of collectors in the BBCF and 16.10% in the TNP reported using carpenter saws in collection. The BBCF still scored higher in this domain because collectors who use carpenter saws fell down the whole tree and sometimes cut off the branches, a technique which is also useful in commercial collection. Based on personal observations from the BBCF charcoal pit, charcoal production happens through the trunk of the fallen tree, a method which is not good for conservation. The BBCF scored only 10.42% in use of machetes, while and 49.39% of TNP collectors admitted using this method. This makes sense, seeing that machetes are more practical for harvesting fuelwood for domestic use. In an informal conversation with a respondent in TNP area, he<sup>70</sup> explained, “they use machetes to cut off mostly branches because it was so difficult to cut off the whole tree with a machete”. This method can actually be good for conservation, as it allows the trunk and roots of the tree to remain relatively unharmed. Next, it was necessary to determine if the collection of fuelwoods was sustainable for future generations.

### **6.10.3 Sustainability and Perception of Changes in Fuelwood Collection**

Fuelwood in Cameroon is legally protected under Environmental law No. 96/12 of 5 August 1996. This has not prevented local residents from collecting it since the protective laws are weak and not well enforced. An increase in the human population pressure, which is resulting in unemployment, leads to uncontrolled harvesting of fuelwood posing a serious threat to these regions. In the BBCF, commercial collection of fuelwoods will pose a severe threat to the wellbeing of the forest. In order to determine just how aware respondents were of this threat, they were presented with the following question: *Do you think fuelwood collection has an impact on the environment?* They

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<sup>70</sup> Conversation with Enoh Martina in the village of Assam in the TNP area on 13.03.2015.

could then choose yes or no responses and put forth reasons to support their answers. The wider range of respondents (52%) said yes, if fuelwood is harvested at the current rate then it could threaten the future of the environment. In addition to that, 48% of the fuelwood harvesters responded that fuelwood collection had a negative effect on the environment. Of those respondents, 70% in BBCF area indicated that the rate of decline was serious and 30% in the TNP area reported that it was average. The fuelwood collectors associated the decline with selectiveness regarding fuelwood type, especially the ironwood and the gum tree, which are widely sold in the BBCF area.



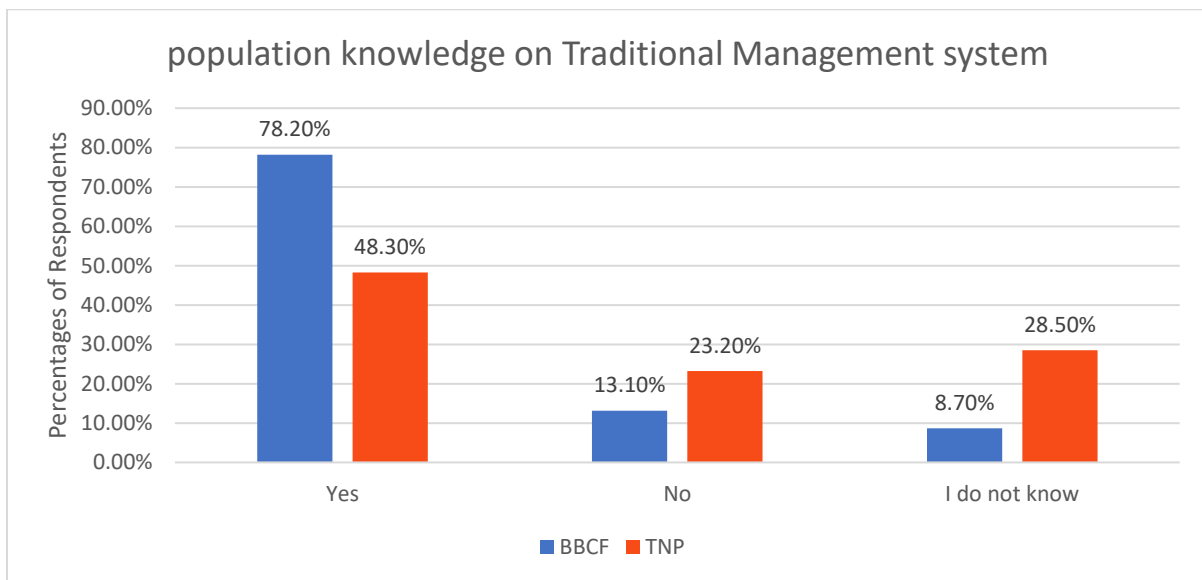
**Plate 6.3. (A) Smoking Fish Using Fuelwood and (B) Fuel Stockpile**

**Source: Atheull et al. (2009)**

In the BBCF, some fuelwood harvesters like Moses Njoba, expressed that “any family has the right anywhere and at any time to collect ironwood in any quantity, because the laws are weak and are not well enforced.” Others maintained the fact that the decline in the amount of fuelwood resources available is due to unemployment and growing population. As in the Democratic Republic of Congo, the effects of commercial fuelwood exploitation have been negative and considered one of the most serious environmental threats. Over 300,000 people are involved in commercial fuelwood collection in Kinshasa alone (Schure et al., 2014). Fuelwood collection in conjunction with the already extensive deforestation associated with cocoa and palm oil plantations is neither sustainable nor good for conservation. Nevertheless, fuelwood harvesting can be very important and provide flexible benefits for both household consumption and commercial income. One can therefore support the idea that the government should integrate forest and energy supply plans to enhance development while still maintaining the natural resource base.

### 6.11 Extent to the Population Knowledge on Traditional Forest Management System

Respondents were also asked to weigh in with their opinion regarding traditional forest conservation methods. Following Kellert et al. (2010), management of natural resources using traditional means have made some progress in forest conservation in recent years. The present research sought to assess if the respondents could identify some traditional means of conservation that might contribute to sustainable management of forest resources, and through which means they receive information on forest protection. They were presented with the following question: *Do you know any traditional methods of protecting and conserving the forest?* Then they could select from the following answers: Yes, No, and ‘I do not know’.



**Figure 6.15. Extent to the Population Knowledge on Traditional Management System**

The analysis of the results shows that 78.20% of respondents in BBCF said yes, there were local traditional means of conserving the forest as compared to 48.30% in the TNP. If you look at the yes response, the increase number of respondents knew that there are means and methods used in forest conservation in the BBCF as compared to 48.30% in the TNP. The lower response in the TNP may come from the fact that they are not given users’ right to enter into the forest and perform traditional ritual as the BBCF usually do. In the ‘No’ response, 13.10% in BBCF said they do not have traditional means of conservation as compared to 23.20% in TNP. For the “I do not know” response, 8.70% in BBCF as compared to 28.50% in the TNP. The increase number in TNP came

as result that, the people were so angry with the forest department, given the fact that all their cultural values are suppressed. It was very important to follow up with the respondents that answered affirmatively to there being traditional methods of conservation in the forest to find out the conservation methods to which they were referring, and whether or not these could be implemented on a wider scale.

## **6.12 Local Means of Conserving the Forest**

The local people were asked to identify the local means of protecting the forest resources. The indigenous people identified some of these methods, such as animal species and plants that are affiliated with their beliefs and taboos (e.g. Pythons, Gorillas and Chimpanzees).

### **6.12.1 Totems Beliefs and Taboos about Wildlife and Plants**

The above observations and findings demonstrate that local people respect totems and beliefs when it comes to sparing wildlife and natural resources from exploitation. Bobo et al. (2015) assert that these local beliefs are usually stronger with some ethnic groups and some families than others. In the Takamanda area, it is a taboo to kill certain animals like chimpanzees and gorillas because the local people regard their meat as that of a human being. In the BBCF area, the python is sometimes considered to be a godlike spirit. During fieldwork, one of the respondents<sup>71</sup> recalled that “during times of poor harvest in the village communities, some selected men from the chief’s family have to visit the python in the forest.” He further explained that “these men usually bring items like pigs, goats, hoes and machetes to make sacrifices to the forest and the problem is resolved.” Similarly, in Eastern Ghana, the people respect and worship Affesikan Tingaane, the god of rain. Anytime the indigenous people have problems in the village, they make sacrifices in the form of cows, pigs and goats, and the problem will be solved (Aniah et al., 2014). Another interviewee reported that the local python remains one of the most significant totems in the region. When there was tribal war within the local communities in the southwest region, the Python would follow the local people around and wipe out their footsteps so that their enemies could not track their position. This study is consistent with another study conducted by Deb and Malhotra (2001), which reported that the indigenous people of West Bengal worship the python and will never kill or eat the

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<sup>71</sup> Conversation with Joku Stephanie in Bimbria village on 24.04.2015 in the BBCF community.

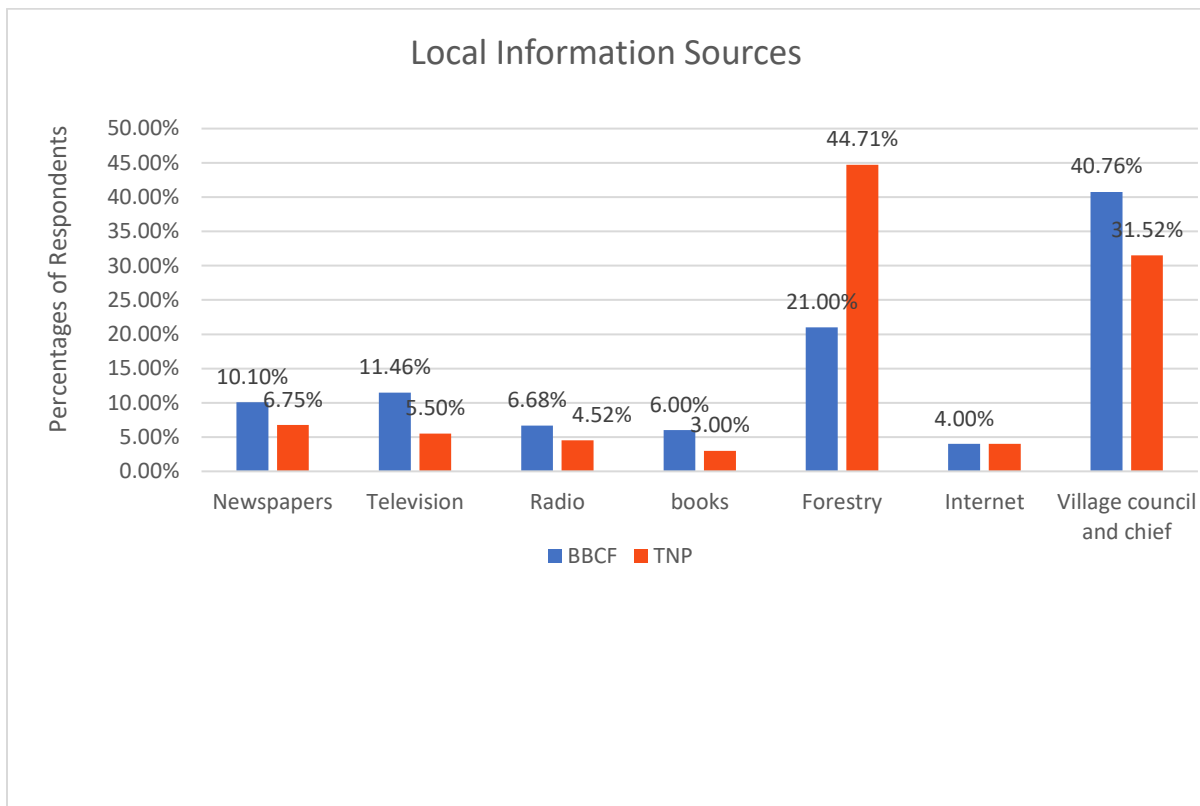
creature. These indigenous people have long believed that their community was saved from the war by the local python. The local people of the Takamanda and Biabim areas also point out other animals like the brush-tailed porcupines, leopards and monkeys, which are animals' totems too. It is a taboo to kill these animals. One hunter Tabi Charles reported that "if another hunter kills, for example, a Gorilla, you will later hear that somebody is dead in that village." Etidendem et al., (2011) reported that these taboos are strongly associated with Bechati and Fossimondi areas in the southwest region of Cameroon. According to the local community in Besali and Fossimodi areas, villagers use local animals like their totems. The indigenous people have long accepted that animal totems are a strong means of protecting forest resources. A study from Wright and Priston (2010) in the southwest asserts there are effective ways to punish indigenous people who hunt and kill animals like Gorillas and Chimpanzees. For instance, they could be asked to pay a fine, or the chief could ban them from the village. During the fieldwork research, one respondent declared that he "could not eat an animal which looked like a human being." Another respondent Agbor John of the TNP community voiced that "women of childbearing age or pregnant women are prohibited from eating Gorillas because it is believed that they will bear children looking like gorillas." Another respondent said that eating an animal that resembles a human being can bring ill luck to the whole family. These superstitions are actually good methods of forest protection because hunters will avoid these species.

Some trees (plants) within the forest as considered by the Bimbia Bonadikombo (BB) communities were traditionally valued. According to Wright and Priston, (2010) a villager cannot cut down certain trees in the forest without performing some traditional culture. These trees include *Baphia nitida* camwood. They are always considered by the BB community as chief of the forest. It is a taboo for them to harvest this tree because they think that some cultural spirit stayed inside those trees. The findings of the present study are similar with a report in Ethiopia (Orhoakpor), where the local community highly respect Okpaga and Ogriki trees. These trees are reserved by the community because they thought if you cut down this tree you may die. This tree had a very high value in the Orhoakpor culture. Under these trees; birds, animals and reptiles leave without any human interference (Rim-Rukeh et al., 2013). This cultural belief is good for sustainability and conservation of forest.



### 6.12.2 Sources of Information for Management and Conversation of Forest Resources

The village communities generally live in unity and harmony and respect their local authorities. Since part of the first study objective was to identify local and traditional means of conservation, it was deemed necessary to find out the information used to raise awareness of forest management and conservation. The respondents were presented with the following question: *please can you indicate where you get information on conservation and protection of the forest?* They could then select from the following: newspapers, television, radio, books, forestry staffs, library and village council and chief. Figure 6.16 below presents those results.



**Figure 6.16. Respondents on Local Information Sources**

In the BBCF, 40.76% of the respondents received information on conserving the forest from their local council and their chief as compared to 31.52% in the TNP. The number of respondents that received their information from forestry staffs amounted to 21.00% in the BBCF and 44.71% in the TNP. Nearly the same number of respondents are only 10.10% in BBCF and 6.75% in the TNP received their information from newspapers. As for television, this was a primary informer for

11.46% of the BBCF compared to 5.50% in the TNP. Less than 7% of the respondents in both areas reported receiving information from the radio or library. The largest amount of local people reported getting their conservation and environmental information directly from their chiefs and local councils. This information is valuable in promoting forest sustainability. If the chiefs' interests are taken into consideration and their cooperation can be gained, people might be more likely to adjust their forest-related activities for increased sustainability. Awung and Marchant (2016) support the fact that if information to protect the forest is disseminated via government and the forest department, the engagement of the people will be low. But if this happens at the level of the local authorities, people are more likely to put into practice what they hear from their leader, and thus, sustainability can be improved. In addition, the forest department should focus on developing the tourism sector and good road network to encourage trading within villages or encourage tourism. This will go long way to help local people and also take away their interest on forest resources.

### **6.13 Chapter Conclusion**

In conclusion, this chapter evaluates farming, hunting, fishing, NTFPs and fuelwood collection in order to determine the sustainability of the forest management systems in both the BBCF and TNP. In assessing farming-related forest exploitation, it became clear that BBCF farmers had more flexibility to move to new land because they enjoyed users' rights of the land. To an extent they carry out farming activities in more sustainable way. TNP farmers have no such rights, and in some cases, their farmlands have now been absorbed by the state. Local farmers use other methods like slash and burn without capacity training (building). Slash and burn is even practised within the TNP despite its protected status. Despite the presence of some organisations like PSMNR-SWR, GIZ, WWF, WCS and MINFOF which can all assist with good agricultural practices, many farmers will still not comply with the regulations and conservation efforts because they lack the financial resources to put what they have learned into practice. Following Section (78) of the 1994 Forest Law, animals living within the national reserve territory are legally protected. In addition, regardless of the fact that the government technically owns the TNP forest, the hunters still violate the law and harvest Class A and B animal species more than in the BBCF. The findings show that hunting is not sustainable in either of the study areas with TNP on the rise. This chapter also evaluates fishing practises in the BBCF and TNP. It became clear that fishing takes place in both

areas between December and March. The BBCF fishing activities were at a high of 60% during this period as compared to 40% in TNP. The chapter also reveals the different methods used by the fisher people, like hand nets, fishing hooks, fishing cast nets and fish fences. Based on these findings, fish fence fishing appears to have the most devastating environmental effects on fish population, breeding potential and aquatic ecosystems as a whole. The chapter also evaluates the extent of harvesting of NTFPs, which were selected from different types of species. The reasons behind harvesting NTFPs were assessed, as well as the legislation related to the collection of the forest products. The harvesting of NTFPs was more in BBCF than the TNP because the BBCF communities are not restricted like the TNP communities.

When it comes to fuelwood collection, the study found that the BBCF collectors harvest wood primarily for commercial and home purposes as opposed to the fuelwood collectors in TNP, who collect the wood for domestic use. Ironwood and gum tree were the most popularly collected types of fuelwood in both areas, due to its status as a highly valued energy wood and the fact that it is easy to cut down using a chainsaw or carpenter chainsaw. Ultimately, the chapter identifies traditional management systems for sustainable forest management. The respondents agreed with the fact that beliefs in totems and taboos about wildlife were good for forest conservation, with BBCF scoring 78.20% as compared to 48.30% in TNP. But finally the respondents said they were stronger amongst families. Finally, the chapter shared the fact that villagers primarily receive conservation and environmental information from their local councils and chiefs, and therefore suggests that this would be a valuable tactic for dissemination to pursue in the future.

## **Chapter 7 : Results and Discussion Part II**

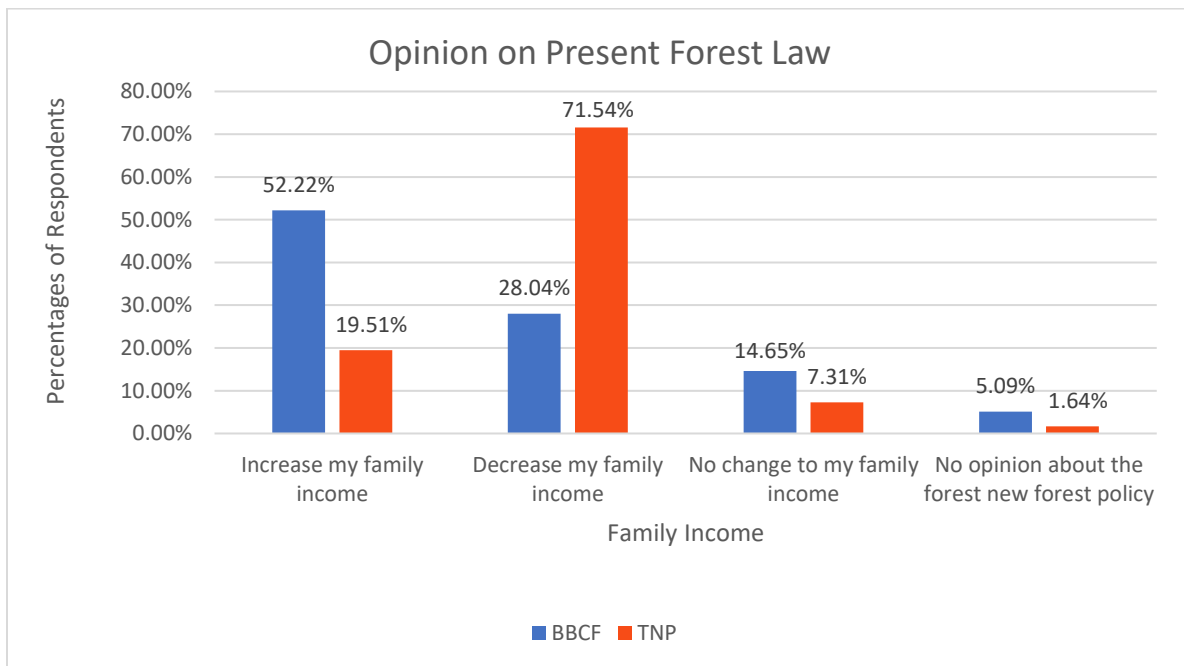
### **7.1 Chapter Introduction**

This chapter presents the second part of the research results. It consists of three sections, which focus mainly on evaluating the extent to which the government manages the forest. This is in line with the second study objective: evaluate the extent to which both forests are managed according to the various ministry-approved management plans. This chapter further assesses the respondents' level of compliance with certain fundamental forest policies and regulations that aim to govern conservation and sustainable management of forest resources. This is in line with the third study objective: evaluate the challenges faced in using the two forests management systems. The fourth part of this chapter examines the forest management systems applied in the BBCF and the TNP to see if they comply with the principles of the Convention on Biological Diversity (CBD), as described in the fourth study objective: assess forest management systems used in the BBCF and TNP in relation to national forest heritage and principles of the CBD. The chapter begins with the respondents' opinions of forest policies and general respect of forest law. The chapter shows how implementation of CBD in the nation's forest management policy will benefit the stakeholders and ends up with a chapter conclusion.

#### **7.1.1 Opinions on Present Forest Policy and Regulation in BBCF and TNP**

The Forest Law of 1994 and the present forest policies in Cameroon such as the Forest Legality Initiative are designed to govern the management of national forests in the country (Department for international Development, 2013). The policy aims at reaching five objectives, each of which is associated with a set of plans and strategies. The first objective is to protect forest heritage in Cameroon and safeguard the global environment. The second objective is to promote and improve local people's participation in the management and conservation of forest resources so that the forest can contribute to their livelihood. The third objective is to improve forest management resources to enhance their contribution to the Gross Domestic Product (GDP), while simultaneously preserving their productivity. The fourth objective is to improve regeneration of forest resources through planting trees. The final objective of this forest policy is to revitalize the forest sector and to set up an efficient institutional framework (Fathom, 2001; FLI, 2013).

The BBCF was created in 2002 following the Forestry Law No 94/01 of January 1994 so that the communities living adjacent should benefit from the forest management and the communities in return would promote biodiversity. In 2008, the TNP was created following the prime ministerial Decree No.2008/2751/PM of 21 November 2008 to assure conservation and protection of the forest. Following this action, the adjacent community would be able to benefit from the area surrounding the national park, but with no forest exploitation inside the national park. With these forest policies already in place, it was necessary to find out from the local people, if the present policies have helped to increase or decrease their family income. Respondents were presented with the question: *what is your opinion on the present forestry policy and its regulations in your area?* They could then choose from the following options: increased my family income, decreased my family income, no change to my family income and no opinion about the law. Figure 7.1 below shows the results.



**Figure 7.1. Respondents Opinion on Present Forest Law**

Figure 7.1 above shows that 52.22% of the respondents in the BBCF are in favor of the present forest policy compared to 19.51% in the TNP. This difference is understandable, as the local people in the BBCF area can exploit the forest with limited control mechanism but the TNP people must obey stricter rules and have more limited access to the forest as they are only able to exploit the

forest surrounding the national park. In the BBCF, 28.02% of respondents reported that the current regulations decreased their family income, while a whopping 71.54% of TNP respondents reported the same thing. This is clear cut evidence that the communities surrounding the TNP are dissatisfied with the present forest policy. In an informal conversation with the respondents<sup>72</sup>, she testified that the forest adjacent to their homes was inherited from their ancestors; they do not see any reason for the government to come and impose laws on them about how to manage their forest. One respondent further testified that the government should compensate them in return for taking away their forestland. Another respondent<sup>73</sup> reported that before this forest was converted into a National Park, he used to make an annual income of 300,000 CFA (about 457 Euro) from exploiting the forest but with the present forest law, his annual income has dropped significantly now that all the forest is national park. He concluded that he has no choice but to exploit the forest illegally. Less than 15% of respondents in both areas reported that the regulations had created no change on their income.

According to Shackleton et al. (2007), in a study carried in South Africa, the forest contributes to local poverty alleviation. They further analyze that a large portion of the local population makes use of the forest resources and these are vital components of local people's livelihood. However, when you look at the BBCF area, only 52.22% of the respondents reported that the present forest policy has increased their family income. In an informal conversation with a respondent Mercy Enoh in the BBCF, it was discovered that some of the local people complain that despite the fact that it is a community forest, there are still some High Conservation Value Forest (HCVF) areas, which they are prohibited from exploiting. According to Bimbia Bonadikombo Community Forest –Sample Management Plan (BBCF-SMP), (2002-2027), if any trespassers are found in these HCVF areas, they will be charged with fines of 10,000 FCA (15 Euro) or seizure of equipment.

### **7.1.2 Opinion on Respecting Present Forest Law in BBCF and TNP**

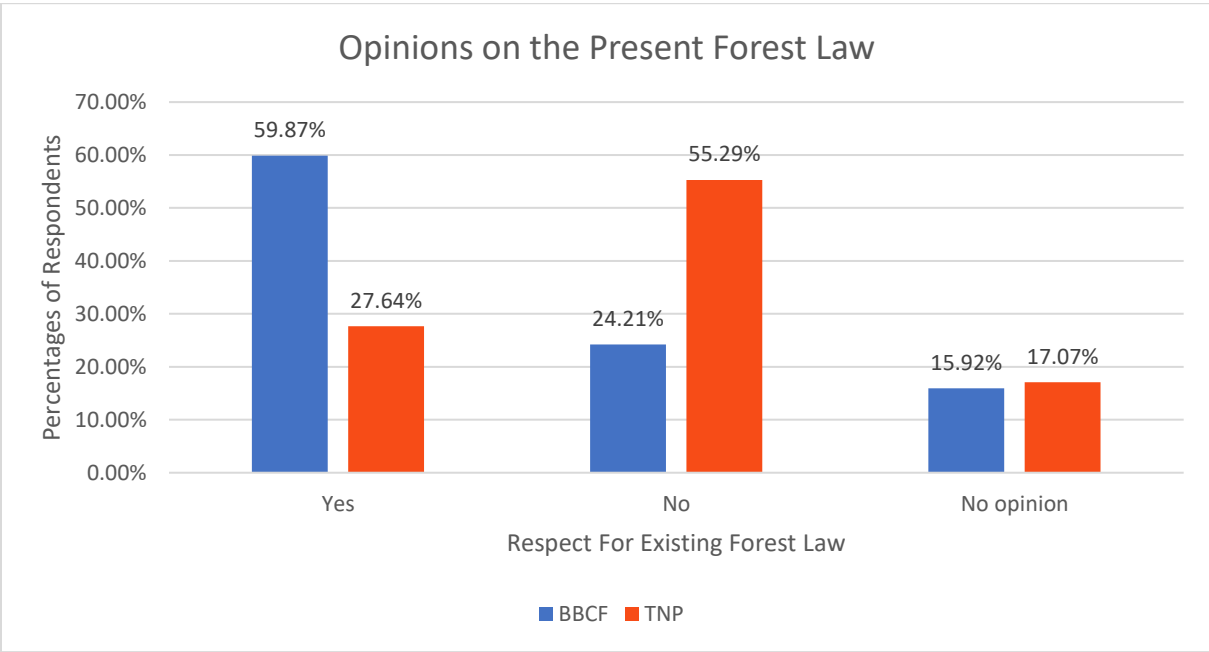
It was necessary to find out if the local people respect or are satisfied with the present forest laws in their area. They were presented with the question: *do you respect the present forest law in your*

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<sup>72</sup> Conversation with Margret Njoku in Kepani village in the TNP area on 30.03.2015.

<sup>73</sup> Conversation with Kennedy Tabi in Kepani village in the TNP area also on 30.03.2015.

*area?* They could then choose from three answers: yes, no and no opinion. The results are presented in Figure 7.2 below. According to Ndoye and Tieguhong (2010), the growing importance of resource exploitation threatens the potential of rural people to earn a living in the future, as well as diminishes the conservation of biodiversity. As mentioned earlier, the 1994 Law is the main legal national instrument that binds forest heritage conservation and sustainability of forest resources in Cameroon. This law nationalized all forest and natural resources. It is the very first law that clarifies an approach to the management of natural resources. This 1994 Forestry Law recognizes local communities' use of forest resources (Section 1 of the 1994 Law). The law elaborates that the local communities have the right to enjoy and harvest some forest products for their home consumption, except for protected species, which are clearly listed in Section 8 Paragraphs 1 to 26. In an effort to further clarify the present law and the rights of local people living around the national park, Article 26 of Decree No. 95-531.PM of 23 August 1995 confirmed that communities residing in the area surrounding the state forest (national parks) should maintain their traditional activities like secondary collection of forest products, which include bamboo, raffia, palms, fuelwood, foodstuff and cane. However, this law prohibits the local people residing inside the national park from exploiting the resources found there, as studied in the case of TNP. In addition, community forest residents like those in the BBCF are prohibited from exploiting forest resources in HCVPs (BBCF-SMP, 2002-2027).



**Figure 7.2. Opinion on the Present Forest Law**

As noted in Figure 7.2 above, 59.87% of the respondents in the BBCF respect the 1994 Forest Law as compared to 27.64% in the TNP. Community-based forest management widely enhances the ability of the local communities to know the value of the forest they inhabit, although most community forests have focused solely on NTFPs (Ezzine de Blas et al. (2009). According to Bowler et al. (2011), global financial organizations have invested billions of dollars in sustainable management of forests to protect and conserve forests and their ecosystems. They further analyze that there is a major mechanism contributing to community forest management that aims to reduce deforestation and degradation and to promote and improve local people’s welfare and alleviate poverty. The fact that 59.87% of forest users in the BBCF respect the idea of a community forest is clear evidence that the community forest model is actually contributing to their livelihood. Out of TNP respondents, 55.29% said that they do not respect the forest law compared to only 24.21% of respondents in the BBCF. Most of the respondents that reported disregarding the laws were villagers situated inside the national park. The villagers outside the park were not as dissatisfied as the ones inside the park’s borders. However, some respondents acknowledged that the reason for creating the national park in the first place was to protect biodiversity. These tended to be the most educated respondents. Other respondents said that their means of living are limited, and they



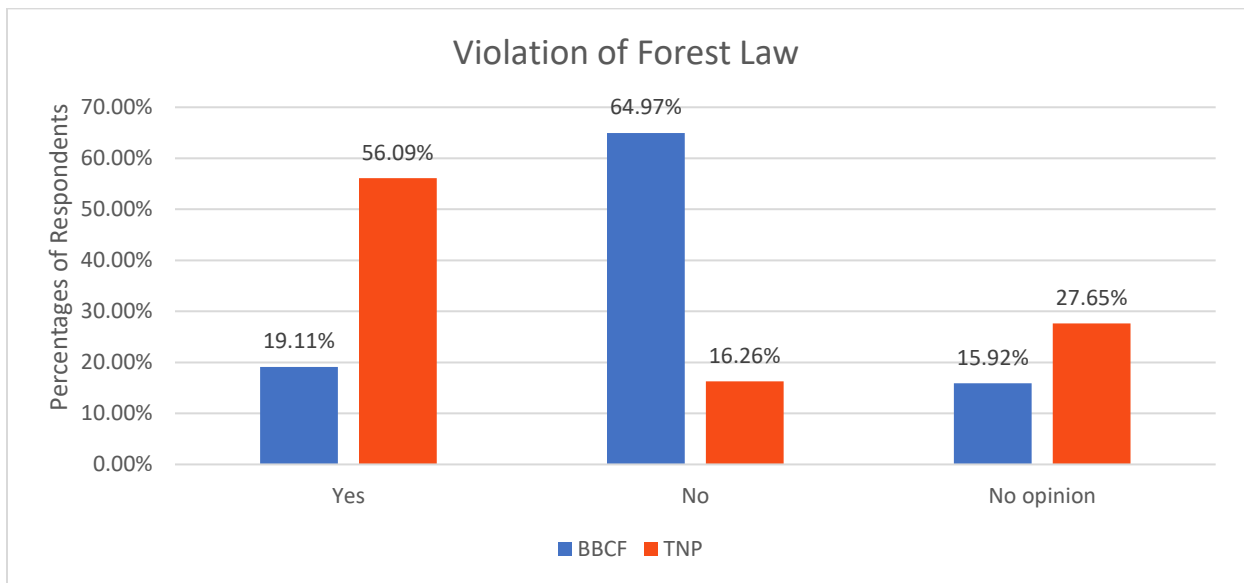
do not benefit at all from conservation, thus they have little incentive to obey the laws and regulations.

As for the respondents that answered, 'no opinion,' these accounted for 15.95% of those from the BBCF and 17.07% from the TNP. Part of the reason for this might be that some respondents were skeptical of the questionnaire and feared that their answers could be used against them. A study carried out in southwest region of Cameroon by Sharpe (2012) demonstrated a concern with "conserving" or "managing" the rainforest in the area leading to the creation of multiple conservation projects, including TNP. With the existence of these projects, the participation of communities in forest conservation has become the biggest problem in the southwest region. He concludes that the key to conservation of forest resources is for external agencies to consider the interests and values of those who hold legitimate rights to the forest resources i.e. the people that live there. These findings fall in line with the present study, especially since the local people of the TNP are not very satisfied with the present laws of conservation. It was necessary to follow up the responses and find out why the respondents had answered 'Yes' or 'No' in regard to their satisfaction with the law in their area. For some respondents, the answer was clear: the law prohibits them from hunting, fishing, farming and even collecting of fuelwood, which is the only source of energy they have. They also mentioned an instance of a hunter being jailed for killing a duiker, which seemed an overly harsh punishment for the crime, causing them to disrespect the law even further. They also aired grievances about how the government has neglected to provide roads, hospitals, education or other forms of infrastructure which might lead to development or even provide them with alternative means of living. Most of the respondents that said 'yes', implying they were satisfied with the law, came from the BBCF. They reported that at least they are allowed to harvest fuelwood, fish and even collect NTFPs and provide for their families. Yet even these respondents admitted to being dissatisfied with the HCVF areas, which forest guards monitor closely and prevent the locals from exploiting.

### **7.1.3 Violation of Forest Law in BBCF and TNP**

While many locals admitted to being unhappy with the state of the laws, it was important to make the distinction between dissatisfaction and outright violation and determine how many of the local people violated the government regulations. Respondents were presented with the question: *have you ever violated forest law in your area?* They could respond with yes, no, or no opinion. Figure

7.3 presents their responses below. Movonda (2009), analyses that stakeholders' lack of compliance with the law enforcement reveals the weaknesses of the forest administration. He later concludes that this has caused serious problems in the monitor and control of forest activities, ultimately leading to loss of income to the public budgets and a relatively negative impact on local forest communities. These possible effects made it important to know if the communities were choosing to violate the laws of their own accord.



**Figure 7.3. Violation of Forest Laws in the BBCF and TNP**

As noted in Figure 7.3, 19.11% of BBCF respondents said yes, they have violated the forest law as compared to 56.09% in the TNP. When respondents were asked the reason for the violation in an open-ended question, they responded by stating that the government is violating the rule of meeting the demands of the local population. For many people in the TNP and BBCF, violating the law is the only way they can provide for their families. Others explained that they disagree with the patrol methods of forest guards in the national park and HCVMs, which include flogging, arrest, and seizure of equipment and harassment of local people. These explanations align with a study carried out by Egute (2012) in the Korup National Park which found that forest exploiters within the national park strongly objected to game guards' anti-poaching methods, which included harassment, flogging, arrest, seizure of hunting equipment and burning of huts in the forest during patrols. 64.97% of BBCF respondents and 16.26% of TNP respondents say that they have not

violated the forest laws in their areas. The relatively high number of BBCF respondents aligns with the number of BBCF respondents that had expressed satisfaction with the existing laws. The relatively more relaxed laws of the community-based forest make their subsistence lifestyle completely legal. As previously mentioned, however, very few respondents in the TNP can afford to comply with the harsh laws of the national park area. Those respondents who chose 'no opinion' amounted to 15.92% of those from the BBCF and 27.65% from the TNP. It's possible that some of these respondents chose this answer out of skepticism of the study, and that might explain why the TNP percentage is so much higher than the BBCF percentage. Of course, it is impossible to determine this definitively. Since more than 50% of the respondents from the TNP admitted to violating the forest law, it is clear that illegal exploitation of forest resources is still going on in the TNP despite the patrol of the forest guards. This draws attention to the need for a change to the management strategy in this area and improvement of the regulations.

#### **7.1.4 Sanctions for Forest Law Violation in BBCF and TNP**

After some respondents admitted to violating the forest law, it was important to find out if that violation led to some sanction. The Forestry Law of 20 January 1994 upholds the condition that those found in violation of the law will be charged with sanctions and possible imprisonment. Chapter 3 Section (154) of the 1994 Forestry Law states that a fine of between 5,000 and 50,000 CFA (7 Euros to 76 Euro) or an imprisonment of up to ten days or both shall be imposed on anyone that commits the following offences:

- 1) Trespassing within a state forest
- 2) Hunting within any area where hunting is prohibited
- 3) Logging in a communal forest for the purpose of earning a profit

Section 155 stipulates that a fine of 50,000 to 200,000 CFA (76 Euro to 304 Euro) or imprisonment of 20 days or both shall be imposed on anyone that commits any of the following offences:

- 1) Hunting without a license or permit or exceeding the killing limit
- 2) Felling of protected trees without authorization.

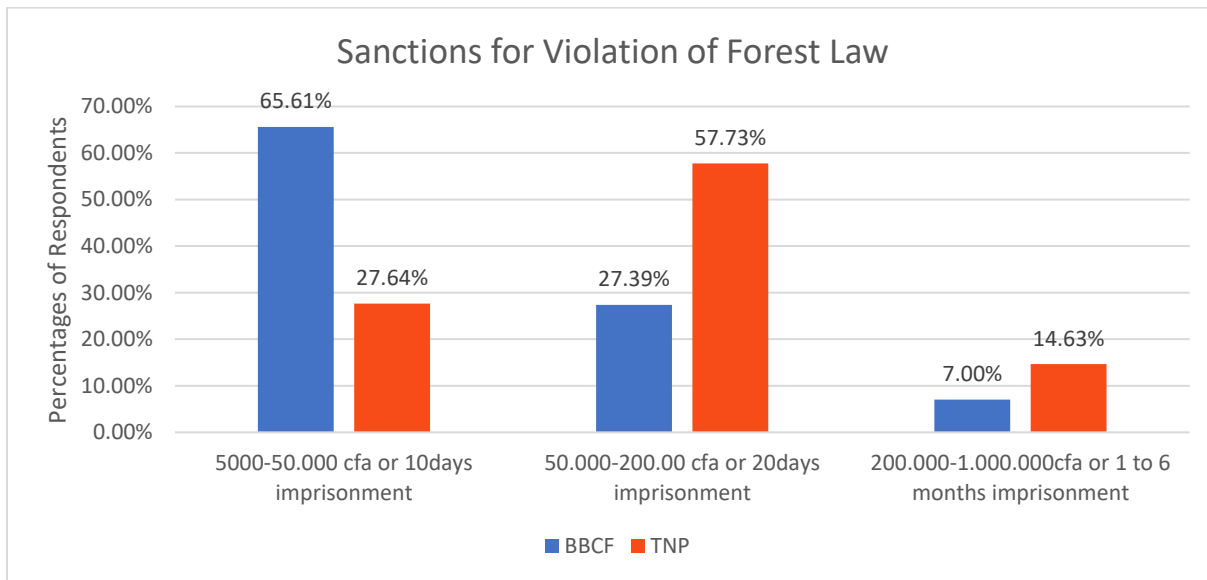
According to the Law of 20 January 1994, Articles 142 (2) and Section 156, violators can be subject to a fine of 200,000 to 1,000,000 CFA (304 Euro to 1,524 Euro) or imprisonment of 1 to 6 months or both if they are found to be committing any of the following offences:

- 1) Clearing or setting fire to a state forest or an afforested or fragile ecological zone.

2) The use of “forest belonging to an individual for anything other than forestry purposes”.

3) “Implementation of a development or exploitation inventory that does not conform to the norms established by forestry services.”

Article 3 Section 40 (3) finally stipulates that “the exploitation of any forest shall require that a prior survey be conducted on such a forest in accordance with the norms laid down by the ministers in charge of forests.” The local people were asked to indicate which of the sanctions, if any, had been enforced on them.



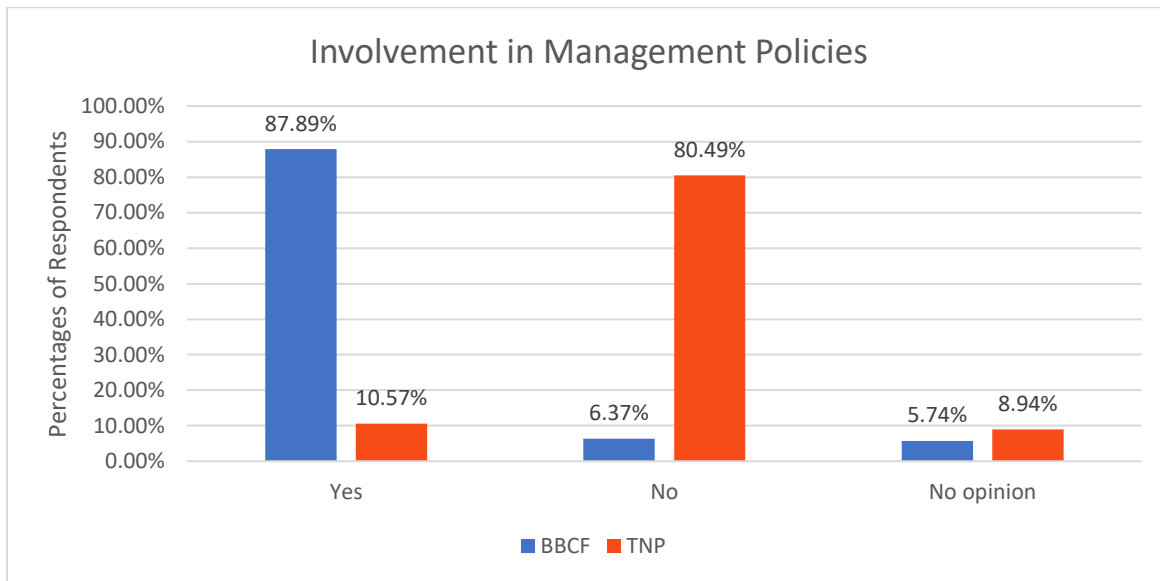
**Figure 7.4. Sanctions for Violation of Forest Law**

As shown in Figure 7.4 above, of the respondents that had been sanctioned for violating the law, 65.61% of BBCF respondents and 27.64% of TNP respondents had been required to pay between 5,000 and 50,000 CFA (76 Euro to 304 Euro) for trespassing within a state forest/HCVF areas within the community forest and for possession of a hunting equipment in an area where hunting is prohibited. Sanctions requiring fines of 50,000 CFA to 200,000 CFA (76 Euro to 304 Euro) and fines up to 1,000,000 CFA (1,524 Euro) were both higher in the TNP, amounting to 57.73% and 14.63% respectively, as compared to just 27.39% and 7.00% of BBCF respondents. In fact, during informal conversation with some of the respondents, some reported that they still owe the state money because they simply do not have enough to pay. Others stated that they prefer to serve the prison term rather than paying money they do not have. Exploitation of forest resources for

economic reasons is one of the most burning problems in tropical forest and must be mitigated (Oyono et al., 2005). Benefit sharing or allocation of forest gains is more likely to resonate with local people and the state governing the forest as an effective means of forest management, as opposed to completely restricting forest use, as in the current case of TNP. Oyono et al. (2005) analyze that when you involve local communities in benefit sharing, it will increase stakes for them in forest protection. They further analyze that unfair benefits distribution can spur retaliatory and intentional degradation of forest resources as well as conflicts among the forest governors and local people. Their finding is consistent with the present study because if the demands of the local people residing adjacent to the forest are not met, there will be more law violation.

### **7.1.5 Involvement in Forest Management Policies in BBCF and TNP**

It was therefore imperative to know if the forest department involves the local people in the creation and adoption of management policy. Respondents were presented with the question: *does the forest department in your area involve you in the adoption of management policies?* They could then choose from the typical three responses: yes, no and no opinion. The results are presented in Figure 7.5. In the BBCF, 87.89% reported involvement in forest management policies compared to just 10.57% in the TNP area. The higher number of local people involved in forest management in the BBCF area came from the fact that, as a community forest, they have a management board called Bimbia-Bonadikombo Natural Resource Management Council (BBNRMC) in downtown Limbe whose sole purpose is to represent the local people and their interests to the forest department. Conversely, 80.49% of TNP respondents and 6.37% of BBCF respondents reported no involvement in forest management policies.



**Figure 7.5. Involvement in Forest Management Policies**

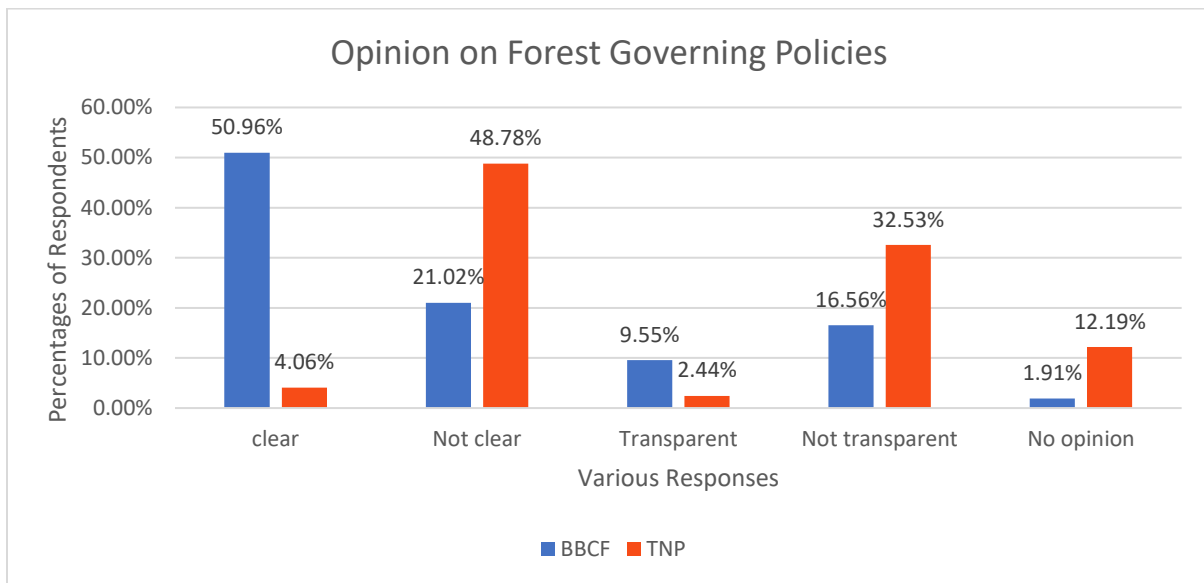
The respondents from both areas reported that the forest department made decisions without informing them. As for respondents that had no opinion on their involvement in forest management, this number was 5.74% from the BBCF and 8.94% from the TNP. There were follow-up questions for their various responses. They were asked to provide further reasons as to why they said yes or no about their involvement in forest management policies. Some of the respondents from BBCF gave reasons like even though they have board members to represent them during meetings, they are not transparent and consistent with the outcome of the various forest department meetings. In an informal conversation with one of the respondents, she<sup>74</sup> reported that the forest department usually promises funding for the board members to hire extension workers for training or capacity building, but the money never materialize. Another respondent Agbor John in the TNP testified that village chiefs and councils might be taking bribes from the forest department in lieu of actual participation in policy making. One of the main objectives of the 1994 Forestry Law was to improve the forest management policy framework so that local communities could be involved in forest management and the safeguarding of forest resources to conserve them for future generations (Cerutti et al., 2008). Unfortunately, this study

<sup>74</sup> Conversation with Julian Takang in down town Limbe at the BBCF management office on 26.04.2015.

revealed that there is no public participation, accountability or transparency in these practices. In a study carried out by Cheo (2010) in the Anglophone part of Cameroon, he concluded that local communities could not be effective in managing their own forest resources unless their powers are clearly established and recognized. Thus, this should be considered in future efforts to establish community cooperation with forest management.

### 7.1.6 Respondent Opinions on Governing Forest Policy

To carry out forest conservation effectively, national forest policy must translate into implemented forest strategy. When policies are poorly implemented or there is a lack of necessary logistics to carry out good governance, the policies are usually weak and can lead to failure. In order to find out respondents' position on this, they were asked: *how do you find the current forest governing policy?* Next, they could choose the following options: clear, not clear, transparent, not transparent, no opinion. Figure 7.6 presents the results.



**Figure 7.6. Opinion about Governing Policies**

In Figure 7.6 above, 50.96% of the respondents from the BBCF reported that forest governing policies were clear to them as opposed to just 4.06% of respondents from the TNP. 21.02% and 48.78% of respondents from the BBCF and TNP respectively reported that the governing policies were not clear to them. In an informal consultation with the respondents Julian Takang in BBCF who found the governing policies to be clear, they acknowledged the fact that the management

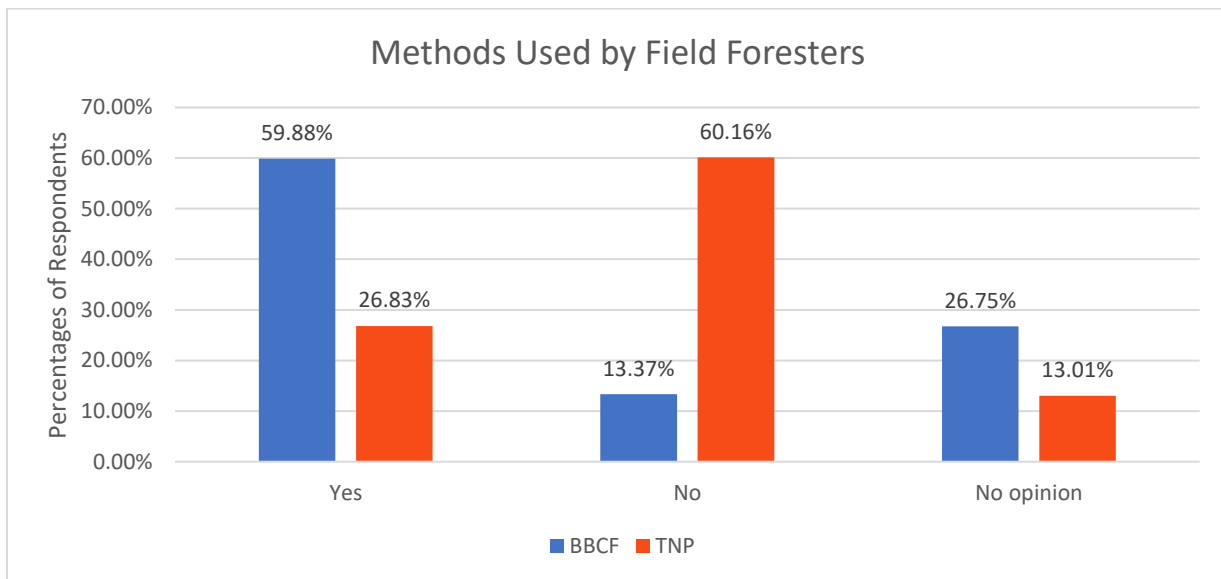
board always gives them yearly reports of what is happening with the forest policies, but complained that they cannot trust the report because the board members representing them have a history of mismanaging forest funds. Some respondents, Tabi Charles, Agbor John and Njoku Hans in the TNP reported that they do not know what is going on with the governing policies because all the decisions take place in the regional delegation office in Buea and the forestry experts inform the chiefs of the policies, rather than communicating with the people directly. Thus, the policies do not seem especially clear. When it comes to transparency of the forest governing policies, 9.55% and 2.44% in BBCF and TNP respectively reported finding the forest governing policies to be transparent to them. On the other hand, 16.56% from the BBCF and 32.52% from the TNP reported finding no transparency in forest governing policies. The number is a bit higher in the TNP as compared to the BBCF because the local communities in the TNP believe that the government deceived them and claimed their forest without any royalties, even in the form of roads, education, hospitals, community centers or even alternative means of living. As for those respondents that registered as ‘no opinion,’ these made up 1.91% of BBCF respondents and 12.19% from the TNP. From informal conversation, it became clear that some TNP respondents indicated ‘no opinion’ because they were simply fed up with the forest management policies.

Larson and Ribot (2007), ask the compelling question of whether governing forest policies can benefit the rural poor? They point out that forest governing policies in developing countries originated from European “scientific” policies that were practiced during the colonial period by foreign and local elites whose primary aim and interest was to make profit and maximize gains for themselves. In spite of some reforms in the environmental policies instigated by the western countries, local people still find themselves at a serious disadvantage. They further conclude that if forest management policies want to benefit local people they must make radical changes, rethinking forest policies to counter balance the widespread regressive policies and asymmetries. These findings are like those of the present study because if the national forest policies are not altered and implemented to benefit the rural communities, there will continue to be a conflict between the forest department and the communities living adjacent the forest.



### 7.1.7 Methods Used by Field Foresters to Protect Biodiversity

The role of the field foresters within the community forest is to protect and control the community, ensure that forest resources are exploited sustainably, and protect HCVF. Both areas have field foresters to make sure all of the above objectives are met (see 5.2 above) Respondents were presented with the following question: *are the methods used by field foresters to protect the forest good?* They could then choose from three answers: yes, no and no opinion. Figure 7.7 presents their results below.



**Figure 7.7. Methods Used by Field Foresters**

In Figure 7.7 above, 59.88% and 26.83% of respondents from the BBCF and TNP respectively, accept that the methods used by the field foresters are good. The substantially higher percentage from the BBCF is because the forest exploiters understand the management principles, thanks to the Bimbia-Bonadikombo Natural Resource Management Council (BBNRMC). In an informal conversation with some respondents, Julian Takang, Ndifor Grace and Mola Gordon they explained their satisfaction with the field forester methods by saying that the field foresters are doing their job in an appropriate manner that will not stop the local people to continue to carry out illegal forest exploitation. However, some of the respondents reported that the field foresters are not transparent. One respondent Agbor John pointed out that the field foresters usually take bribes from those who break the law and exploit the forest illegally. The TNP especially advanced reasons

for dissatisfaction with the field forester methods. According to these respondents, the field foresters arrest local people for exploiting the forest, sometimes going so far as to beat violators. Violators are then brought to court and prosecuted in accordance with the 1994 Forest Law. According to Sections 154, 155, and 156, they can be fined a sum of between 5,000 CFA and 300,000 CFA (7 Euros to 457 Euro). Some respondents reported that those who bribe the field foresters will not be charged with violating the law. This is clear evidence that the field foresters themselves are the ones promoting local people to exploit the forest in an unsustainable way, consequently ensuring biodiversity conservation terms will not be fulfilled. From the BBCF, 13.37% and from the TNP 60.16% reported finding the field harvesters' methods of protection to be bad. This again shows a huge disparity between the perceptions of forest managers in the community forest versus in the national park.

When it comes to no opinion on the protection methods, 26.75% from the BBCF and 13.01% from the TNP said they have no opinion about the field foresters' methods of protection. One of the biggest sources of conflict over field forester methods happens as a result of HCVMs in community forests. Traditional activities of hunting, harvesting, gathering and ritual practices are all prohibited in HCVMs, which in turn are controlled by field foresters (Mawoung, 2015). It is their duty to track down poachers and discourage local exploiters from carrying out unauthorized activities in HCVMs. As the field foresters make arrests and bring charges against locals in court, the local communities consider the installation of protected areas within the community forest and the creation of national parks to protect natural resources as an interference with their livelihood. Stakeholders will never respect the forest law if the local communities do not have what they want and, given the changing economic situation in the southwest region and Cameroon in general, the forest department will always need to respond to these changes.

## **7.2 Assessing the Challenges of Implementing Biodiversity Conservation Policies and Managing Forest Resources**

The third objective of this study set out to assess the challenges facing the two forest management systems of the BBCF and TNP when it comes to implementing conservation programs and promoting sustainable management of forest resources. This is achieved by reviewing data from the TNP management plan between 2010 and 2014, as well as a review of the Simple Management

Plan of the BBCF from 2002 to 2027, interviews with the forestry staff of the BBCF and TNP and analyses from the focus group discussion with forest guards.

### 7.2.1 Assessing the Challenges Faced by the TNP in Implementing Conservation

As part of the study, the TNP conservator, Mr. Walter Ashu Egbe,<sup>75</sup> who manages the national park was interviewed. He supervises the forest guards and is answerable to the forest department in the Buea regional office.



**Plate 7.1. Takamanda National Park Headquarters Located at Kajifu 1**

**Source: Author's own collection**

The forest guards control illegal exploitation in the national park. In accordance with the TNP management plan, the forest guards are the ones responsible for carrying out the control mechanism to see that the forest is exploited sustainably. The management plan of TNP also revealed that the national park presently has 14 official forest guards and some five untrained eco-guards (TNP Management Plan 2010-2014). Considering the size of this park of about 67,599 ha and the lack of training in the five eco-guards, there is no doubt that there is a huge problem in

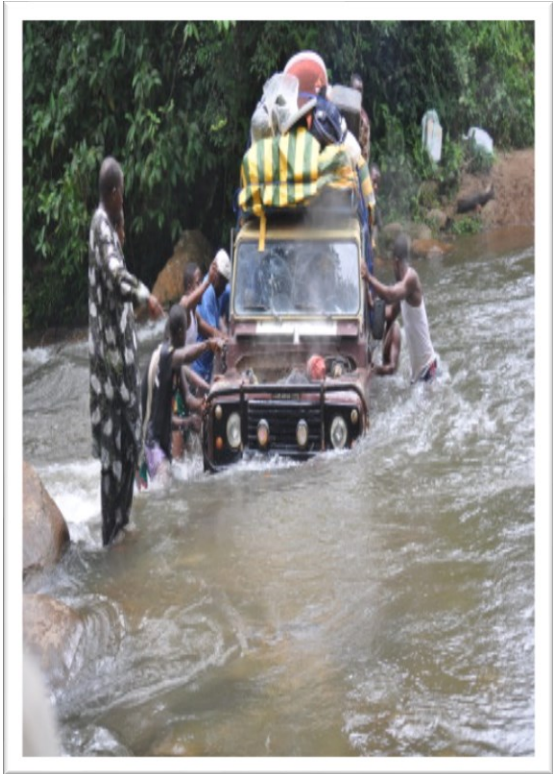
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<sup>75</sup> Interview with TNP conservator Mr. Walter Ashu Egbe in Kajifu 1 on 06.05.2015.

protecting this forest. According to the International Union of Conservation of Nature (IUCN), one forest guard is supposed to guard 5,000 ha of an open forest and one forest guard is supposed to guard 3,000 hectares of land in a closed forest (Egute,2012). The TNP, which is 67,599 ha of closed forest, is about seven trained forest guards short of this principle. This means that one TNP forest guard is responsible for about three times the surface area as stipulated by the IUCN. This provides clear evidence that there will be a lack of control and monitoring among the forest guards within the park. As revealed during the focus group discussion, the responsibility of forest guards is to carry out patrols within the national park, sometimes at the entrance of the park, where some illegal exploiters usually pass into the national park. Forest guards also check park encroachment and arrest illegal exploiters and those who violate park rules. The forest guards are to report any case of illegality to the court, where the violator will be prosecuted in accordance to the 1994 Law as stipulated in Article 3 of the 1994 Forestry Law Sections 154, 155, 156, 157, and 158.

The focus group discussion with the forest guards revealed that within a given month, they usually have at least four arrests, which they then hand over to the court in Mamfe. Because of the corrupt nature of the court system, they often do not know the outcome of those cases. The forest guards readily admit that the size of the park is too big for them to be everywhere at one time. They further explained during certain peak periods like from the dry season of September to March, there are too many arrests to be made. As shown in the original 1934 ordinance, the initial purpose of creating the Takamanda forest reserve was a British colonial man oeuvre to safeguard timber for future logging purposes. At the time, the local community still retained the right to collect NTFPs from the reserve. In 2008, the forest reserve became an official national park. The adjacent communities were given some user rights to collect NTFPs for subsistence use, including hunting of bush meat as a reserve, but this stipulation ran counter to the provisions of Decree No. 95-466-PM of 20 July 1995, which lay down the conditions of implementation of forestry regulation, which excludes user rights in national parks. Later on, the decree that created the TNP, Decree No. 2008/2751/PM of 21<sup>st</sup> November 2008, further granted user rights to adjacent communities to search alternative means of living to the local communities through a participatory process and adoption of a management plan, since they lost their right to harvest of NTFPs and bush meat (TNP Management Plan, 2010-2014).

To confirm the findings in the field research, an interview was held with Walter Ashu Egbe, the conservator of the TNP, to get better clarity. In the interview, he revealed that it is complex and lengthy to negotiate the zoning paths and boundaries of the national park, which was one of the national park objectives stated in the TNP Management Plan. Walter Ashu Egbe further testified that it is a big problem to meet management objectives of the national park in general. The conservator later pointed out that it is very common for poachers and law violators to use numerous paths within the park as access and sometimes escape routes, even into neighboring Nigeria. He further pointed out that the villages of Okpaniya, Kekpane and Obonyi, which are enclaves, have no official clarification. He later concludes that people usually pass where and when they want through the national park. This makes controlling the park activities even more difficult because you cannot predict who will carry out various actions and where they will take place. As revealed in a focus group discussion with the forest guards, there is a big problem presently going on within the park. The guards further explain that there is a popular settlement problem with the Mindi community in the north of the TNP. Grazing and human settlements in the park is uncontrolled. They also note that the bad road network is one of the biggest problems they have around the Takamanda areas especially during the rainy season, as illustrated in Plate 7.2. In the rainy season, vehicles will take more time to reach their destinations because the roads are so muddy. If there were a good road network, this could contribute to valorization because it would ease the movement of the forest guards and regular patrol within the park.



**Plate 7.2. Challenges in Accessing the Takamanda Area by Road**

**Source: Opiyo, 2015**

The forest guards revealed that only southern and south-eastern sections of the park are seasonally accessible by road. They further pointed out that the only solution was to trek through footpaths where it would be difficult to implement research patrols. The forest guards need equipment and protection for themselves during the patrols because interactions with forest poachers have been known to escalate to violence. They need equipment like guns, GPS, uniforms, trucks and even back up from the police department in Mamfe. The guards revealed that they do not even receive regular salaries. Sometimes it will take about three to four months before they are paid for their work. This is demoralizing and can make them reluctant to carry out effective patrols in the park. According to Bruner et al. (2004), a lack of funding in protected areas to conserve biodiversity will increase local people's stakes to exploit the forest illegally. They calculate that it would cost about 900 million to 1.5 billion Euros per year to manage all the areas effectively. They further analyze that it will cost about 3.5 billion Euros in the next decade exceeding present spending or reasonable support from the western countries that will increase protected area management systems in developing countries. In regard to feasibility, it's important to run tests to determine

the true cost of running a protected area locally and globally so that this can be considered before opening one. Bruner's findings and those for the present study were similar in that both sets of forest guards complained of irregularity in their salary payment and lack of equipment to form effective patrols of the national park.

### **7.2.2 Institutional and Legal Challenges Facing TNP Management**

Since the founding of the TNP, the TNP management plan has dictated that the park boundaries must be reviewed by a special ordinance. In order to avoid conflict and confusion, it's imperative that the local communities understand the boundaries. The lack of management activities over the last two decades, especially regular forest guard patrols, gave rise to the current local community behavior which will require significant input to overcome. Cernea and Schmidt-Soltau (2006) pose the question: can conflict be minimized amongst stakeholders in the protected areas? They go on to report evidence from twelve different cases within six countries, analyzed through a reconstruction model for involuntary resettlement. They ultimately conclude that due to the creation of national parks in the Congo basin for conservation reasons, 120 to 150,000 people have already been displaced and will continue to be displaced if this approach continues despite its deleterious outcome. They argue that creation of national parks has displaced many local people without providing them the means to resettle. Their findings are consistent with the present study because the TNP has settlement issues with the local community and the undefined park boundaries. As pointed out by the conservator, Mr. Walter Ashu Egbe that the enclave villages inside the national park like Obonyi 1 and 111, Kekpane and Okpaniya need to be resettled, as does the northern village of Mindi. Egbe also reported that the TNP service has already taken the Mindi community to court and found them guilty of violating the 1994 Law, thus there is added pressure to resettle the community quickly.

As revealed in the TNP quarterly report (PSMNR-SWR, 2014), there is no sufficient sensitization of the people in and around the park on the laws governing natural resources, especially forest and wildlife resources. This constitutes a major barrier to the involvement of local communities in the management of the national park. It further reveals that despite recent participatory and sensitization approaches aimed at involving local communities in park management, much work still needs to be done. The report finally concludes that there is a lack of respect for traditional chiefs, councils, and uncontrolled use of traditional sanction among the young people of the

villages. The Makwo youths constitute a serious hindrance to the implementation of park measures because they do not respect the traditional authorities who help enforce the 1994 Forestry Law.

### **7.2.3 Assessing Challenges faced by BBCF in Conserving and Managing Forest Resources**

Mr. Arrey Mbongaya Ivo,<sup>76</sup> the forest manager of BBCF revealed that, Bimbia-Bonadikombo Natural Resource Management Council (BBNRMC) is responsible for fighting illegal exploitation of forest resources. This management council has different unions such as the famers' union, charcoal burners' union, hunters' union, NTFPs collectors' union, fishermen's union and the small-scale timber collectors' union, which are all under the larger umbrella of the BBNRMC. As revealed in a monthly report document from the BBNRMC in Limbe, each union usually elects its own members to represent them at the board meetings to make sure that the local people exploit the forest in a sustainable manner to protect and conserve biodiversity. Article 3 Section (41) of the 1994 Forestry Law states:

“Any natural person or corporate body wishing to carry out forest exploitation activities shall be granted approval under the conditions fixed by the decree that forest exploitation rights may be granted only to natural persons resident in Cameroon. Or to companies whose registered offices are in Cameroon and whose shareholders are known to the forestry services”.

The management council is responsible for employing forest guards to protect HCVPs and to ensure that the forest is sustainably managed to promote biodiversity. As revealed in the simple management plan of the BBCF (2002-2027), the forest is divided into nine compartments for management reasons. Four of these compartments: Dikolo Peninsular, Likomba Lambenge, Likomba lelu and Bimbia were created to ensure environmental education and ecotourism, research, and to protect the historical site of the former slave market. In a personal observation from visiting the forest with some field assistants, it became clear that local people still carry out illegal exploitation in these protected sites, as depicted in Plate 7.3 below. Ngalim and Simbo carried out their own study in the BBCF and reported that communities living in the vicinity of protected areas are forced to break the rules in order to survive. They further analyze that the BBCF

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<sup>76</sup> Conversation with Mr Arrey Mbongaya Ivo, the forest manager of the BBCF, on 28.04.2015.



is not an exception. They point the cultivation of palm within the community forest will influence the use of fuelwood, which is necessary to cook for palm oil production. They concluded that this activity is detrimental to protected areas. Both Ngalim and Simbo's study and the present study are consistent, as the local communities adjacent to the BBCF HCVPs still exploit the area for charcoal production (Plate 7.3).



**Plate 7.3. Researcher Visiting a Charcoal Pit in BBCF**

**Source: Author's own collection**

As revealed in the BBNRMC report, men have a larger share of the management power than women of about 78% of the board members are men. As pointed out in a focus group discussion with the board members, the few females who are members of the board demonstrated exceptional leadership to be there. During the group discussion, the question was asked: *why do local women not involve themselves more in the participation of the board?* The respondents gave the following explanation: "The men choose to represent them, and the women have withdrawn. Women are not supposed to be in a corporation." They further point out that according to local customs and traditions, a woman's place is in the kitchen, having children and being a housekeeper. Board members also make the excuse that the central organization is not big enough to accommodate new female members. They explain that if you allow everybody to be present in the central organization, it will become too big and confusing. Despite these opinions, some of the members seemed to lament the fact that culture and tradition has such an effect on women.

As reported earlier, the board members that represent the BBNRMC were the ones charged with employing forest guards to protect the HCVPs. As revealed in an interview with the manager Mr. Arrey Mbongaya Ivo, there are twelve forest guards to protect the forest; one guard representing each compartment, with one additional guard in each of the protected area, making two guards in each HVCF. He further points out that the BBNRMC was responsible for the payment of their salaries, and the money paid to them comes from the forest funds. According to the World Agroforestry Centre (WAC, 2015-2020), access to financing are one of the biggest challenges facing forest communities in Cameroon. They point out that good and viable sustainable enterprises around forest products and services will benefit forest communities. In this present study, an interview with the forest manager raised the problem of financial shortage. In the BBCF, funds are raised through commercial exploitation, for example from hunters, charcoal burners, fuelwood collectors and small-scale timber collectors. The manager pointed out that union groups raise some of the funds, but each union member is responsible for paying his or her own registration dues. Sometimes union members object to paying their dues because they complain of accountability at the management level. Eyebe et al. (2010) point out that most of the funds that support simple management plans come from international partners. They later conclude that in the absence of these funds, there will be an annulation and the process of transitioning will be hard for the community trying to manage their own forest. As pointed out during a focus group discussion with the forest guards, there are many illegal exploiters in the protected area. Even when arrests are made, violators often bribe the board members and the cases are closed with no further action. The guards revealed that these violators are mostly hunters, charcoal burners and fuelwood collectors found in the protected areas, and sometimes the hunted animals or sawmills are seized from these individuals.



**Plate 7.4. Bush Meat Seized from Hunters**

**Sources: Tworoski, 2010**

Mr. Arrey Mbongaya Ivo revealed in the interview that the BBCF received some funding from MINFOF, WWF, Mount Cameroon Forest Project (MCFP) and WCS, when they initiated the creation of the community forest. During that period, management was affordable and easy. The forest guards were paid regularly. Ivo pointed out that presently, there is no international funding and this is hindering proper control of the community forest, especially in the protected areas. He further pointed out that there is another challenge in that the forest guards will not carry out regular patrols in the protected area. He continued by explaining that due to irregularity in their salary payments, forest guards are sometimes likely to carry out illegal forest exploitation themselves while on patrol.

#### **7.2.4 Lack of Trust and Accountability in BBCF Forest Management**

In a focus group discussion with the BBNRMC, members reported that there was lack of trust among the board members, especially those in the accounting department. They pointed out that the general lack of trust was due to lack of transparency, minimal accountability and limited information sharing among the board members and local communities. They further revealed that

they do not trust the people who represent them. This will pose serious challenges to the management system. During the focus group discussion held with the union members, members admitted to losing trust in their leaders because money contributed to the common funds was misused with no accountability. The union members suggested that women should be more involved in the boards BBNRMC because women are somehow more accountable and transparent. In an informal discussion with one of the BBNRMC members, he<sup>77</sup> was prompted to say,

“It was only in the past two months that we decided to involve women in the board meetings because certain issues were not moving on well. The way men were handling money issues was not clear. Before, we trusted the men but later on realized that the way they handled money couldn’t account for the money they contributed into the common funds, and could not give us a proper statement of account on how these fund are used”.

Given this statement, it will be difficult to execute proper management of forest resources. According to Brown and Lassoie (2010), the purpose of global forest management decentralization is to enable local people to regain rights to their land by removing colonization and central government management of forest resources. They further analyze that for local communities to succeed, their forest must first be handed over to them to manage. To further increase their accountability and transparency, they must create their own good management policies among themselves. Similarly, the present study found that the BBNRMC members are concerned with the lack of transparency and accountability among the board members. In order for the BBCF communities to benefit from forest management, they need to select board members who are both traditional and trustworthy pillars of the Bimbia-Bonadikombo community.

#### **7.2.5 Last Vestiges of Forest Gods (Cultural Spirit) as Challenge to Conservation**

As revealed in the Bimbia archives, the forest has served as an area for religious rites and rituals. This happened most notably in the Bimbia compartment, an HVCF, which also contains sacred burial ground for the deceased. The archive also reports that traditional native doctors have used this protected area to prepare traditional medicines. Traditional doctors who are adjacent to the community forest harvest a variety of plants in this protected area to cure common illnesses like

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<sup>77</sup> Conversation with Mercy Takang in downtown Limbe in the BBCF on 27.04.2015.

epilepsy, typhoid, headache and malaria, despite the fact that encroaching on these areas for exploitation of any kind is forbidden. In a personal observation during the fieldwork research, the BBCF area has a difficult topography. Steep hills made it difficult to access the various villages. Based on personal testimony, it takes about six hours to travel from the BBNRMC office to the closest charcoal pit in the Bonadikombo compartment (Plate 7.5).



**Plate 7.5. Researcher and Field Assistants in the Forest**

**Source: Author's own Collection**

The already low number of forest guards employed to patrol the 3,735 hectares of forest land in the BBCF, coupled with the lack of equipment and human resources and the irregular salary payment, it's not surprising that forest guards are reluctant to do their job. These details will hinder effective management of forest resources and promotion of biodiversity conservation until they are addressed. One can conclude that the conflict between the stakeholders and the forest department will never be resolved until the forest department faces the current reality and rights to these wrongs. Forest management policy must happen not only in paper, but in action.

### **7.3 Assessing Forest Management Systems Used in BBCF and TNP in Relation to Convention Biological Diversity (CBD)**

The fourth study objective laid down the groundwork to assess the management system within the two forests in relation to the principles laid down at the CBD. In fact, this was achieved by examining the Cameroon forest policy, how it is implemented and how it affects local people's livelihood residing adjacent to the forest of BBCF and TNP, given that the local people could play a vital role in sustainable management and conservation of biodiversity of the forest. In addition, it's crucial to examine legal and institutional framework that makes up the national forest policy for conservation of biodiversity in relation to CBD and whether the forest department is effectively implementing those policies. A visit to the NGO offices provided insight concerning the implementation of the policy since they are experts in working with the communities. Such NGOs include GIZ, WWF and WCS. To further, assess the management systems within the two forests, there was consultation with the regional delegation in Buea, which is collaborating with the PSMNR-SWR. Its archives and quarterly publications were also reviewed.

#### **7.3.1 Forest Management Systems Used in BBCF and TNP in Accordance with National Forest Policy and CBD**

The 1994 Forestry Law came into being in an effort to meet the national forest heritage conservation and management requirements. In Cameroon's National Biodiversity Strategy and Action Plan (NBSAP) which is the main instrument for implementing the CBD, ten main guidelines are laid down for forest heritage conservation and management (NBSAP, 2012):

1. The nation's forests constitute the country's natural heritage with intrinsic values and should be sustainably managed and utilised in a way that improves the livelihoods of local people.
2. All stakeholders are responsible for contributing to sustainable management and conservation of biodiversity.
3. All the stakeholders, including local communities' vulnerable groups, should participate in decision-making processes and have access to information on biodiversity.
4. The ecosystem approach should be at the center of achieving sustainable use components and biodiversity conservation.
5. Biodiversity payment and ecosystem services should be institutionalised and promote

responsibility for development.

6. Mainstream biodiversity and ecosystem consideration for all national sector-planning processes is central to guaranteeing economic and ecological sustainability.
7. The conservation of biodiversity should be considered in sustainable use and benefit sharing, as well as in Social Impact Assessment (SIA) and environmental planning tools for developing major initiatives.
8. Indigenous knowledge and practices of the local communities should be preserved, respected and maintained.
9. Multilateral, bilateral, financial, technical and scientific cooperation in relation to biodiversity should be enhanced at the sub-regional, national, and international levels.
10. There should be harmonization, coordination and consistency of all related biodiversity policies within and across all sectors.

The 1994 Forestry Law is the first law that officially recognizes the integrated approach to all national resource and forest heritage management systems. The Law recognizes the local communities' need to manage their environment, as well as their forest heritage. It allows the local community to exploit the forest and enjoy some user rights, but in return requires conservation of the forest for future generations. Following the creation of the TNP, Decree No. 2008/2751/PM of 21 November 2008 assured conservation and protection of the national park. However, the adjacent communities have no user rights in the national park. As revealed in the regional delegation archive, the current framework for protecting biodiversity in Cameroon biodiversity is marked with various projects and programs to enhance the implementation of the law, since it is so difficult to implement on its own. The document points out that in the last decade, there has been a corresponding expansion that marked the legal framework and norms with clear roles and responsibilities to protection of biodiversity. In the present study, the local people still raise concerns about this issue, primarily about the fact that the forest department acts without involving stakeholders in biodiversity related policies. That is why in Figure 7.6 above, 48.78% of the local TNP community reported that they were not clear on the harmonization, coordination and consistency of biodiversity-related policies within the TNP. Significant projects and programs have been designed and implemented with some major achievements in nation's biodiversity protection in certain areas. The creation of the community forest itself as laid out in Section 37 (2)

and 38 (2) of the 1994 Forestry Law complies with the first principle of the CBD: local communities (such as the BBCF) will manage their own forest areas sustainably to improve their livelihoods. The TNP, however, violates the second principle, since not all stakeholders are involved in promoting biodiversity. They attribute this violation to the forest department, which has failed to provide them with alternative means of living. Guideline four is fulfilled to some extent in the BBCF. As shown in Figure 7.6 above, 50.96% of the local people reported that they had a clear understanding of the management policies. As for guidelines five, six and seven, which state that payment from biodiversity services should be used for development, the local people of TNP complain of serious dissatisfaction, citing the poor road network, lack of community halls, schools and local hospital. Both areas fail to meet guideline nine - maintain and respect local traditions - as the restrictions of the national park and HVCF prevent locals from using the forest in the manner they once used, such as for rituals or other forms of forest exploitation. The TNP more or less complies with guideline nine, as the presence of well-funded international NGOs like GIZ, WCS and WWF promote conservation and study of biodiversity.

### **7.3.2 Regional Agreements and Strategies Geared toward Conservation of Biodiversity**

As revealed in the forest department reports in Buea, Cameroon has multiple regional and sub-regional agreements to manage and conserve biodiversity. For instance, the Sub-Regional Central Africa Treaty and its Convergence Plan of the Conference of Ministers of Forest for Central Africa (COMIFAC) was initiated by the heads of state in the region and spelled out in the Yaoundé declaration of 1999. The plan seeks to enhance coordination and harmonization of sub-regional strategies and policies for the sustainable management and conservation of forest resources. The COMIFAC gives way to other key biodiversity regional discussions, like the Central Africa Working Technical Group for Biodiversity (CAWTGB). This conference was responsible for drawing attention to biodiversity-related convention issues, such as the United Nation Framework convention on Climate Change (UNFCCC). Cameroon was also involved in the Sub-Regional Network for Parliamentarians, the Sub-Regional Network for Protected Areas, the Women Network Society, and the Network for Organization for Civil Society, and the Organization of the Forest Ecosystem and Sub-Regional Network for Local People. Cameroon was also involved in the Congo Basin Forest Partnership, which coordinated the formation of trans-boundary forest



landscapes. There are some regulations and biodiversity-related laws implemented in accordance with CBD requirements. The laws for biodiversity protection are as follows

### **7.3.3 The 1996 Framework Law for Environmental Protection (FLEM)**

Following the Cameroon framework law, environmental management is a relatively recent practice in the country. Multiple different sections of the law have been adopted to regulate the environment in Cameroon. The 1992 UN on Environment and Development, of which Cameroon was a member, emphasized the need to apply a holistic approach to the management of the environment in Cameroon. In August 1996, the adoption of Law No.96/12 relating to the environmental management happened as a result of the 1992 UN Conference on Environmental Protection. The law states,

“The protection of nature, the preservation of animal and plant species and their habitat, the maintenance of biological balances and ecosystems and the conservation of biodiversity and genetic diversity against all causes of degradation and threats of extinction are of national interest. It shall devolve on the Administration and each citizen to safeguard the natural heritage”.

This law states that the principles of caution and corrective action shall be the main principles underpinning sector policies and interventions relevant to conservation and biodiversity protection related to the national approach to meet the international standards set down by the 1992 Rio Convention on Biological Diversity. This paves way for incorporating local knowledge and good cultural practices to protect specific species with local community policies. Article 64 (1) in Law No. 96/12 of August 1996 states that “Cameroon’s biodiversity use must be sustainable, especially through: an inventory existing species, particularly of those that are endangered; management plans of species and the preservation of their habitat; a system on the control of access to genetic resources.” This article benefits the BBCF significantly since they can apply for hunting licenses. However, this puts the local communities of the TNP at a disadvantage as they will be able to obtain no such permit for their area. As the fundamental instrument responsible for coordinating multi-institutional approaches for the preservation and protection of biodiversity, the article provides a precedent for intervention in all environmental matters in Cameroon. The conditions stipulated under Cameroon’s 1996 Environmental Law falls in line with the Rio Convention on Biological Diversity in 1992, Article 64 (2), which states that “biodiversity conservation through

protection of the fauna and flora, the creation and management of natural reserves shall be governed by the Laws”. Because of this law, after the creation of the TNP, the people living in the vicinity of the park have no legitimate right to reject government policy and regulations. Article 64 (3) states, “the state may erect any part of the national territory into an ecologically protected area. Such an area shall be the subject of an environmental management plan.” This article also applies to creating protected areas such as the HVCFs within the BBCF, those compartments that reserved for eco-tourism and research. Because of the implementation of national instruments in accordance with Art. 15 of the CBD, the 1996 Forest Law states that local people like the TNP communities should have benefit access to genetic resources of the forest. In order to exploit the forest’s genetic resources, the exploiters must be in compliance with Article 15 of the CBD. Section 65 (1) of this article dictates that any exploration or exploitation of scientific genetic resources in the country shall only be in connection and cooperation with local communities and research national institutions, and in conformity with the international conventions. Section 65 (2) of the 1996 Law states that local communities like the TNP and Cameroon research institutions should work together with foreign researchers to regulate the access to forest genetic resources. This will benefit the local people of TNP since they need compensation for their forest heritage. However, the proper course of action to implement this benefit sharing is not yet clear among the stakeholders, and traditional norms relevant for bioprospecting and sustainable conservation of forest resources still need to be assessed. Nevertheless, in August 2012, Cameroon adopted an access to benefit sharing as a national strategy for its genetic resources in accordance with the CBD principle, but this reform still requires some work before it can be truly effective.

#### **7.3.4 The 1994 Forestry, Wildlife and Fisheries Law**

In the 1994 Forestry, Wildlife and Fisheries Law, Section 1 states,

“This law and the implementing instruments thereof lay down forestry, wildlife and fisheries regulations with a view to attaining the general objectives of the forestry, wildlife and fisheries policy, within the framework of an integrated management ensuring sustainable conservation and use of the said resources and of the various ecosystems”.

This legislation is based on the national forest policy, which establishes legal norms for local people to participate in the governing of their own forest and recognizes customary access rights of forest users and institutes the concept of conservation and sustainable management of natural

resources. In considering this principle as mentioned above, the 1994 Forestry Law gave way for the creation of community forest like BBCF that could enable local communities to sustainably benefit from its natural resources in return protect the biodiversity of the forest for the future. This principle legally acknowledges the right of local communities not only to use their forest but also to participate in the management processes. In fact, the BBCF has a management agreement via MINFOF that permits the community to manage a specific area of the given forest in accordance with a simple management plan that will run for 25 years. This is stipulated in 1994 Forestry Law Sections 37 (2) and 38 (2). Asare et al. (2013) argue that while the institution was originally developed to facilitate community-based forest management, it is a sound environmental recommendation to entrust the management of the forest resources to the local communities in order to motivate them to protect the environment. Actually, the right to exploit all forest resources for commercial purposes is limited only to community forests, and because of this, the law only allows 5,000 hectares of forest land to be demarcated a community forest for 25 years, as stated in Decree No. 95/531/PM of 23 August 1995. It's not only the size that's a relevant factor in the application to become a community forest. The community desiring to become a community forest must put in place a common economic integration groups, a common initiative group and it must also obtain a corporate body status and form a legal entity. Then there is the matter of obtaining an official land title that complies with Land Ordinance No.74-1 of 6 July 1974, which stipulates that the state is the guardian of all lands. The inordinate cost and effort involved with community forest creation in Cameroon exposes a hidden agenda to ensure that management of community forest remains in the hands of the government (Nuesiri, 2008).

### **7.3.5 Access Benefit Sharing (ABS) involved in the Utilisation of Genetic Resources in Accordance with the CBD**

Communities can only enjoy users' rights to community forest areas. Those communities residing adjacent to national parks like the Takamanda community have no users' rights to the forest resources within the national park. The CBD did set out some requirements so that the local people living in protected areas could reap the benefits from utilization of genetic biological resources and other forest resources. It was in accordance with the decree No. 95/466/PM of 20 July 1995, which set the terms and conditions for the application of the wildlife regime, that the TNP was created in 2008, following the Prime Ministerial Decree No.2008/2751/PM of 21 November 2008

to assure conservation and forest protection. Following the CBD and the Nagoya Protocol on Access to Genetic Resources and Fair Equitable Sharing of Benefits Arising from their Utilization, communities like TNP could benefit from genetic resources found in the national park. According to Section 12 of the 1994 Forestry Law,

“The genetic resources of the national heritage shall belong to the state of Cameroon. No person may use them for scientific, commercial or cultural purposes without prior authorization. The economic and financial spin-off resulting from their use shall be subject to the payment to the state of royalties. The rate and conditions of which shall be laid down, to their value by the minister in charge of finance upon the proposal of the competent ministers”.

As a matter of fact, even if the genetic resources belong to the state, the local people residing adjacent to the forest can benefit from the genetic resources, for they are legally recognized in Article 65 (1) of the 1996 Law Relating to Environmental Management. This will enable the local communities to become more involved in the protection of the forest for future generations. In this respect, the national access benefits sharing strategy aimed to provide a framework that would define and identify a) administrative roles for access to genetic resources and the fair and equitable sharing of benefit arising from their use, b) identification mechanisms for participation of different stakeholders, or c) actions for the development of an institutional framework and the legality of benefit sharing (NBSAP, 2012). In fact, fees and funds generated from national parks in Cameroon including TNP are regulated. As revealed in the Forest Department quarterly reports, three quarters of the money that comes from park entrance fees is sent into the treasury fund, and one quarter of the money is allocated to special fund. Following Article 15 of the 1996 Law Relating to Environmental Management, local communities residing in protected areas like the TNP are supposed to benefit from this fund. Unfortunately, the tourism sector in the TNP still requires a great deal of development. Other national parks like the Korup National Park, Waza National Park and Campo Ma'an National Park have a much more developed tourism sector than the TNP, and as a result, earn more tourism revenue.

Andrade and Rhodes (2013) assert that many conservation areas have followed the conventional method applied at Yellowstone in 1871. This means that many national parks failed to adapt and fully integrate other important factors that can influence conservation, like cultural, social and

political issues. They further point out that this causes adverse social effect for the local communities living adjacent to their own forest. They further explain that the local traditions and way of life are disrupted, which can bring conflict between the local communities and forest departments. It seems intuitive that in order to balance biodiversity conservation objectives with social and economic problems, local communities must comply with forest department regulations. However, Andrade and Rhodes found that in 55 developing countries, it was the local communities' involvement in conservation efforts that protected biodiversity effectively. They conclude that local communities' participation in the protected areas' decision-making processes was the only variable that significantly related to the level of compliance with the forest department regulations. In short, the higher the level of involvement, the higher the level of compliance. Their findings are consistent with the present study, insofar as if the TNP communities are not able to benefit from their forest heritage, there will be a constant conflict between the forest department and the local communities, and the local communities will continue to be driven to violate the forest department regulations. In an informal consultation, one villager Asuh Martina implored, "Look at our village showing sign of poverty.



**Plate 7.6. Left Ebe Village in TNP and to the Right Kids Crossing a Local Bridge to School**  
**Source: Author's collection; Opio, 2015**

She further explained, ilven the way our kids arrive to school is so dangerous. The government cannot provide us with good roads and nearby school, so you think I will wait for the forest guards to come and control me over our heritage? Local people need control over the forest. In addition,

the local people must be sensitized and provided with alternative means of living so that the biodiversity will be preserved for future generations.

#### **7.4 Chapter Conclusion**

This chapter reveals that the local people in BBCF, 52.22% favor the present forest policy as compared to the TNP local people with 19.50%, even though the BBCF respondents still advance reasons like they are still HCVF within the community forest which they are prohibited to exploit. In fact, the local people in TNP do not respect the present forest policy because following Article 26 of Decree No.95-531.PM of 23 August 1995 which confirms that communities residing adjacent National Parks should maintain their activities, which include harvesting of bamboo, raffia and palms, the TNP forest communities do not enjoy this rights. So for this reason they vowed to exploit the forest illegally. The chapter also reveals that more law violators prefer to serve prison term than to pay fine in money form. The local people in both areas hate the use of force by the forest guards during forest patrol. The irregular payment of the guards and lack of good road network, lack of equipment, is an additional problem to enforce conservation. The resettlement problem of the Mindi village outside the NP is an additional problem to conservation and transparency, accountability and trust is also a big setback to the BBCF area. The chapter also reveals that the 1994 Forestry Law is the number one official law that recognizes national forest heritage resources. The BBCF and the TNP were created following this Law and they have the right to benefit from genetic resource utilization. However, the mechanism for benefit sharing is not yet well defined and the procedure needs to be configured among the stakeholders.

## **Chapter 8 : Conclusions and Recommendations**

### **8.1 Chapter Introduction**

Chapter 8 presents the conclusions of the research findings, according to the study objectives and research questions. The conclusions reveal areas where future research is necessary and presents recommendations for the study areas of the BBCF and the TNP, and Cameroon in general.

#### **8.1.1 Farming Conclusions**

Following the first study objective, which was to evaluate the extent of sustainability of the Bimbia-Bonadikombo Community Forest (BBCF) and Takamanda National Park (TNP), traditional management systems were identified as maintaining sustainability of both forest areas. This is in line with the first research question, which is: what impact do sustainability and biodiversity conservation have on the forest users in the community forest and national park? Moreover, which actions should operators take to tackle this impact? The study reveals that the farmers in BBCF exploit the forest in a more sustainable way, like shifting cultivation and fallowing farming, unlike the TNP farmers, who are more involved in unsustainable farming methods like slash and burn. This comes from the fact that, as a community forest, the local communities in BBCF have the ability to move from one farmland to another. Following Ordinance No.74/1 of 6 July 1974 which establishes rules governing land tenure, and states that all land belongs to the state except if you own a land title; in Cameroon, it is difficult to own a land title because of the cost and time involved in the process. The process is just as technical and cumbersome as applying to become a community forest. The local communities residing around and inside the park do not have that flexibility, given the fact that they are prohibited from farming inside the national park. In fact, objective 3 of the TNP management plan of 2010-2014 states that “to promote participatory management and support alternative income generation activities for sustainable development,” the forest department has failed to provide alternative means of living to the local communities, hence why they persist in illegally farming within the park. Those farming within the park could be fined for violating the law. The study reveals that the farmers in the TNP are more likely to use chemicals in farming than the BBCF farmers. In a follow up question, TNP farmers explained that because of the limited farming land available to them, they have to use chemicals in order to increase their yield. As mentioned above, using pesticides and

fertiliser without any or enough training is not good for conservation. It is the responsibility of the forest department to provide the local communities with good farming methods. If forestlands are used for years without any control mechanism, ultimately resources will be degraded and unsustainable. Therefore, farmers need capacity building in farming and chemical usage to sustainably conserve the forest for future generations. Even though with the present of PSMNR-SWR, with some good agriculture methods that they taught the farmers in TNP, they still complaint of lacking financial means to put it to practise.

The study reveals that farmers in the TNP are illegally farming within the park. Law No.94/01 of 20 January 1994 Section 29 (3) states “any activity in a state forest shall, in all cases, be carried out in accordance with the management plan” and insists that the TNP communities are not supposed to carry out farming activities inside the national park.

### **8.1.2 Hunting Conclusions**

The study also determines that traditional hunting practices are one of the primary ways local people exploit the forest for their livelihood. In fact, there were more hunting activities in the TNP than in the BBCF, despite the fact that hunting is prohibited in national parks. This is a result of the fact that the hunters in the TNP are native to the area and use hunting as a sole means of earning their livelihood. Some hunters hunt for home consumption while others hunt for commercial purposes. In addition to financial reward, TNP hunters earn great respect from the family and community to whom they provide bush meat. Hunting for them is a way of life, passed from one generation to another. In the BBCF, since hunters come from different backgrounds and are generally migrants from different parts of Cameroon, their hunting attitude deviates sharply from that of the TNP hunters. The hunters in BBCF sometimes seek different means of living since they are in a pre-urban area. According to Section 78 of Law No.94/01 of 20 January 1994, Class A animals are protected from hunting and Class B animals can only be hunted with a permit. Most TNP hunters kill their animals with guns, which are easily purchased from neighboring Nigeria. If the hunters in the TNP do not find alternative means of living, they will continue to exploit the forest. It is up to the forest department to resolve this problem of sustainability and extinction of the endangered species.



### **8.1.3 Fishing Conclusions**

The study also examined traditional fishing practices to discover that fishing in the TNP was mostly carried out by women, while men were more involved in this practice in the BBCF. The study also reveals that BBCF area uses the drift nets, a method capable of capturing all the breeding adults of a species. It is not a sustainable method, as it leaves no fish to lay eggs to continue the species. It's also harmful to other aquatic species as the drift nets in the water can ensnare and hurt other animals. Both areas used the method of fish fencing, but it was more common in the BBCF. This method is also said to have a negative impact on the environment because it harvests fish at all developmental stages, including the juvenile specimens. Further damage to the fishery resources happens when farmers admitted to mixing and washing spraying equipment used for pesticides and fertilisers on the banks of the river. This slow poisoning will go a long way to kill the fish in the river and pose future problems for sustainability and conservation of fishes if it continues. The 1994 Forestry Law Section 117 decrees that traditional fishing practices do not require a licence or permit, but there must be control mechanism by the forest department in order to know which method of fishing the local communities use most often. For example, the fish fence method is known to be detrimental to the environment, and thus the forest department should limit this method by implementing a stricter control mechanism.

### **8.1.4 NTFP Harvesting Conclusions**

The study also reveals the extent of sustainability and conservation in the harvesting of NTFPs. Local TNP communities harvest NTFPS mostly for consumption, with a select few items like bush mango and bush onion for sale. The BBCF community harvest eru (*Gnetum africanum*) for home consumption, with some of it sold to local markets, since they are in a pre-urban area. Some farmers testified that before, it was easy to find NTFPs behind their houses but now they have to travel miles before finding the produce they want. The people of the TNP are more involved in the malpractice of felling a whole tree only to harvest NTFPs. Before engaging in commercial harvesting of NTFPs, the harvester needs a harvesting permit (licence) from MINFOF. This discourages many harvesters, who complain of a lack of credit facilities to enable them to get involve in commercial harvesting. It follows that the requirement of a harvesting permit will be good for conservation. The study further reveals that fuelwood is very important to the local people's livelihood. About 90% of the local people use fuelwood, with only about 10% using

different energy source for cooking. The people of BBCF use more fuelwood because they burn it into charcoal. In addition, as a pre-urban area, some of the wood from the BBCF is sold in Limbe town local markets. Since the people of BBCF are involved in this malpractice of charcoal production (Plate 6.2) one can therefore conclude that they are falling short of sustainable use of and conservation of resources in the protected area.

#### **8.1.5 Timber Exploitation Conclusions**

Timber exploitation is the biggest cause of deforestation and forest degradation in both study areas. Timber exploitation in the TNP is carried out illegally by Nigerian loggers, who extract the timber in the night and return to Nigeria before morning. Following the 1994 Forestry Law Section 37 (5), the BBCF enjoys users' right of timber exploitation. The TNP communities do not have that users' right, and thus all timber exploitation carried out within the TNP is illegal.

#### **8.1.6 Traditional Conservation Efforts**

The study reveals that local communities accept that there are some means of conservation that they do not know. The study identifies some traditional means of preserving the forest, like totemic belief and taboos against killing and eating Chimpanzee, Pythons, Gorillas and cutting down trees like *Baphia nitida*, with the BBCF area scoring 78.20% as compared to 48.30% in the TNP in protecting the forest using traditional beliefs. This culture that frowns upon the eating and killing of such animals fosters an indirect practice of forest resource conservation, protecting the forest for future generations. The increased prevalence of these beliefs would contribute vastly to conservation efforts. The results of this study are in keeping with those of one carried out in East of Ghana that found that conserving a given area within the forest fostering the belief that the site is for cultural heritage will enhance sustainability and preserve the eco-system of the forest. The local people believe that the Aziza spirit resides in certain trees is a powerful step toward conservation. This goes a long way to enhance and promote conservation of national heritage, as laid out in Article 64 (1) of the 1996 framework law for environmental protection and the CBD. The present study also discovered that the local communities usually set aside one day on which villagers are forbidden from conducting forest-related activities, incidentally reducing the amount of time allotted for exploiting forest resource. It would make sense, then, to integrate these traditional methods into forest management policies as a step toward enhancing conservation. The

study also found that most of the villagers get information on forest protection from their local chiefs and councils. Given the fact that the local community live in unity and listen to their local authority figures, it follows that if the local chiefs and traditional rulers in the BBCF and TNP are more involved in conservation policies, conservation efforts would improve.

The second study objective is to evaluate the extent to which both forests are managed according to the various ministry-approved management plans. Therefore, the second research question is: are the stakeholders involved in forest management and do they respect forest laws (norms)? If not, why? And which decisions must be made to tackle such problems? In examining the exploitation of forest resources in BBCF and TNP, it is clear that farmers, hunters, NTFP harvesters, fishermen and rural communities all carry out forest exploitation in some unsustainable ways in search of financial gain and as a means of subsistence living. This study shows that the level of forest exploitation depends on the individual needs of local people, but that individual need alone is not responsible for the current rate of forest degradation. During field work study the people still said so far as the government don't provide alternative means of living they will still continue to exploit the forest in their vicinity. One can assert that as long as the daily living demands of local communities are not met, the people will devise any and all means of exploiting the forest resources. The course of this study found that some of the local people in both communities understand the law very well but will not respect it because they have no alternative means of living. These respondents explained that the forest is their inheritance from their ancestors, and they will not respect the law that disregards this legacy. It is a risky standpoint, as those found in violation of the 1994 Forestry Law Section 154 can be forced to pay up to 200,000 CFA (304 Euro) or face 20 days of imprisonment. Most people endure the imprisonment. This is actually detrimental to the conservation of the forest. The study found that local people, especially the TNP villagers refuse to comply with and hate the governing policies of the forest department, especially the policing methods of the forest guards. The forest department must step in and provide the local people with environmental education; otherwise the forest guards will continue to arrest the local people.

The third study objective was to evaluate the challenges of using the two forest management systems. In order to best meet this objective, the third research question asks: are there known conflicts among the stakeholders and what strategies have been put in place to address these

conflicts? In forest management, they are usually many challenges faced not only by the local communities, but by the forest department. The study revealed that the TNP is run by a conservator, who is appointed by the regional delegation of forestry in Buea. Similarly, a forest manager, appointed by the BBNRMC, heads the BBCF management. The TNP headquarters is in Kajifu 1, while the BBNRMC is located in the town of Limbe. Both study areas have a challenge regarding lack of funding, leading to forest guards complaining of irregular payment. In the TNP, the total number of forest guards is insufficient to patrol the whole park in a day. The lack of equipment and human resources to carry out the patrol is also a major problem. It's simple to deduce that without enough forest guards, conservation will be impossible to enforce. The TNP also faces challenges in demarcating clear boundaries. The enclave villages of Okpaniya, Onal Kekpane and Obonyi have this boundary problem, which hinders intensive conservation. The park faces challenges from neighboring Nigeria, where wildlife resources are illegally exploited by poachers from this country. The TNP is currently lacking a good road network. While a better road system would ease the movements of the forest staff in patrolling the area, on the other hand, it would also facilitate hunters' access to the park and selling of bush meat. The TNP is able to boast a less significant rate of increasing exploitation because the area was previously a conservation reserve. As a national park, the laws prohibiting resource exploitation are more severe. While it's behooves the environment to restrict timber logging and other exploitation activities, this has a severely negative impact on the people living in and around the park. Following the 1994 Forestry Law Section 29 (1), people living within the TNP no longer have logging rights or the access to the profits of timber exploitation, because such activities are not accounted for in the TNP management plan.

In the BBCF, board members complained of trust, transparency and accountability among themselves. They complained of money, which is coming from small-scale timber exploiters and individual exploiters. From personal observation, the topography of the BBCF is not easy to access by foot. This will pose difficulty for further conservation efforts, and likely lead to unsustainable use of forest resources. The issues of transparency and accountability must be addressed in order to achieve good conservation management practices. For example, women should be more involved in forest management issues since they too engage in forest exploitation and benefit from

such activities. Forest management reports should be produced monthly in order to address issues and avoid confusion.

The fourth and last study objective was to assess the forest management systems used in BBCF and TNP in relation to national forest heritage policy and the requirements of the CBD. The fourth research question asked is: do the local communities participate in benefit sharing and do the decisions on forest management policies consider the different interests of stakeholders? The 1994 Forestry Law is the first official law that recognises national forest heritage resource management, following Sections 37 and 38 of the 1994 Forestry Law. The BBCF was created in 2002 for the community to sustainably manage the forest while simultaneously conserving the biological forest resources for future generations. Due to the fact that the area was noted to be a high conservation value forest (HCVF), there was an immediate need for protection. The study reveals that the BBCF has four protected compartments within the community forest that call for high conservation, meaning that the communities themselves are prohibited from encroaching on these areas. The TNP created in 2008 was established strictly for conservation of biodiversity, meaning that the local communities within and outside the park were prohibited from encroaching on the forestland. Following the 1994 Forestry Law of Sections 37 and 38, the BBCF enjoyed the legal right to harvest timber, despite complaints of lack of trust, transparency and accountability within the forest management team and the accusation that funds acquired from harvesting timber have been embezzled by the Bimbia-Bonadikombo Natural Resource Management Council (BBNRM). The eco-tourism sector in the BBCF should be developed so that the community can benefit from the associated fees. Without the legal right to harvest timber, the TNP is suffering in that domain. If the tourist industry were developed, those funds could be redirected toward other community projects or put back into the tourism sector. Good road network can also encourage businesses within villages so that it will take away the local people interest off the forest. In addition, the study also reveals that both communities could benefit from genetic utilisation. An example of this practice would be a pharmaceutical company identifying a particular plant that is good for producing medication, harvesting this plant and paying money to the forest department. Such income could benefit various developmental projects in the village. However, the mechanism for benefit sharing is not yet well defined and the procedure needs to be configured among stakeholders. The forest conservator should follow up the method of benefit sharing with the forest

department to see how the process of sharing will benefit all participants involved. At the moment, the forest policy is already written on paper, but the implementation of the process is an entirely more complicated matter.

## **8.2 Recommendations**

The recommendations made in this study could go a long way to benefit the Bimbia-Bonadikombo Community Forest and Takamanda National Park, as well as other community forests and national parks in Cameroon.

### **8.2.1 Need for Adequate Capacity Building (Training) Among the Forest Users**

As revealed in the study, many forest users like farmers, hunters, fishermen, NTFPs collectors carry out forest exploitation without adequate capacity building and thus are not effective in conservation or management of forest resources. In this study, farmers were able to acknowledge the fact that they use chemicals on their farmland without or with only limited capacity building in chemical usage. Farmers mix and wash their spray equipment at the banks of the river and fishermen engage in unsustainable fishing method like fish fencing. NTFPs collectors fell down whole trees to harvest products, while fuelwood collectors burn wood for charcoal production. All these activities are harmful to conservation. The forest conservator in the TNP should work in collaboration with the PSMNR-SWR so that new, sustainable methods of farming, fishing, and NTFP harvesting will effectively benefit the local people. The conservator should work with the PSMNR-SWR so that they can initiate special training programmes that are both extensive and easy for forest users to adopt. PSMNR-SWR successfully trained 16 villages around the Korup National Park and TNP in 2014, using the programme known as Farmers' Field School (FFS). The aim of this school is to reinforce the capacities of farmers to practice good farming methods regarding new breeds of cassava and cocoa. The farmers attended the school training for nine months and upon their graduation, they obtained certificates (PSMNR-SWR, 2014). The forest conservator should work with the local chiefs so that many TNP villages involved in farming can send students to attend the training. The forest manger in the BBCF should also work with Mount Cameroon Forest Project (MCFP) in Limbe so that such training can be organised for the farmers in the BBCF. Forest conservators and forest managers should apply for NGO funding and collaborate with networks of professional forestry trainers across the country to organise

workshops to train the forest users on how to use forest resources effectively. There are presently some NGOs like Programme for Sustainable Management and Natural Resources-South West Region (PSMNR-SWR), World Wide Fund for Nature (WWF), German International Cooperation (GIZ) and Wildlife Conservation Society (WCS) in the southwest region that are helping to train forest users. The forest managers should collaborate with them so that they can help organise training sessions. The forest conservator in the TNP, with the collaboration of PSMNR-SWR, should enforce the ban on certain use of chemicals, like the fish poison used in the river, as well as the ban on slash and burn farming. In order to enforce these rules, it's imperative to strengthen the capacity of the forest department. In the TNP area, there is a success story of the efforts to promote equitable and legal NTFPs sectors in which it is permitted to collect and sell bush mango (*Irvingia gabonensis*). The PSMNR-SWR and forest conservator collaborated on this program. They signed a partnership with an NTFP cooperative whose aim is to encourage the marketing of bush mango (*Irvingia gabonensis*) with affiliated collector groups. The affiliated collector groups, together with PSMNR-SWR and the forest conservator, make sure the relevant administrative papers from forest department are obtained. They also organise activities related to transport, storage, processing and handling of the products. They also help to establish trade agreements with Nigerian traders to facilitate the marketing of the bush mango. Presently, about 65 collector groups in 24 villages between TNP and Korup National Park have been organised and trained in collection, processing, storage, and record keeping and selling of bush mango (PSMNR-SWR, 2014). This success story, which benefits the local communities residing in protected areas and area surrounding the park, should be applied in the BBCF so that NTFPs such as bush mango can benefit those in and around the HCVF within the BBCF. The same method used by the conservator and PSMNR-SWR should be copied and used in different forest management communities.

### **8.2.2 Need to Provide Alternative Income Generating Activities and Create a Forest Trust Fund for Poverty Alleviation**

Forest departments in particular should provide alternative means of living for those who depend on the forest for their daily subsistence and means of income. To alleviate the poverty which causes forest exploitation, the forest department should communicate with the government to create some special trust funds that will help them carry out income generating activities like pig, goat, poultry, sheep, fish and bee farming; and better cassava, maize and vegetable gardening. This will provide

an alternative means of protein so that the local communities will not depend on bush meat harvesting and NTFP gathering.



**Plate 8.1. Cassava Crop Harvested and Processed with a Local Machine**

**Sources: (PSMNR-SWR, 2014)**

For example, the Cassava-Processing-Makango Project initiated in 2014 (Plate 8.1), successfully provided this alternative and diverted local community attention away from exploitation of forest resources and toward a more sustainable manner of subsistence living. More technical schools and programmes to train youth in hands-on, skilled professions like hairdressing and tailoring will also divert attention away from the forest and toward self-employment. Self-help initiatives for handcrafts or women in small businesses would also be mutually beneficial to both the community and the forest. The government should push toward providing more economic activities that can meet the demands of the people, such as providing school infrastructure and better road networks. It should also support training in education, and improve healthcare and welfare services. All of this will help divert attention away from exploitation of forest resources. This is in line with Cameroon Strategic Goal C, which is to promote the sustainable utilisation of biodiversity for creating wealth and enhancing poverty alleviation (NBSAP, 2012).

### **8.2.3 Recognise Traditional Management System and Local Beliefs Useful for Conservation**

This study reveals that some people living in the BBCF and TNP areas still hold traditional beliefs, like not killing and eating of certain animal species (e.g., Gorilla, Python, Chimpanzee) and not cutting certain trees (e.g., king tree). The villagers in both regions protect certain areas of the forest for worshiping of their gods and set aside a day on which it is prohibited to carry out forest-related activities. In the TNP, most of the local people reported getting information on protecting the forest from their local chief and village council, not the forest department. The forest department should



pay more attention to local chiefs and councils, and work with them by allocating them more management power with respect to the interaction of their people with the forest. Since village communities usually live in one unit, the individuals will pay more attention if their village council implements the law. The forest department should contact the association of chiefs in the southwest regions so that they can convene meetings with local communities to sensitise them on the importance of biodiversity conservation. They can pass this awareness of the biodiversity conservation to the people through the local chiefs. The traditional beliefs and norms of the forest communities useful for biodiversity conservation should be documented in written form to serve as complementary conservation measures.

#### **8.2.4 Integrate Local Institutions into Forest Management System**

Community resource management in Cameroon is currently within the framework of local communities' involvement in the management of natural and forest resources. Unfortunately, national parks do not practise community management. This study reveals that despite being a community forest, which calls for communities' participation, there are protected areas within the BBCF that need strong conservation efforts for sustainable management of the forest. The decision-making powers within the BBCF are in the hands of BBNRMC boards, which do not consider the best interests of the local people. In order to prevent illegal exploitation of the forest, it's necessary that the tangible interests of the local people are factored into plans for sustainable management and conservation. The TNP was created in 2008 for the express purpose of conservation, but local people were not granted user rights to collect timber or NTFPs, or engage in any other forest exploitation. In the TNP area, the forest department should not continue to make all management decisions for the people that live in the area. Through a representative cross section, they should form a committee that constitutes both the village elites and the forest department. Forest management funds should be disbursed through recognised authorities to avoid confusion and contribute to effective management of the forest. Money that comes to the BBNRMC management board as a common trust should be recorded in a quarterly financial report that is then available to the forest communities. The forest manager should work in collaboration with the BBNRMC boards to provide the communities with an annual report concerning the state of the forest. In addition, the manager of the BBCF should decentralise and share forest responsibilities among local people so that everyone will feel a sense of belonging and purpose

when it comes to forest management decision-making. This will effectively establish trust with the BBNRMC board.

### **8.2.5 Minimise Corruption, Increase Level of Trust, Accountability and Transparency**

As noted in the study results, there is rampant corruption and a lack of trust, accountability and transparency among the forest stakeholders. This needs to stop to bring about better sustainable management and conservation of forest resources. Kiskor and Damania (2007) find that the root causes of corruption are illegal and unsustainable exploitation of forest resources. This, coupled with a lack of accountability and transparency, makes the forest management council highly corruption prone. They assert in order to solve this problem; the stakeholders must address the causes of the problem (i.e. incentives) rather than its symptoms (i.e. bribery). They finally conclude that solving this problem with public oversight and successful strategies will require action to bring legal and sustainable supplies together to improve measures to target transparency, accountability and trust in forest resource management. Trust, accountability and transparency are among the major issues facing the forest departments in the TNP and BBCF as revealed in the study. One of the board members in the BBNRMC said, “We do not trust men any more to handle common trust fund, we should vote more women in the board because they are more accountable, when it comes to financial matters.” In the TNP, which is in collaboration with MINFOF, PSMNR-SWR, WCS, WWF and GIZ, the park’s management should seek appropriate measures so that the salaries of the forest staff are increased and paid regularly. They should provide allowances like risk allowances and forest trip allowances. In addition, with the potential progress of third-party involvement, this will require action from international NGOs and private sectors to fight corruption, increase trust, accountability and transparency (Kiskor and Damania 2007). NGOs like the Last Great Ape Organisation (LGA) are fighting corruption and enforcing forest laws. The increased presence of these organizations could improve the reputation of trust in the forest department. In the BBCF area, the manager and the board members should be accountable for all the common money in the trust fund. They should form an audit committee to check the account on a quarterly basis. Legal actions should be applied if any of the board members fail to abide by the governing laws laid down by the BBNRMC board. Since the BBCF forest guards raised the concern of irregularity in salary payment, the management board should increase their salaries and ensure that they are delivered regularly. The BBNRMC should always take minutes during every

meeting session and the union members should have copies of the reports. Women should be more involved in the board meetings because they are more trusted than men at the local community level.

### **8.2.6 Allocation of Benefit Sharing of Forest Resources**

The sustainable management and benefit sharing among communities who reside adjacent to the forest is a very important and sensitive issue in forest management practice. Local people are most likely to manifest their efforts in guarding the forest because of the benefit they reap from there. As far as the local communities share in the benefits that come from the forest, they will be more invested in the stewardship over forest resources. The local communities of the BBCF should benefit from its legal rights of timber logging and the gains made from the small-scale timber exploiters. For the individual logging rights of timber located outside the protected areas, timber logging paperwork should be easy to process so that local people can enjoy their legal individual rights in the BBCF area. The eco-tourism sector in the TNP area and cultural heritage site in the village of Bimbia should be well developed so that the funds and profit made will benefit the local people in village and enable them to fund projects like building more schools, hospitals and communities halls. The utilisation of genetic resources by the pharmaceutical companies should be monitored so that local communities like the TNP can benefit from those profits. Traditional doctors in the BBCF should be allowed to harvest medicinal plants that can cure illnesses like headaches, malaria and stomach-aches, and reforestation can be introduced in these areas.

### **8.2.7 Educate Local Communities on Environmental Protection and Create Enclave Villages within the Protected Areas**

The local communities will not stop exploiting the forest unless they are really educated on the need for conservation. Thus, it is very important for the forest department to initiate programmes for environmental education. The study revealed that the enclave villages in the TNP have settlement problems. On the 27 of January 2015, a court in the Akwaya sub-division pronounced that the community of Mindi within the TNP was found guilty of illegal settlement within the state property, a year after its original settlement. The key heads of the families were sentenced to six months of imprisonment and three years suspended sentence with a 53,370 CFA fine (81 Euro) each, payable to the court. The court identified through the Kajinga village chief that the Mindi

people originated from Kajinga. The Kajinga chief was asked to provide the Mindi community with a piece of land. The court ordered the TNP service to make sure the Mindi resettled within twelve months. It also asked the TNP service to provide them with improved crop species to assist the resettlement (PSMNR-SWR, 2014). The method used to resettle the community of Mindi should be documented by the forest department so that the consequences of failing to obey forest laws can be better explained to local communities. The forest department should select some knowledgeable and strong youths from within the TNP and BBCF to be trained as forest guards.

### **8.3 General Conclusions**

Based on the discussion of the outcome from the study, forest exploitation during the colonial period did not leave room for much conflict surrounding the local people's livelihood. During the post-colonial era, multiple laws generated confusion and enabled the forest department to control the forestry sector. In the TNP, particularly, the forest department has not successfully implemented the conservation methods because the increasing needs of the local people living adjacent the forest are not being met, unlike in the BBCF where the local chiefs ensure that basic subsistence are still achieved. Increasing demand for bush meat for both domestic and commercial purposes is rampant in the TNP area. The increasing demand for fuelwood as an energy source and for charcoal remains a major problem to solve in the BBCF. The communities' livelihood is not met; the forest laws are not enforced and are weakly implemented. It is imperative to reconcile these challenges of conservation and sustainable management of forest resources with the economic development and local people's needs. The best way to do this would be to increase the involvement of local communities in the decision-making process concerning the forest around them. Since community forest has proven better for sustainable management and use of forest resources, the government should give room for more community forests with well-established and good forest policies. If the forest department wants to create more national parks, it must first make sure that the local people living adjacent the forest should be well sensitised on the conservation effort and compensated for forgoing forest exploitation so that the forest department can exercise the strictest conservation methods. Participatory management with the park staff and the local communities residing in the park vicinity will enhance the quality of forest management since they will be fully participating in the management processes. Lastly, management and conservation involving the participation of TNP and BBCF local communities will go a long way

to contribute to the sustainability and conservation of natural resources. This will promote Cameroon's national forest heritage and international conservation needs.

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## **Appendices**

### **Appendix 1: Field Research Questionnaire**

Topic: Forest conservation and management practices in Cameroon: Case of Bimbia-Bonadikombo Community Forest and Takamanda National Park

Dear Respondent,

I am Regina Edawa Nyambi, a PhD student at the Brandenburg University of Technology Cottbus-Senftenberg Germany. The aim of my research is to compare two forest management systems, a state management system (the case of Takamanda National Park) and a community-based management system (the case of Bimbia- Bonadikombo Community Forest), to determine which management system better conserves and protects the forest against biodiversity loss. In my questionnaire and interview with you, I would like to know your opinion about the current forest management system in place, whether it is good enough to protect our national forest heritage. The reason for this research is to discover the most diserable management system to conserve and protect our forest heritage and create awareness among local people as well as the forest department in the BBCF, TNP and the government of Cameroon. I plead for sound co-operation and understanding and hereby pledge that all information will be treated confidentially and only be used for academic purposes. Thank you very much for your kind attention in advance.

## Section A: Personal Data

Please fill in the spaces below and/or cross one of the boxes applying to your situation.

Forest area of residence \_\_\_\_\_

1. What is your Name \_\_\_\_\_? Optional

2. Gender: you are

- Male
- Female

3. Your age is \_\_\_\_\_ years

4. Please indicate the number of people in your household

Male \_\_\_\_\_

Female \_\_\_\_\_

Total \_\_\_\_\_

5. Please indicate your highest level of education

- Primary education     University
- Secondary education     Vocational training
- High School     No formal education

6. What is the status of the forest in your Area?

- National Park     Community forest

7. Your current Occupation/Profession

- Farming
- Fishery
- Hunting
- NTFP harvester
- Fuel wood/Charcoal collection

Others: please Specify \_\_\_\_\_

## Section B: Respondents Dependence on Forest

8. What system of farming do you use on your farm (Please you can tick more than one answer)

- Shifting cultivation     Slash and burn     Fallowing farming     Livestock farming     Plantation farming     I don't know

9. How many years of Capacity building do you have in the method you are using to carry out farming

No years of training  one year of training  two years of training  Three years of training  Five years and above of training

10. Do you use chemicals on your farm? Moreover, do you have any protection while using the chemical?

Yes  No  No opinion

11a. Do you have access to capacity building before using the chemicals?

Yes  No  No opinion

11b. if your answer to question 16 is Yes or No, how many years of capacity building

No years of training  one year of training  two years of training  Three years of training  Five years and above of training

12 How many years have you been carrying out hunting (**Please you can tick if farming applies to you in question 7**).

1-5 years  5-10 years  10-15years  15-20years  20years and above

13 How many days a week do you go to the forest for hunting

1-2 days a week  2-3 days a week  3-4 days a week  4-5days a week  5 days and above a week

14. Do you know the class of animals you harvest?

Yes  No  No opinion

15. If your answer to question 14 is yes which class of animals (**Please, indicate the animals type that you harvest most for the past three months**)

Class A animals  Class B animals  Class C animals  No opinion

16. Which hunting method do you use? (**Please you can tick more than one answer**)

the use of guns  wire traps

17. Do you have Licence permit to carry out hunting?

yes  No  No opinion

18. How many years have you been carrying out fishing (**Please you can tick if fishing applies to you in question 7**)

1-5 years  5-10 years  10-15years  15-20years  20years and above

19. Do you have Licence permit to carry out fishing?

Yes  No  No opinion

20. How many days a week do you go to the water for fishing?

1-2 days a week  2-3 days a week  3-4 days a week  4-5days a week  5 days and above a week

21. What methods of fishing do you use to catch fish (**Please you can tick more than one answer?**)

-Fishing method using gill nets  Fishing method using drift net  fishing method-using fish fences  No opinion

22. Why do you carry out fishing harvesting?

trading  home consumption  Traditional rituals  No opinion

23. Do you harvest NTFPs (**Please you can tick if NTFPs collection applies to you in question 7**).

Yes  No  No opinion

24. How many days a week do you go to the forest for collection of NTFPs?

1-2 days a week  2-3 days a week  3-4 days a week  4-5days a week  5 days and above a week

25. Why do you collect NTFPs in the forest of your area?

trading  home consumption  Traditional rituals  No opinion

26. Which methods do you use to collect NTFPs?

Removal of whole stem plus roots  Plucking leafs and fruits only  No Opinion

27. Do you respect the 1994 forest law that regulate the management of the harvesting of NTFPs in your area?

Yes  No  I do not know

28. How many years have you been collecting firewood? (**Please you can tick if firewood collection applies to you in question 7**)

1-5 types  5-10 types  10-15 types  15-20 types  20 types and above

29. What are the factors that influence you to collect fuelwood?

Domestic use  commercial use  charcoal production  I do not know

30. What methods do you use to collect fuelwood?

using chainsaw  using machetes  using carpenter saws  I do not know

31. Do you think fuelwood collection have an impact on the environment?.

yes  No  I do not know

32. If you are provided an alternative means will you stop the collection of firewood?

Yes  No  No opinion

33. If your answer to 32 above is yes give reasons to support your answer.

(i).....

(ii).....

(iii).....

**Section C: Respondents Opinion on Local Indigenous, Tradition and Sustainable Forest Management Systems**

35. Are there local traditional means of sustainable forest management in your village?

**(Please tick only one answer)**

yes  no  No idea

36. If your answer to question 35 is yes, please name the means of management systems

(i).....

(ii).....

(iii).....

37. Traditional rulers and head of village councils in your forest area contribute to sustainable forest management and protection of natural resources

Yes  No  no idea

38. What are the means of contribution, support your answer to question 37?

(i).....

(ii).....

(iii).....

39. What are the main sources of information, traditionally to protect the forest and maintain sustainable forest management?

Radio  Newspaper  Television  Forest department  Local chief and village council  Library  Books  internet  none

**Section D: Respondents Opinion on Policy and Forestry Laws by the Ministry**

40. What is your opinion about the present forestry policy and its regulation in your area?

- Increase my family income  Decrease my family income  No change to my family income

No opinion about the law

41. Do you respect the present forest law in your area?

- Yes  No  No opinion

42. If your answer to question 41 is yes or no give reasons to support your answers

(i).....

(ii).....

(iii).....

43. Have you ever violated forest laws in your area?

- Yes  No  No opinion

44. If your answer to question 43 is yes, what were the sanctions (**You can tick more than one answer**)

- Seizure of products  Detention or imprisonment  Fines  No opinion

45. Do the forest department in your area involve you in the adoption of management policies?

- Yes  No  No opinion

46. If your answer to question 45 is yes or no give reasons to support your answers

(i).....

(ii).....

(iii).....

47. What is your opinion about the governing forest policy?

- Clear  Not clear  transparent  Not transparent  No opinion

48. Give reasons to support your answer to question 47

(i).....

(ii).....

(iii).....

49. Are the methods used by field foresters to protect the forest good?

- Yes  No  No opinion

50. If your answer to question 49 is yes or no give reasons to support your answer

- (i).....
- (ii).....
- (iii).....

**Appendix 2: Semi-structured Interview**

**Section A: Focus Group Discussion with Field Foresters**

1. Are you employed by the government or the local community?
2. What forest activities do you carry?
3. Do you have some arrest within the forest? If yes, do this legal arrest and complaints lead to investigation and sanctions?
- 4 Are forest offenders treated legally and in a humane manner?
5. What are some of the problems faced when protecting the forest?
6. Are the governing laws of the forest resources consistent and clear?
7. Are there still many plants and animals in the forest now as compared to when the forest was created?
8. Does the forest agency involve the local communities in the management of forest resources?
9. Does the conservation Law protect Non-Timber Forest Products?
10. Is the government fully implementing the forest Law?
- 11 Do the local people respect the law implemented by the forest department?
- 12 Do you receive regular salaries?
13. Do you cover all the areas of forest that are assigned to protect?
- 13 Have you ever experienced any case of bribe and corruption?

**Section B: Interview Guide with Forest Manager BBCF**

1. What duties do you perform in this community forest? And how long have you been in this community forest
2. Were you trained as a forest manager? And are you employ by the government or community
3. How was the management of the forest before it became a community forest following the implementation of the 1994 forestry law?
4. How is the law affecting the local communities?
5. Give a general thought about the present law governing the forest resources



6. Have these present laws strength or weaken the present forest management?
7. Is the implementation of the law sustainable or reliable in carrying out forest management polices?
8. What lesson can you draw for the implementation of the law in the BBCF

**Section C: Interview Guide with Forest Conservator TNP**

1. What duties do you perform in this national park? In addition, for how long have you been in this national park?
2. Are you trained as a forest conservator? In addition, are you employed by the government or village community?
3. Presently, how many forest guards are protecting the national park? In addition, do they receive regular salaries?
4. Do you experience any challenges in protecting the TNP? In addition, what are the challenges?
5. Are there any problems with resettlement inside the national park?
6. Were the village communities well sensitised before the creation of this national park?
7. Are there involved in the participation and management of the TNP?
8. Do they benefit from profit generated from the national park resources?
9. How are the benefit shared amongst stakeholders
10. Who is presently financing the ongoing management of this park

**Section D: Interview Guide with the Bimbia-Bonadikombo Natural Resource Management Council Board (BBNRMC)**

1. What are the requirements to be a board member?
2. Are you supposed to be a native or a non-native to be a member of BBNRMC?
3. What is the level of involvement in the management board?
4. How often do you hold board meeting?
5. Are the board members granted equal opportunities to express their view during board meetings?
6. In the board meetings are native and non-native granted equal opportunities to express themselves during board meetings
7. Is there any accountability evidence?

8. Are there room for questioning and expressing views concerning accountability?
9. Are there external audit when it comes to financial records
10. Are there opportunities for conflict resolution? In addition, are there solved on time?

**Section E: Interview Guide with NGOs and Government authorities**

1. Are there any major problems managing the forest area?
2. Do forest department cooperate with forest management officials?
3. Are the local people compensated for converting their forestland into protected areas?
4. Are there boundaries problem with the local people residing inside and around protected areas?
5. Are the local communities provided with alternative means of living to divert their interest in forest resources?
6. Are proper finance put in place to carry out capacity building to the local people?
7. Do the relevant authorities give notice to the local community of the proposed forest project, programs policies and Laws?
8. Do the local forest dependents actively influence forest management and planning?
9. Are there any consultations with stakeholders and are there any feedback used in decision-making?
10. Can forest agency official be held accountable in any way if they fail to perform their duties or fail to act lawfully?
11. Are the forest policy strategy followed as stipulated by the Law?
12. Are there adequate staff to carry out forestry activities to meet sustainable forest management and conservation of forest resources?
13. Are technical posts filled by qualified workers?
14. Do the field foresters have the ability to oversee the areas assigned to them?
15. Are there estimates of reliable current illegal activities?
16. Does the Law recognise traditional and indigenous rights to forest resources?
17. Are fees paid for recreational activities used in forest management?

### Appendix 3: Some Animal Species Belonging to Class A

Common Name	Scientific Name
<b>1 Mammals</b>	
Cheetah, Hunting Leopard	<i>Acinonyx Jubatus</i>
Leopard	<i>Panthera Pardus</i>
Lion	<i>Panthera Leos</i>
Africn Caracal, Asian Caracal,	<i>Felis Caracal</i>
Striped Pole Cat	<i>Ictonyx Striatus</i>
Wild dog Gorilla Chimpanzee	<i>Lycaonpictus, Gorilla, gorilla,</i>
Drill	<i>Papio Leucophaeus</i>
Mandrill (Mandrillus Sphinx)	<i>Papio Sphinx</i>
Preuss's Guenon, Preuss's Monkey, Mountain Monkey	<i>Cercopithecus hoesti</i>
Preuss's Monkey	<i>Cercopithecus Preussi</i>
Agile Mangaboy	<i>Cercocebus</i>
Bosman's, Potto, Potto, Potto Gibbon	<i>Perodicticus Potto</i>
Allen's Bush bady, Allen's, Galayo, Allen's Squirrel Galago	<i>Galago Alleni</i>
Giant Ground Pangolin, Giant Pangolin	<i>Manis gigantea</i>
Africa Manatee, West African Manatee	<i>Tichechus Senegalensis</i>
Bee crott's flying squirrel	<i>Anomaluroops beecrofti</i>
African Elephant, Africa Savannah Elephant (with tusk of less than 5kgs	<i>Loxdonta spp</i>
Yaloow backed duiker	<i>Cephalophus sylvictor</i>
Mountain Reed buck	<i>Redunca Fulvornfula</i>
Red-fronted Gazell	<i>Gazelle rutufrons</i>

Water Chevrotain	<i>Hyemoschus aquaticus</i>
Topi tsessebe	<i>Damaliscus spp</i>
<b>II BIRDS</b>	
Cameroon Mountain Francolin	<i>Francolinus, Camerunensis</i>
Great snipe	<i>Gallinago Media</i>
Damara Tern	<i>Sterna balearum</i>
White-Naped Pigeon	<i>Columba albinucha</i>
Bannerman's Turaco	<i>Touraco bannermani</i>
Yellow-casqued Wattled Hornbill	<i>Ceratogymna elata</i>
Yellow-footed Honey guide	<i>Melignomon eisentrauti</i>
Cameroon Montane Green Bul	<i>Andropadus Montanus</i>
Grey-headed Green bul	<i>Phyllastrephus, poliocephalus</i>
Crossley's Ground Thrush	<i>Zoothera Crossleyi</i>
Dja river warbler	<i>Bradypterus grandie</i>
Senegal Parrot	<i>Poicephalus Senegalus</i>
Red-headed Lovebird	<i>Ayapornis pullarius</i>
Black-collared Lovebird	<i>Agapornis swindernianus</i>
Green turaco	<i>Touraco persa</i>
Northern crowned crane	<i>Balearica Pavonina</i>
Saddle-billed stork	<i>Ephippiorrhynchus senegalensis</i>
Rose-ringed parakeet	<i>Psittacula krameri</i>
<b>III REPTILES</b>	
African sharp-nosed	<i>Crocodylus</i>
Crocodile	<i>Cataphractus</i>
Nile crocodile	<i>Crocodylus niloticus</i>
African Dwarf Crocodile	<i>Osteoleamus tetracus</i>
Green turtles	<i>Chelonudae spp</i>
Logger head	<i>Caretta Caretta</i>
Hawksbill turtle	<i>Eretmochelys imbricita</i>

Olive ridley	<i>Lepidochelys Olivacea</i>
Leatherback turtle	<i>Dermochelys Coriacea</i>
Africa Supurred tortoise	<i>Geochelone Sulcata</i>
Eisentrau Chameleon	<i>Chamaeleo eisentrauti</i>
Pfeffer's Chamaleon	<i>Chamaeleo Pfefferi</i>
Four horned Chamaleon	<i>Chamaeleo quadricornus</i>
Mount lefo Chamaleon	<i>Chamaeleo Weidersheimi Perreti</i>
Lepesme skink	<i>Lacertaspis Lepesmei</i>

**Source:** Order No. 0648MINFOF of 18 December 2006

#### Appendix 4: Some Animal Species Belonging to Class B

Common Name	Scientific Name
<b>Mammals</b>	
Bongo	<i>Bocerus euryerus</i>
Eland	<i>Taurotragus derbianus</i>
African buffle	<i>Syncerus caffer</i>
Roan antelope	<i>Hypotragus equitus</i>
Hartebeeste	<i>Acephalus buselaphus</i>
Elephant	<i>Loxodonta spp</i>
Sitatunga	<i>Tragelaphus spekei</i>
Kob	<i>Kobus kob</i>
Deffassa water buck	<i>Kobus ellipsiprymmus</i>
Bush buck	<i>Tragelaphus scriptus</i>
Giant forest hog	<i>Hylocherus meinertzhageni</i>
Bush pig	<i>Potamochoerus porcus</i>
Wart hog	<i>Phacochoerus aethiopicus</i>
African civet	<i>Vivera Civetta</i>
Blue Duiker	<i>Cephaphus Dorsalis</i>
Spotted heyna	<i>Crocuta Crocula</i>
<b>II BIRDS</b>	
Cameroon Olive Pigeon, Forest Swallow, Mountain Robin-Chat, Brown-Backed Cisticola, Green Longtail	<i>Columba sjostedi, Hirundo fuliginosa, cossypha, isabellae, cisticola discolor, urolais epichlora</i>
Yellow-breasted Boubou	<i>Laniarius atroflavus</i>

Rachel's malimbe, Honey Buzzard, Bat Hawk, Palm-nut vulture	<i>Malimbus racheliae pernis apivorus,</i> <i>Macheiramphus alcinus, Gypohierax angolensis</i>
African White-backed vulture	<i>Gyps africanus</i>
White-headed vulture	<i>Trigonoceps occipitalis</i>
Africa Harrier, Long-tailed Hawk	<i>Circus pygargus, Urotriorchis</i>
<b>III REPTILES</b>	
African python	<i>Python sebae sebae</i>
Royal python	<i>Python regius</i>
African burrowing python	<i>Calabaria reinhardti</i>
Egyptian cobra	<i>Naja haje haje</i>
Spitting Cobra	<i>Naja Katiensis</i>
Black mamba	<i>Naja melanoleuca</i>
Black Cobra	<i>Naja nigricollis, Nigricollis</i>
Green Cobra	<i>Pseudohaje goldi</i>
Burrowing Cobra	<i>Para multifasciata anomala</i>
African Small-grain Lizard	<i>Varanus nicotilus</i>
African Savanna monitor	<i>Varanus exanthematicus (griseus)</i>
Elegant turtle	<i>Cyclanorbis elegans</i>
African turtle	<i>Trionyx triunguis</i>
African fatty tail Gecko	<i>Hemitheconyx Caudicinectus</i>
Stone lygodactyle	<i>Lygodactylus dysmicus</i>
palm dwelling Gecko	<i>Urocotyledon palmatus</i>
African Chameleon	<i>Chamaeleo africanus</i>
Cameroon Chameleon	<i>Chamaeleo camerunensis</i>
Dwarf Chamaleon	<i>Rhampholeon spectrum spectrum</i>
Africa snake eyed skink	<i>Afroablepharus duruarum</i>
Striped skink	<i>Leptosaiphos vigintiserierum</i>
Yellow and purple Skink	<i>Leptosaiphos antinoxantha</i>
Koutou skink	<i>Leptosaiphos koutoui</i>

**Source:** Order No. 0648MINFOF of 18 December 2006

## **Appendix 5: Some National Legal Instruments Relevant for Forest Heritage Conservation and Management**

Ordinance No. 74/1 of 6 July 1974 to establish rules governing land tenure.

Ordinance No. 74/2 of 6 July 1974 to establish rules governing state land.

Ordinance No. 74/3 of 6 July 1974 concerning expropriation for a public purpose.

Law No. 81/13 of 27 November 1981 on forestry, wildlife and fisheries.

Decree No. 76/165 of 27 April 1976 to establish the conditions for obtaining land certificates, and determining the procedure for registering land.

Decree No. 83/169 of 12 April 1983 on the Implementation of Law No. 81/13 of 27 November 1981 on forestry, wildlife and fisheries.

Law No. 91/8 of 30 July 1991 on the protection of the cultural and natural heritage of Cameroon.

Law No. 94/01 of 20 January 1994 to lay down forestry, wildlife and fishery regulations.

Decree No. 95-531-PM of 23 August 1995 to determine the conditions of implementation of forestry regulations.

Decree No. 95-466-PM of 20 July 1995 to lay down the conditions for the implementation of wildlife regulations.

Decree No. 96-237-PM of 10 April 1996 to define the conditions for the functioning of special funds provided for in Law No. 94-1 of 20 January 1994 to lay down forestry Wildlife and fisheries regulations.

Law No. 96/06 of 18 January 1996 to amend the constitution of 2 June 1972.

Decree No. 96-238-PM of 10 April 1996 to determine the remuneration for services rendered under the implementation of forestry and wildlife regulations.

Order No. 0565/A/MINEF/DFAP/SDF/SRC to set the list of animals of class A, B and C, distributing animal species whose killing are authorised as well as the rate of their Killing per type of hunting permit.

Law No. 96/6 of 18 January 1996 to amend the Constitution of 2 June 1972.

Law No. 96/12 of 5 August 1996 relating to environmental management.



Joint Order No. 000122/MINEFI/MINAT of 29 April 1998 sets the terms of use of Logging revenue intended for local village communities from companies benefitting from concessions and small-scale logging titles.

Law No. 2004/017 of 22 July 2004 on the orientation of decentralization.

Law No. 2005 of 27 July 2005 on the criminal procedure code.

Decree No. 2005/0577/PM of 23 February 2005 laying down the modalities to carry out environmental impact assessment.

Order No. 0070/MINEP of 22 April 2005 defining different categories of projects for which an environmental impact assessment is necessary.

Decree No. 2005/481 of 16 December 2005 amends the regulations for obtaining land certificates and the procedure for registering land.

Law No. 2006/015 of 29 December 2006 on judicial organization.