Kungliga Tekniska Högskolan
Royal Institute of Technology
School of Architecture and the Built Environment
Department of Urban Planning and Environment

SOM-EX 06-005

MASTER OF SCIENCE THESIS

Socio-economic impact of *Prunus africana* management in the Mount Cameroon region

A case study of the Bokwoango community

EKANE NELSON BELLEWANG

DIVISION OF URBAN PLANNING

ABSTRACT

In most developing countries, forest resources are a major source of livelihood for forest dwellers. Forests provide fuel wood, farm products, meat, timber and plants of high medicinal value, including *Prunus africana*. The collection of medicinal plants is also an important source of cash income for some forest communities, and widely relied on to cure illnesses (Poffenberger, 1993). Because of this, the poor forest dwellers in particular are forced to exert pressure on their surrounding environment to make ends meet. Indiscriminate exploitation of forest resources has cost some forest dwellers dearly as they are now experiencing marked reduction of wildlife, forest cover, soil fertility and most importantly water supply, which is a key to life. *Prunus africana* has a very high economic and medicinal value locally as well as internationally. The exploitation of this species is a very profitable activity in most parts of Africa where it occurs, including the Mount Cameroon region. In recent years, most youths and young men in the Mount Cameroon region have seemingly become less interested in their usual income generating activities (farming, hunting, etc.) because of reduced productivity and have taken up *Prunus* harvesting as their major source of income. Increase in demand for this species by the French pharmaceutical company (Plantecam), weak institutional capacity to control exploitation, uncontrolled access into the forest, scramble for diminished stock by legal and illegal exploiters, destruction of wild stock by unsustainable practices, and insufficient regeneration of the species in the past have almost driven this species to extinction in certain parts of Cameroon and made it severely threatened in others. *Prunus africana* is presently threatened with extinction in the entire Mount Cameroon region. In response to this, the Mount Cameroon Project (MCP) and the Ministry of Environment and Forests (MINEF) helped some communities (Bokwoango and Mapanja) in the Mount Cameroon region to form *Prunus africana* harvesters' unions with the aim of preserving the resource and improving the socio-economic benefits. The principal aim of the Bokwoango *Prunus africana* harvesters' union is to ensure sustainable exploitation of *Prunus*

africana while saving money for important development projects for individual members, their families and the entire community. This piece of work highlights the different facets of *Prunus africana* management in Cameroon in general and the Bokwoango community in particular. The study examines the socio-economic impact of *Prunus africana* management in the Bokwoango community and shows specifically the management role played by the Bokwoango *Prunus africana* harvesters' union to reduce the rate of exploitation of *Prunus africana* and also to ensure benefit sharing of the earnings from sales of *Prunus* bark. It at the same time brings out the constraints encountered by harvesters as well as the opportunities that can make the union become more viable to the socio-economic development of the Bokwoango community. Results of this study show that for the short period that the Bokwoango *Prunus africana* harvesters' union has existed, the socio-economic changes in this community are encouraging if one compares the present situation with that before the formation of the union. Most importantly, there has been increased awareness on the great need to conserve not only the threatened *Prunus africana* species but also other threatened plant and animal species in the region through sustainable hunting, harvesting and regeneration. Some proposals are made for efficient natural resource management and improvements on livelihood through alternative income generating activities. The study ends with recommendations for policy and institutional reforms as well as suggestions for further research in sustainable management of *Prunus africana.*

Keywords: Exploitation, Non-Timber Forest Product (NTFP), Regeneration, Conservation, Sustainability, Community forestry, Sustainable livelihood, Community-Based Natural Resource Management (CBNRM), Socio-economic impact, Management

TABLE OF CONTENTS

ACKNOWLEDGEMENT

This study would not have been complete without the support and contributions of a lot of people.

I am most grateful to the Head of International Programmes at the School of Architecture and the Built Environment, Department of Urban Planning and Environment, Division of Urban Studies, Dr. Viking, Nils for supervising my work. His recommendation, guidance and comments were indispensable for the accomplishment of this work. I equally wish to acknowledge the financial support I obtained from Sida through the Director of Studies of the EESI Programme, Associate Professor Gustafsson, Jan-Erik. This financial contribution was of great help to me during my field studies. I very much appreciate the discussion I had with my opponent Arvid Krueger and the constructive comments made by my examiner Professor Cars, Göran at my thesis seminar. These helped me improve on the thesis.

My sincere appreciation goes to the staff of Mount Cameroon Project and Kalle, the president of the Bokwoango *Prunus africana* harvesters' union for helping me out in the field to administer the research questionnaires and gather relevant information. It would not have been easy for me to single-handedly go around asking questions in Bokwoango without the assistance of Kalle who was very devoted and interested in my work. I am thankful to Per Giertz, Managing Director of ORGUT Consulting AB for giving me the opportunity to make use of the office library.

Special thanks go to my loving parents (Pa Ajale and Ma Ebude), sisters and brothers for their relentless support and encouragement throughout my studies. Mbole has always supported me financially and Ebah has been very helpful in gathering some vital information from some government institutions in Buea. I cannot end without acknowledging the very special role played by Metuge. He has always been there to encourage, support and inspire me to work harder, and was

very instrumental in making me participate in the EESI Programme. Duone, Ngome and Edibe have always been there for me.

Lastly, I wish to extend my gratitude to friends and classmates for their encouragement and academic cooperation.

ACRONYMS

MCP: Mount Cameroon Project

MINEF: Ministry of Environment and Forestry

NTFP: Non-Timber Forest Product

DBH: Diameter at Breast Height

CITES: Convention on International Trade in Endangered Species

CERUT: Centre for the Environment and Rural transformation

LBZG: Limbe Botanical and Zoological Garden

Mount-CEO: Mount Cameroon Ecotourism Organization

GHS: Government High School

CDC: Cameroon Development Corporation

ICRAF: International Center for Research in Agroforestry

NFAP: National Forestry Action Plan

IFAD: International Fund for Agricultural Development

DFID: British Department for International Development

UNCED: United Nations Conference on Environment and Development

WWF: Worldwide Fund for Nature

GTZ: German Technical Corporation

DED: German Development Service

ODA: British Overseas Development Administration

ODI: Overseas Development Institute

SNV: Netherlands Development Organization

SOWEDA: Southwest Development Authority

ONADEF: Office National de Développement des Forêts

IRAD: Institut de Recherche Agricole pour le Développement

MIFACIG: Mixed Farming Common Initiative Group in Boyo Division.

MOCAPCIG: Mount Cameroon *Prunus africana* harvesters' Common Initiative Group

MKFP: Mount Kupe Forest Project

KIMFP: Kilum/Ijim Mountain Forest Project

PRSP: Poverty Reduction Strategy Paper

GLOSSARY

Socio-economic: This is considered as a unit based upon the interrelationship of social and economic factors.

Social: Pertaining to society or its organisation. Related to persons as living in society or to the public as an aggregate body. Constitutes living in a society, having developed or fulfilled tendencies to organise in society as a race or people in communities as social beings.

Economic: Relating to the science of economics. Pertaining to money matters or wealth and also to the management of affairs.

Management: The act, art, or manner of managing, controlling, or conducting. It also means the skilful use of means to accomplish a purpose.

Impact: A continuing, powerful influence (Funk and Wagnalls, 1976).

Livelihood: A means of maintaining life.

Sustainable livelihood: An occupation or employment enabling some one to provide for his/her basic needs and to be secure that this will continue to be the case in the future.

Exploitation: The use of land, oil, minerals, etc. (Hornby, 1997).

Non-Timber Forest Products (NTFPs): Also known as Non-Wood Forest Products (NWFPs), include all materials supplied by woodlands except timber. It is also defined as all goods derived from forests of both plant and animal origin other than timber and firewood.

Regeneration: (biol.) The restoration or new growth of plants, etc. that have been lost, removed, or injured.

Conservation: The act of conserving; preserving from loss, injury, or waste. Official protection of rivers, forests and other natural resources.

Biodiversity: The variety of life on earth at all its levels, from genes to ecosystems, and the ecological and evolutionary processes that sustain it.

Sustainability: This means resolving the conflict between the two competing goals - the sustenance of human life and the integrity of nature. It involves the

simultaneous pursuit of economic prosperity, environmental quality and social equity.

Community forestry: The effort by communities - those united by a common interest or by a sense of place – to recognise and take advantage of the economic, social, and environmental opportunities afforded by their local forest resource, whether public or private.

Co-management: This is a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources.

Community-based natural resource management (CBNRM): Consists of two parts. Community-based is the first part and it implies that the community has the legal right, the institutional base and the economic incentives to take substantial responsibility for the sustained use of local resources. The second part, natural resource management refers to the management of these local resources (CBNRM Net, 2001).

LIST OF TABLES

LIST OF PICTURES

LIST OF FIGURES

LIST OF BOXES

CHAPTER ONE
INTRODUCTION OF THE RESEARCH

1.1 PROBLEM FORMULATION INCLUDING RESEARCHABLE QUESTIONS

GENERAL PROBLEM FIELD

The world's resources are dwindling at an alarming rate, and this is a serious cause for concern. Some natural resources are renewable, usually at very high costs, whereas others are completely irreplaceable. Therefore, it is imperative that resource management should fully involve the consideration of long-term resource costs. Management plans, programmes and schemes without long-term considerations are bound to be very expensive, if not disastrous for the future.

There is a complex interrelationship between the components of the ecosystem and this reciprocal relationship makes the survival of some components greatly dependent on the performance of others. Consequently, an effect on some components causes direct or indirect impacts on others. There is also a link between forest degradation and poverty. Forest degradation makes the soil susceptible to erosion that causes soil degradation and crop failure. Catchment[1] functions of forests are everywhere tangibly critical for those living in their watersheds[2] (Wily, 1995a). Forest degradation also contributes to climate change, which is characterized by increase in atmospheric temperature, changes in rainfall patterns, reduced flow from watersheds, water scarcity and desertification. Moreover, human activities affect other forms of life in different ways. Some activities that have direct effect include indiscriminate exploitation of forest resources with the resultant destruction of habitats as well as highly endangered plant and wildlife species that need to be conserved. Other human activities that exert indirect effect may include different types of pollution, mismanagement of resources and bad government policies. Undoubtedly, human population trends are

[1] The Catchment of a forest is the area that the forest serves; a technical term in geography.
[2] Watersheds are regions or areas of high ground drained by a river or a river system; a technical term in geography.

also indirectly contributing to the environmental problems in the world today. Perman *et al.* (1999) ascertain that many people live in conditions that do not meet reasonable standards. This is particularly true for people living in the poor nations of the world, but it is by no means restricted to them. Not surprisingly, the extent of degradation tends to be highest in those parts of the world that have the greatest forest coverage. It is the tropical forests that are most extensive, and tropical deforestation is now perceived as the most acute problem facing forest resources. In the 30 years from 1960 to 1990, one fifth of all natural tropical forest cover was lost, and the rate of deforestation had been increasing steadily during that period.

We are presently confronted with serious problems of deforestation, desertification, water scarcity, pollution, acid rain, global warming, etc, which are all impacts of man's activities. The lives of human beings themselves are presently affected, and mankind's future survival is severely threatened. Haas (1990) stresses that environmental management has only recently emerged as a popular topic of study. The environment is perhaps best characterized as an arena in which many different issues interact. For instance, patterns of energy use, industrial practices, and demographic change all play key roles in the understanding of the major dynamics and causes of environmental degradation. One of the four sections of Agenda 21[3] focuses on conservation and management of resources for development. This section emphasizes the need to manage physical resources such as land, seas, energy and waste to further sustainable development. But according to Huckle and Martin (2001), the transition to sustainable development involves hard political choices, for ecological and economic sustainability can be realized with more or less social, cultural and personal sustainability. If the former are to be realized with improvements in social justice, cultural diversity and individual

[3] Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organisations of the United Nations system, Governments, and major groups in every area in which human impacts on the environment. The Rio Declaration on Environment and Development, and the statement of principle for the sustainable management of forests were adopted by more than 178 governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, 3rd to 14th June 1992. Further implementation of Agenda 21 and commitments to the Rio principles were strongly reaffirmed at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa from 26th August to 4th September 2002.

fulfillment, social relations in all spheres of people's lives, at all levels, will need to be more democratic. Therefore, programmes designed for the conservation of the biosphere can only be made democratic through active public participation and the consideration of socio-economic, cultural, gender and political factors.

SPECIFIC PROBLEM AREA

In most parts of the world, perhaps most easily discernible in the third world, humans depend on their surrounding environment as a major source of livelihood. Forests provide important cultural and economic resources for the rural and urban poor. For instance, forests provide fuel wood, timber, cooking oil, bush meat, agricultural inputs and medicinal products. Cameroon as a third world or developing country is endowed with one of the richest biodiversity in Africa with a myriad of fauna and flora. Cameroon has been identified by the World Bank, World Conservation Union and the World Wide Fund biodiversity task force as one of the 13 mega diversity countries in the world.[4] The forests and biodiversity of Cameroon constitute a significant portion of the Congo Basin. The Congo Basin accounts for about 80 % of the remaining moist forests in Africa and 20 % of the world's tropical moist forest – second in size only to the Amazon (Essama-Nssah and Gockowski, 2000). This enormous and diverse resource base is one of Cameroon's most important assets - it is an irreplaceable cultural heritage and national treasure that must not be destroyed. Yet the inhabitants of the Mount Cameroon region cut down forest indiscriminately for subsistence farming and firewood. They destroy soil by poor farming practices and exploit forest resources that are of economic importance, e.g. tree species like *Prunus africana*. They hunt different animal species like antelopes, monkeys and porcupines, and capture beetles, chameleons, snakes and birds. *Prunus africana* has become important in the Mount Cameroon region because of its medicinal value, and many people are involved in its exploitation and marketing. The lure of money from sales is causing

[4] Article by Johnny Fonyam (Ph.D) in the Culture and the Environment publication (1999). A publication of the University of Strathclyde, Glasgow and the University of Buea, Cameroon.

the inhabitants of this region to harvest the species unsustainably. As hunting and farming becomes more difficult and less productive in this region, the inhabitants are looking for alternative sources of income. They are, therefore, left with no other option than to exert pressure on the *Prunus africana* species to make a living. The high level of exploitation and trade has greatly depleted the *Prunus* species, and has made the inhabitants of the Mount Cameroon region victims of severe forest mismanagement. The majority of these people are often left out of decision-making processes, and gender issues are often not taken into consideration. This is coupled with the little or no environmental education they received in the past. Consequently, they are forced to exploit their environment indiscriminately even though few of them are aware of its intrinsic value and recognize that it requires conservation. There are legal, socio-economic, ecological and tenure problems associated with the exploitation, management and regeneration of *Prunus africana* in the Mount Cameroon region in general and the Bokwoango community in particular.

Law is an effective instrument of control and preservation of the environment. It is also important to note, however, that law is often by no means the only control instrument as it is not self-executory unless its enforcement is secured, e.g. through transparent practices and involving local communities in management of the resource that the law is designed to protect. Other complementary instruments[5] thus need to be put in place to make the system function effectively. Legally, all the trees in the Cameroon forests belong to the State. Therefore, exploitation of any forest resource requires permission in the form of a license from the State. Oblivious of this, most of the people in the Mount Cameroon region believe that all the trees growing in and around their communities belong to them and so they have the right to do what ever they wish with the forest and its resources. Some of them join in the illegal process of *Prunus africana* exploitation and adopt poor harvesting methods - cutting down trees and

[5] 'Complementary instruments' here implies creating awareness on the legal requirements for forest exploitation and the strict implementation of enforcement measures.

total debarking of mature as well as young trees. Over exploitation and unreliable field monitoring during the illegal period of *Prunus africana* harvesting has led to the destruction of the *Prunus* stock in individual farms and surrounding communal forests. With the increasing scarcity of this resource, harvesters now have to go further away from Bokwoango to harvest wild stock from forest under State control.

Despite the high rate of *Prunus africana* exploitation before the formation of the *Prunus africana* harvesters' union, very little socio-economic changes were experienced by the *Prunus africana* harvesters in the Bokwoango community. During that period, there was limited control over the harvesting techniques and quotas. Poor record keeping and inequitable benefit sharing during this period made it difficult for harvesters to initiate development projects for themselves and the entire community. In Bokwoango, Mapanja, Bonakanda and Ekona Lelu, for instance, where Plantecam Medicam used immigrant exploiters or middlemen, the local people were not adequately involved in the transactions and as such were not deriving a fair share of the benefits from the exploitation process. The local harvesters, who were supposed to be the direct beneficiaries of the *Prunus africana* trade, were continuously being cheated by middlemen coming from outside to buy *Prunus* bark. This created great tension between local harvesters and middlemen with frequent cases of conflicts.

Unaware of sustainable harvesting techniques as well as some consequences of indiscriminate exploitation of *Prunus africana* during the illegal period, the Bokwoango harvesters continued mounting pressure on the species through unsustainable harvesting techniques. This has led to the destruction of this resource in the forests in and around their community. Results of the 1996 *Prunus africana* inventory[6] show that the resource base of this species has been greatly destroyed in

[6] *Prunus* inventory carried out in 1996 by the Bureau for the Management and Development of Forests (ONADEF) in collaboration with Ministry of Environment and Forests (MINEF), Mount Cameroon Project (MCP), the processing facility and exportation enterprise (Plantecam Medicam) of the French pharmaceutical company – Groupe Fournier – the main purchasers of *Prunus africana* bark, and communities in the Mount Cameroon region to determine the remaining stock of *Prunus africana* for sustainable management.

the forest extending from Bokwoango right up to Ekona Lelu. During the past few years, most farmers and *Prunus africana* harvesters in the Mount Cameroon region have shown increasing interest in *Prunus africana* regeneration. Some of these farmers and harvesters, however, do not have access to sufficient land on which to carry out subsistence farming and *Prunus africana* cultivation at the same time. Lack of a modern environmental information system in this region is also a major barrier to conservation initiatives and strategies.

The problems encountered here are twofold: firstly, how to realize an improvement of plant seeds through regeneration; and also, how to introduce sustainable exploitation techniques. These are, however, less severe problems that could be easily taken care of scientifically. Secondly, government initiatives in actively involving local communities in natural resource management and effectively implementing the policy reforms in the forestry sector are more severe problems to solve, because they are often shaped by politics and centralization with objectives not necessarily aiming at the same goal.

RESEARCHABLE QUESTIONS

Two specific questions are closely examined in this study. These include:

- To what extent has the exploitation of *Prunus africana* affected the socio-economic well-being of the inhabitants of the Bokwoango community – both members and non-members of the Bokwoango *Prunus africana* harvesters' union?
- How can the Bokwoango *Prunus africana* harvesters utilize their environment sustainably as a major source of livelihood and at the same time live in harmony with it, without destroying the inherent resource base?

1.2 BRIEF BACKGROUND OF THE STUDY

Amongst all the village communities in the Mount Cameroon region, the Bokwoango community was the second after the Mapanja community to take action when harvesters started noticing an increasing scarcity of *Prunus africana* on which they greatly depended. Another cause for action was the realization that they had been cheated for too long by illegal buyers of *Prunus africana* bark or middlemen who were not giving them a fair share of the trade in *Prunus africana*. These two communities resorted to the formation of user groups - *Prunus africana* harvesters' unions to ensure the preservation of this very important resource in pursuit of their socio-economic livelihood. Even before the formation of these *Prunus africana* harvesters' unions, there already existed hunters' and farmers' unions involved in regulating hunting and farming activities in some of the communities in the Mount Cameroon region. Farming, hunting and timber collection have for several decades been the major sources of income in the Bokwoango community. Most of the community members involved in these activities seemingly took up *Prunus africana* exploitation as an additional income generating activity during the last two decades. There has also of recent been an increasing interest, predominantly amongst the youths, in the exploitation and trade of rare species of beetles, chameleons, snakes and birds. The problems of poor record keeping and inequitable benefit sharing during the illegal period of *Prunus africana* exploitation were reduced significantly when the Bokwoango *Prunus africana* harvesters' union took over control of exploitation activities in the community. The existence of this union has been an impetus not only for the socio-economic development of members who have noticed slight improvements in their income from *Prunus africana* exploitation, but also for the conservation of the *Prunus africana* species, which is presently severely threatened in the entire Mount Cameroon region. The results of ONADEF *Prunus africana* inventory carried out in 1996 indicated widespread mortality of this tree species resulting from poor exploitation methods, and a future sustained yield of approximately 300 tons per annum from the Mount Cameroon forest. Though the

Prunus africana tree density estimates of this inventory are being criticized by exploiters and forest managers for its reliability, one point is clear and has been accepted by the exploiters and forest managers themselves. This is the fact that *Prunus africana* has become scarce. In addition to *Prunus africana* exploitation, forest clearance for farmland and firewood, timber collection for furniture and house construction, hunting of bush meat, collection of reptiles and beetles, including other insects have greatly reduced the fauna and floristic value of the Mount Cameroon forest.

It is worthwhile to study and document the initiatives of user groups, especially the efforts made towards socio-economic and cultural development. This study assesses specifically the institutional and operational capacity of the Bokwoango *Prunus africana* harvesters' union to manage *Prunus africana* exploitation in a sustainable and equitable[7] manner. It is through such studies that a clearer picture of the strengths and weaknesses of communities as resource managers maybe brought out, and the difficulties they encounter in the management process be better understood. From his research on poor forest communities in Eastern India, Poffenberger (1993) states that there is a great need for better documentation of community initiatives. He says there is a lot we do not know about the species existing in the region and their importance to people. The questions he think might give us an idea of the priorities and preferences of poor forest users include: How are the forest species used? How much can be harvested sustainably? How can the value of these forest products for local people be enhanced? How can outside organizations best support the activities of local people? Results of this study, therefore, give an idea of the extent of socio-economic change as a result of *Prunus africana* management and bring out the activities of the Bokwoango *Prunus africana* harvesters' union. From the results, it is also possible to cast light on whether the set objectives of the Bokwoango *Prunus*

[7] Equitable means fair and reasonable in a way that gives equal treatment and satisfaction to everyone.

africana harvesters' union as well as anticipated changes in the entire community are being achieved or not.

1.2.1 UTILISATION OF THE RESOURCE - Prunus africana

Before starting any discussion on the usage of *Prunus africana*, it is important to first of all outline its nomenclature, description, geographical distribution and uses. This gives a picture of what *Prunus africana* looks like and what components make it so important. There are different common and local names given to this species in the different geographical regions where it occurs. The nomenclature, description, geographical distribution and uses of *Prunus africana* are outlined below.

Nomenclature

Scientific Name: *Prunus africana* (Hook.f) Kalkman (Rosaceae), formerly known as: *Pygeum africanum* (Hook.f) (Cunningham and Mbenkum, 1993).
Common Names: Pygeum, African Cherry, Red Stinkwood
Local Names in Mt Cameroon region: 'Kanda stick', 'Wotangue'

Description and Geographical Distribution

Prunus africana is a medium size evergreen, hard wood species of the family Rosaceae. It is endemic in afro-montane forests[8]. Geographically, this species is distributed mainly in the wild forests of some countries in Central, East and Southern Africa, including the islands of Sao Tome, Fernando Po, Grand Comore and Madagascar. Naturally, it occurs mostly at high altitudes with low temperatures (between 900-3,000 m altitude) and mainly in areas with favoured edaphic[9] conditions. It has a spreading crown and may grow up to the height of approximately 40 m. The tree takes 15 to 20 years to produce seeds and 12 to 15

[8] Afro-montane forests are a rare type of evergreen mountain forest found in the tropical African area where local climatic conditions causes cloud and mist to be regularly in contact with the forest vegetation. These forests support ecosystems of distinctive floristic and structural form and contain a disproportionately large number of the world's endemic and threatened species. *Prunus africana* is found only in the African forests.
[9] Edaphic refers to ground or soil.

years to produce bark with the prostrate remedy's active ingredient. The bark is dark brown to black with a rough blocky texture. Freshly broken bark smells like bitter almond (Schippmann, 2001). Bark extracts contain fatty acids, sterols and pentacyclic terpenoids (Longo and Tira, 1981; Catalano *et al.*, 1984; Uberti *et al.*, 1990). These are possibly the active components that give the bark its medicinal properties. The tree is home to numerous symbiotic plants (ferns and orchids) and also to a myriad of wild birds and animals.

Picture 1 - The *Prunus africana* tree (Source: Future Harvest, 2004)

In Cameroon, *Prunus africana* occurs in three major areas with volcanic soils and a cooler highland climate. Favourable climatic conditions and fertile soil have contributed to the dense population in these areas (Cunningham and Mbenkum, 1993). Recently, influx of people into these areas has been attributed to *Prunus africana* exploitation even though its contribution to population increase is negligible when compared to other important factors such as fertile soil and favourable climate for agriculture. The areas in Cameroon where *Prunus africana* occurs include: the Northwest province; Western province; and the Southwest province where the Mount Cameroon region is found. Sparse clusters of *Prunus africana* can be found in the forests of Mount Cameroon and Mount Muanenguba of the Southwest province, Mount Oku in the Northwest province, and the high plateaux of the

Western province. This species is presently known to be almost extinct in the Northwest and Western provinces, and threatened in the Southwest province.

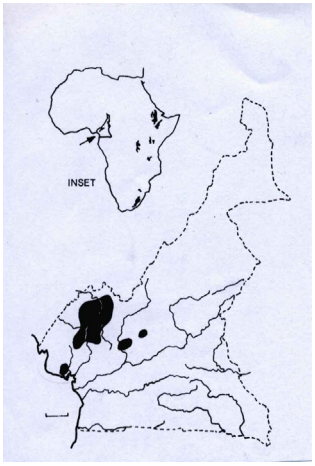


Figure 1 - Maps of Cameroon and the whole African continent showing the geographical distribution of *Prunus africana*. The black areas are *Prunus africana* rich regions. The island regions in the African continent where *Prunus africana* is present are not represented here. (Adapted from Cunningham and Mbenkum, 1993).

Reasons for Over-exploitation

The bark of *Prunus africana* has high medicinal value. Thus, the species is of great importance locally as well as internationally. The intrinsic value of this species is the driving force behind the indiscriminate exploitation for local and international trade. However, the quantity of *Prunus* harvested for international trade far surpasses that used locally. High demand for this species has led to over-exploitation for its medicinal properties and to a lesser degree for its timber. This has made the species scarce not only for international trade but also for use by the local communities.

Local and International Uses

Locally, dry bark is either chewed or crushed into powder and drunk as tea for the treatment of several ailments. It is an important medicine in the Ijim montane forest area, where it is used to treat malaria, stomachache and fever (Nsom and

Dick, 1992). It is used for this same purpose in the Mount Cameroon region. Other ailments that are cured traditionally using *Prunus africana* bark or bark extracts include: genito-urinary complaints, headache, chest pain, allergies, and kidney diseases (Fru, pers. comm., 2005). The bark is not only used by traditional healers, but also by local people collecting their own medicinal plants, including for use as a purgative[10] for cattle (Kalkman, 1965). The wood is hard and durable. Hence, it is excellent for use as construction material and in the manufacture of furniture. It is also used to manufacture handles for farm tools and house hold utensils. Worth mentioning also is the stock that is cut down for fuel wood by farmers.

The *Prunus africana* bark extract was patented in 1966 (Debat, 1966) and processed to provide treatment for prostrate gland hypertrophy[11] (Longo and Tira, 1981; Catalano *et al.*, 1984). Perman *et al.* (1999) conclude that one fifth of all tropical forest cover was lost during the period from 1960 to 1990, which implies that *Prunus africana* is one of the tropical forest species that was intensively exploited during this period after bark extract was patented in 1966. Presently, bark extract is used internationally for the manufacture of drugs to cure benign prostrate hyperplasia, prostrate gland hypertrophy and male pattern baldness. These diseases commonly affect older men in Europe and North America (Dawson and Rabevohitra, 1996). Presently, prostrate gland disorders are a health threat to older men not only in the Western world but also in the third world. France is probably the biggest importer of *Prunus africana* bark. Other European countries involved in its importation include; Italy, Spain, Switzerland, Belgium, Germany and Austria. Capsules containing bark extracts have been marketed in Europe for more than two decades.

Prunus africana trees are felled at unprecedented rates to fuel a US $ 220 million annual market in *Prunus* remedies in Europe and the United States. The main companies involved in the international trade of *Prunus africana* include: Groupe

[10] Purgative is a medicine that causes evacuation of the bowels. It stimulates peristaltic action and causes defecation so as to get rid of unwanted substances from the body.
[11] Prostrate gland hypertrophy is the enlargement of the prostrate gland in males.

Fournier (France), Indena Spa (Italy), Inverni della beffa (Italy), Sarget (Spain), Inofarma (Spain), Muggenburg Extrakt GmbH (Germany), and SODIP (Madagascar).[12] Extract in tablets or capsules are marketed under two main names: 'Tadenan', produced by Laboratoire Debat in France and 'Pygenil' produced by Indena Spa in Italy (Cunningham and Mbenkum, 1993). *Prunus africana* is traded in different forms, which include: unprocessed dry bark, bark extracts, herbal preparations in the form of capsules, and as timber. It is undoubtedly because of the lucrative nature of the international market that *Prunus africana* is being over-exploited and traded on a larger scale than any other African medicinal tree species with the resultant devastation of wild stock. This species has been listed as vulnerable in the world's list of threatened trees, owing to its rapid population decline (Schippmann, 2001). The decline in *Prunus africana* stock is alarming and has great impact on fauna and flora, whether dependent on the species or not. Bark removal is most extensive in Cameroon and Madagascar (Dawson and Rabevohitra, 1996). Cameroon is probably the biggest exporter of *Prunus africana* bark and bark extracts in Africa, followed by Madagascar. Other African countries with high trade in this species include: Kenya, Uganda, Tanzania, and the Democratic Republic of Congo (Cunningham and Mbenkum, 1993).

1.3 AIM AND OBJECTIVES

The aim of this study is to contribute to knowledge towards the achievement of improved livelihood and continuity through community natural resource management - *Prunus africana* specifically - in the Mount Cameroon region and beyond.

The objectives of this study are to:

- Identify and analyse major socio-economic and cultural aspects associated with *Prunus africana* management – by members and non-members of the Bokwoango *Prunus africana* harvesters' union.

[12] Future Harvest 2000 press release. Ancient medicinal tree threatened with extinction.

- Identify actors - national and international, and discuss the efforts these actors make to ensure proper *Prunus africana* management, regeneration and improved livelihood.
- Propose and discuss some managerial techniques and institutional set-ups that could promote and support efficient management and regeneration programmes.

1.4 SCIENTIFIC AND PRACTICAL SIGNIFICANCE OF THE STUDY

This study asserts that if adequate management and regeneration measures are taken into consideration, *Prunus africana* can be continuously exploited and traded without driving the species to extinction.

The significance of this study is twofold: scientific and practical significance of the results obtained. Scientifically, this study contributes to knowledge on *Prunus africana* management as part of community resource management. Practically, the results of this study could be applicable to the Bokwoango community, other communities in Cameroon, communities in other developing countries and even beyond. This study might pave the way for further research in this field.

1.5 RESEARCH FRONT REVIEW

The exploitation of tropical forest for timber is a very lucrative trade in the international market, and is an important contributor to the economy of most tropical countries, including Cameroon where lumbering is intensive. However, there has also been increasing interest over the years in the exploitation of non-timber forest products (NTFPs), including medicinal plants, e.g. *Prunus africana* because of their intrinsic value and high demand both at local and international markets. It is conventional for most people to think that the exploitation of tropical forests for timber is the major cause of degradation. This is not entirely true. They forget that exploitation of NTFPs has also gradually degraded tropical forests. Vast

areas of once lush forests are fast becoming desert land due to the high rate of forest exploitation for timber and NTFPs, as well as forest clearance for agricultural land in Africa, a continent with a rapid population growth and urbanization (Wangari Mathaai, pers. comm., 2005). Growth in lumbering and agricultural activities, as well as the increase in demand for fuel wood partly triggered by population growth and economic crisis are generally considered the prime causes of deforestation, land degradation, water scarcity and desertification in Cameroon and perhaps many other countries in sub-Saharan Africa. It is asserted that a touch on the forest is a touch on the environment. Thus, it is absolutely necessary to involve environmental concerns in forest management. The question that we are faced with, therefore, is; should forest exploitation cease because of the negative effects of man's activities on the forest and its resources? Not necessarily. Studies aimed at identifying the value of forest should also identify appropriate ways of using the forest and keeping it intact at the same time. In Cameroon, for instance, the lumbering sector, which employs several people, contributes to economic growth of the country. The opening line of the 1995 Forest Policy document of Cameroon notes that "the forests of Cameroon represent one of the country's greatest riches." Overall, ONADEF estimates that the national stock of commercial timber represents a standing value of about 25,000 billion FCFA, which is approximately US$ 70 billion. As in many other developing countries, there are few reliable sources of statistical information about forest loss in Cameroon, but estimates of annual deforestation range from 0.4 to 1.0 % (Essama-Nssah and Gockowsky, 2000). Putting an end to lumbering activities, therefore, will play a negative role on the economy of the country. In any case, the way forward involves transparent allocation of exploitation licenses, adoption of appropriate conservation strategies, enforcement of forestry regulations, rigorous forest regeneration programs, and, most importantly, joining communities in natural resource management. The implementation of conservation strategies in community forestry programmes as well as other local initiatives can

only be made successful if the situation of the people involved is well understood and appropriate measures taken to address their problems. People must be taught how to make value judgments and decisions based on physical and biological principles as well as ethical and moral consideration.[13]

The first section of Agenda 21, which focuses on the social and economic dimension, highlights the interconnectedness of environmental problems with poverty, health, trade, consumption and population. Mortimore (1998) thinks that the image of Africa in the modern world has come to be shaped by the perception of the continent's drylands and its associated problems of population growth, poverty, drought, degradation and famine. Marrison and Larson (1995) use UN baseline population projections, which suggest that Africa's population in 2025 will be 2.5 times the 1990 level. In the developing world as a whole, about 2 billion people rely solely on fuel wood as their energy source for heating and cooking. Traditional fuels, mostly firewood, supply about 52 percent of all energy required in sub-Saharan Africa (World Resource Institute, 1994/95, p.33/p.10). Cleaver and Schreiber (1994) in reviewing linkages between population, agriculture and the environment in Africa, conclude that population growth is only one of the several possible causes of environmental degradation. This is contrary to the 'Malthusian' spiral for dryland Africa, where population growth is considered the major contributing factor to resource mismanagement, environmental degradation and consequently reduced supporting capacity. However, whether population growth in Africa is the major cause of environmental degradation or not, it is certain that the estimated future increase in the African population will cause an increase in pressure on an already deteriorating environment and its scarce resources for food, medicinal plants, fuel, farmland and even suitable land to live on. According to Mortimore (1998), the doomsday scenario based on present trends cannot be acceptable for the people of the drylands whose adaptability is their chief resource. But to what extent can people adapt to poverty? It is true that one of the major

[13] Lectures in Environmental Law by Dr. Johnny Fonyam (2001).

forces that drive people to over exploit their environment is poverty, which stems from the ever increasing population and inequitable distribution of land and other resources. MINEF has asserted that the rate of poverty, as well as high prices of fuel are among major causes of deforestation, which is threatening Cameroon forests today with serious environmental hazards.

Murphree (1995) strongly emphasis the centrality of land tenure for community-based natural resource management. Deininger (2004) states that land provides not only a foundation for economic and social development but also helps to empower the poor to adjust to the challenges posed by the recent trends of globalization. In many communities, access to resources is governed by both written and customary laws. Access to land is the right or opportunity to use, manage, or control land and its resources. It includes the ability to reach and make use of the resources. Access to land affects nearly all areas of policy development. For example, it has direct relationship to agricultural production and ensuring long term food supply. It is a basic component of achieving sustainable development (Komjathy and Nichols, 2001). Women's access to land in the African context is very limited because of traditional and cultural beliefs. This hinders development of women in most rural and even urban settings in Africa. Komjathy and Nichols (2001) further state that since women are the major producers of household food supply there are usually customary provisions for indirect access to land in terms of use rights as community members, wives, mothers, sisters or daughters. They think these use rights do not grant enough security for women when traditional family structures dissolves. The economic and social well-being of women and their children are at increased risk when women face widowhood and divorce, or when the male head of household does not or cannot exercise his traditional responsibilities to his family. This situation can be likened to that in the Bokwoango community where access to communal land is controlled by customary law. The acquisition of land in this community is greatly influenced by traditional and cultural beliefs that usually put women and sometimes men without rights to

inheritance at a disadvantage. This limits the agricultural productivity of women in general and makes them susceptible to the effects of poverty.

What remains an influential idea is that there are limits to the extent to which we can degrade biological systems and still benefit from what they offer. Therefore, any successful attempt to alleviate poverty will eventually reduce the pressure exerted on the environment and improve the lives of forest dwellers. This insight was made explicit by Barbara Stocking, Director of Oxfam, U.K, who says "Poverty in Africa should be at the top of the global security agenda."

It is common for people living around a forest to have traditional social, cultural and economic associations with the forest, often tenurial and other rights, and as often, depend economically upon the forest (both for subsistence and income). This insight is reflected in the UNCED document, which stresses the necessity to make people active participants in the management of natural resources as a prerequisite for sustainable development (Wijkman, 1993). A majority of the poor and vulnerable people in developing countries in general with Cameroon being no exception are striving day and night for a better life and an improved standard of living. This is only achievable through socio-economic and cultural development. Azasu (1999) asserts that the last decade has seen a shift in development strategy towards community involvement in local development. This assertion is ascertained by Dème (1998), who states that for several decades prior to the early 1990s Mali's natural resource management policies, then solely under state control, were characterized by a centralized decision-making process, a State-controlled land tenure system, lack of investment, inadequate laws and an extremely repressive political regime. State management, however, has been inadequate and as a result the forest received no management whatsoever. Consequently, it has been systematically over-exploited for the past 50 years. In an attempt to redress this situation, the Malian national Programme for the Development and Management of Natural Resources has been trying to encourage local communities to play an active role in the sustainable management of the Kelka forest lands in Mali. This

has involved establishing 13 local Kelka village associations and a 'supra-village' federation known as the Waldé Kelka, responsible for managing the forest resources in association with local forestry department. The current process of political and administrative decentralization has, however, introduced a new national strategy for developing and protecting the country's natural resources. This strategy is mainly based on the recommendations of the International Convention to Combat Desertification[14]. In support of this, the State has passed new legislation and transferred certain resources to enable a more decentralized form of natural resource management. Furthermore, there has been a radical re-orientation in the role of government extension personnel who are now expected to provide local communities with technical advice on environmental planning and management (Dème, 1998). The policy changes that occurred in Mali during the 1990s are quite similar to those in Cameroon. The first forestry legislation in Cameroon was drafted in 1974 after the Earth Summit on Human Environment in 1972. Community management of natural resources in Cameroon was introduced after the 1994 forestry reforms. The 1994 Law addressed the recommendation by the World Bank that local communities be actively involved in the management of forest resources. The rights and responsibilities of the communities, however, have not yet been specified. There is no clear mechanism to ensure that the local elites do not capture the intended benefits. Furthermore, the receipts from the area tax were supposed to be shared with the local communities, but this has not yet been implemented fully and transparently. One of the principal tools for sustainable management is a forest zoning plan, which Cameroon is in the process of developing (Essama-Nssah and Gockowski, 2000). Cameroon now has a National Forestry Programme (NFP), which is comparable to the Programme for the Development and Management of Natural Resources in Mali. The National Forestry Programme is used in planning, programming and implementing forest

[14] International Convention to Combat Desertification recommends that local communities play a more active and recognized role in the management of their environments.

activities. NFP is a recommendation of the UNCED, and has been endorsed by the Intergovernmental Panel on Forest (IPF) and the Intergovernmental Forum on Forests (IFF). IPF endorsed the basic principles of NFPs as identified by the Food and Agricultural Organization, FAO. The basic principles of NFPs as identified by FAO include:

- National sovereignty and country leadership;
- Consistency with national policies and international commitments;
- Integration with the country's sustainable development strategies;
- Partnership and participation;
- Holistic and intersectoral approaches;
- Policy and institutional reform and capacity building.

IPF also emphasizes the importance of considering certain factors in implementing NFPs. These include:

- Use of appropriate participation mechanisms to involve all interested parties;
- Decentralization where applicable and empowerment of regional and local government structures;
- Recognition and respect for traditional and customary rights of, inter alia, indigenous groups, local communities, forest dwellers and forest owners;
- Secure land tenure arrangements;
- Establishment of effective coordination mechanisms and conflict resolution schemes.

Local forest management has received a great deal of attention in recent forest law reforms, especially with respect to community-based activities and the realignment of power and responsibilities between central and local governments. There has been a proliferation of new mechanisms for the devolution of forest management to local communities, user groups or households through site-specific arrangements such as co-management agreements, community forestry leases, the delineation and titling of village territories and related devices. Some national laws have, however, left the tenurial status of forest areas unclear, giving weak or no

alternative mechanisms by which local groups or individuals might assert effective control. Nonetheless, there is a greater recognition that policy statements mean little in practice without strong institutional capacity to implement them.[15] In bringing decision-making as close as possible to citizens, joint resource management is seen as integral to 'good governance' (Brown, 1999). To succeed, it requires processes to negotiate and share rights and privileges (including tenure and decision-making powers) by multiple stakeholders, and the recognition of these by government and a wide range of resource users (Ingles *et al*, 1999; cited in Egbe, 2001). Enabling laws and policies are likely to devolve management responsibilities, promote institutional reforms, increase resource flows to forest dependent populations, and create new partnerships involving changes in ownership and access (Brown, 1999; cited in Egbe, 2001). The major problem in the Forestry sector in Cameroon, just like in Mali and many other developing countries, is not with the text but with its application by those in the field. For interested parties both within and outside of governments, the logical way forward is apparent, and involves an institutional, legal and practical movement towards local communities as natural resource managers, in collaboration with governments. In most cases, the partnership is based upon the forest local community as 'manager', guided technically by the government, which maintains oversight and ultimately responsibility (Wily, 1995a. p.8). The natural resources of the third world have been utilized and managed by the local inhabitants for centuries. They have developed their own ways of protecting and conserving these resources. They usually have a better knowledge of these resources as well as some useful means of capturing potential benefits than outsiders. Involving them in the management process will therefore be a way of tapping into their knowledge base and utilizing it to promote the sustainable use of the resource (Azasu, 1999). A similar assertion is made by Cox and Elmquist (1997) who think the rapid recognition of the role of indigenous

[15] Policy, Planning and Institutional Arrangements: Issues in National Forest Planning, Policy and Legislation. http://www.fao.org//docrep/W9950E/w9950e06.htm

people in conservation is crucial not only from a moral and ethical perspective, but is an operational imperative for those who seek to preserve the world's biodiversity.

Just like in Cameroon, Namibia's economy is heavily dependent on natural resources. In Namibia, for instance, two-thirds of the 1.6 million population live in rural areas and are directly dependent upon the soil and living natural resources for their livelihoods (Brown, 1996; cited in Jones, 1999. p.1). This situation is the same in most rural areas of other developing countries, including the Mount Cameroon region where *Prunus africana* exploitation is one of the major forest activities. Jones (1999) also highlights the initiative of the Namibian government, which has put its faith in a community-based approach to natural resource management and has initiated the process of addressing sustainable development on communal land. This approach aims to provide communal area residents in Namibia with appropriate incentives to use their resources sustainably and combines reform of policy and legislation with implementation at community level.

The exploitation of the *Prunus africana* species happens to be amongst the important sources of livelihood for the poor in many parts of Africa where rural and urban people greatly depend on the availability of the surrounding resources for survival. *Prunus africana* is widely used in traditional medicine in Southern, East and Central Africa (Jeanrenaud, 1991). Results of studies carried out by Cunningham and Mbenkum (1993) show that 88 % of people in the Mount Cameroon region collect traditional medicine, including *Prunus africana*, which according to Jeanrenaud (1991) is the fourth most popular medicinal plant species collected by 14 % of households surveyed in the region. Jeanrenaud (1991) also gives examples of some other most frequently cited traditional medicinal plant species used by rural people living around Mount Cameroon e.g. *Kigelia africana, Psidium guajava, Vernonia anthelmintica, Pilea spp., Khaya spp.,* and *Sterculia tragacantha.*

Protection of the fauna and floristic biodiversity of the forests of Cameroon with the support of the population of the areas affected requires the development of alternative activities for these populations to increase their revenue. They can

also be provided with substitute forest products to reduce their dependence on forest products, thereby contributing to the protection of these forests.[16] It is, therefore, unrealistic to ask forest dwellers to stop exploiting forest resources, including *Prunus africana* without introducing alternative income generating activities that are well supported and contextual. Worth noting also is that these alternative activities must not only be forest related but also non forest activities. The introduction of alternative income generating activities, however, is not always as easy as it might seem because people must first of all be made to understand why they have to take up these activities and what benefits they should expect. But before this, there must be feasibility studies to determine whether the proposed alternative activities can thrive successfully in the area in question.

Community forestry clearly has the potential of contributing to poverty alleviation and the improvement of rural livelihoods. However, for community forestry to be genuinely successful in sustainable poverty alleviation, communities need to be assured of some key conditions: Full and enforced legal protection; Sufficient leverage to obtain and maintain ownership over their own organization and planning processes; Adequate training in organizational, administrative and technical skills; Access to finance. Ensuring that these conditions are met is at the very heart of the challenge facing community forestry development and is an integral part of the objectives and activities of the Community Forestry Unit within MINEF (Fomété and Vermaat, 2001). Community management of natural resources is being practiced in many developing countries today. To understand the extent of changes, whether socio-economic or environmental that occur in a community as a result of community involvement in resource management, it is important to first of all have an idea of the socio-economic or environmental baseline situation before the community members got actively involved in the management process. Once this is done, one can easily pin point the causes and

[16] Article by K. Ndamukong (Ph.D) in the Culture and Environment Publication (1999). A publication of the University of Strathclyde, Glasgow and the University of Buea, Cameroon.

effects of these changes. It is from the cause-effect relationship that appropriate solutions to improve on the socio-economic well-being and environmental conditions of the community can be well formulated.

1.6 RESEARCH METHODOLOGY

The approach adopted in this study include: exploring the research front, describing the activities and situation of the Bokwoango community members, quantitative analysis of changes, qualitative analysis as well as explanation of changes, and lastly prescription for plausible management.

The methodology is based on a desktop review of literature, internet and documents on natural resource management in general. The research front is specifically reviewed on the management of the *Prunus africana* tree species in the African context. There is also an empirical study on the community, NGO and government initiative in the management process. A field study is thus carried out during which interviews and questionnaires have been administered to sample the opinions of *Prunus africana* harvesters and non-harvesters on the management of this resource. An assessment of the state of the resource base, exploitation process and socio-economic benefits is also made.

The variables on which data has been collected during this study include; the independent and dependent variables. Independent variables are presumed causes of events. Therefore, in this study, *Prunus africana* management is presumably an independent variable whereas the socio-economic impact of *Prunus africana* management is most likely a dependent variable.

Data for this research has been collected from primary and secondary sources. Secondary data was obtained from publications, journals, articles, reports on natural resource management, including *Prunus africana* management. Primary data was obtained from designed questionnaires, which were successfully administered. Discussions and interviews were also conducted with selected community authorities, MCP field workers, foresters and local MINEF officials. Another

primary data source was my personal observation and experience as a professional from spending time with selected members of the harvesters' union and other community members during their leisure hours and also while accompanying selected harvesters in to the forest during harvesting.

1.7 DELIMITATIONS

This study focuses specifically on the exploitation of *Prunus africana* in the Bokwoango community found in the Mount Cameroon region and the socio-economic benefits the inhabitants of this community derive from it. The Mount Cameroon region is vast if one considers the whole mountain range. *Prunus africana* exploitation occurs in the forest region closest to the mountain. The use of Mount Cameroon region in this study encompasses those rural communities closest to the mountain. Due to time and resource constraints, however, this research is restricted to the Bokwoango community only, which just like its neighbouring communities has a poor *Prunus africana* exploitation history. The reasons for restricting this study to the Bokwoango community is that this community is easily accessible and was the second after the Mapanja community to organize *Prunus africana* exploitation activities by forming a *Prunus africana* harvesters' union with the aim of achieving sustainable livelihoods, sustainable harvesting and conservation of *Prunus africana*. It would have been interesting to carry out this study on both Bokwoango and Mapanja communities to get a picture of the differences in the operational set-ups so as to make a comparative study of the extent of changes attained so far in both communities. But due to resource limitations, as outlined above, the study focuses only on the Bokwoango community and its *Prunus africana* harvesters' union. This places particular limitations on the transferability of findings. Special emphasis is made on the exploitation techniques, management process and socio-economic achievements. The problem of government initiatives in this area is only highlighted.

1.8 RESULTS

The results of this study can be considered as answers to the researchable questions. These results are based on the premise that sustainable management of natural resources is an indispensable tool for environmental protection and improved socio-economic livelihood. Results of the analyzed socio-economic data in this study, however, show that the socio-economic impact of *Prunus africana* exploitation on both members and non-members of the harvesters' union in Bokwoango has not been increased by more than 50 % even though union members and very few non-members have noticed some improvements. Nonetheless, if the Bokwoango *Prunus africana* harvesters' union, which is presently an active partner in the *Prunus africana* management process in the Mount Cameroon region, is continuously well managed, including the active engagement of its members in *Prunus africana* regeneration schemes, and is adequately supported by the State and local NGOs, it is likely that the activities of this union would continue to initiate gradual improvements in the socio-economic well-being of not only its members but also non-members of the union. Furthermore, this study emphasizes that the introduction of appropriate alternative income generating activities that best suit the Bokwoango context could possibly divert attention away from *Prunus africana* exploitation and hence reduce the pressure exerted on it.

CHAPTER TWO
CONTEXT: THE MOUNT CAMEROON REGION IN FACTS AND FIGURES

This chapter gives a brief description of the Mount Cameroon region. It brings out the potentials that the region is endowed with and identifies the major activities of the Bokwoango people.

2.1 GEOGRAPHICAL CONDITIONS

Cameroon has geographical coordinates of 6 00N, 12 00E and is situated on the border between West and Central Africa. This is why the country is some times considered a West African as well as a Central African State. Cameroon has a population of 16,380,005 inhabitants and covers a surface area of 475,440 sq. km.[17] The Mount Cameroon region covers an area of approximately 2,500 sq. km, of which some 750 sq. km are forested.[18] Mount Cameroon, also known as Mount Fako with a height of about 4,095 m after the most recent volcanic eruptions, is found in the Fako Division of the Southwest province. This mountain is the highest in West and Central Africa and forms part of a volcanic chain lying in a direction known as 'The Cameroon Volcanic Line'. The mountain is crossed by fractures running in the direction of this 'Volcanic Line'. Mount Cameroon is flanked on the south by Mount Etinde also known as the small Mount Cameroon with a height of about 1,713 m.

[17] CIA World Factbook, 2005 – profiles of countries and non–self- governing territories around the world. Information on geography, people, government, etc. http://www.cia.gov/cia/publications/factbook/
[18] Mount Cameroon Project (MCP), 2000.

Figure 2 - The map of Cameroon showing Fako Division in the Southwest province where Mount Cameroon or Mount Fako and the Bokwoango community are situated (Source: CIA World Factbook, 2005).

2.1.1 LOCATION AND VEGETATION TYPE

Location

The Bokwoango community falls within the administrative boundaries of Buea, which is the provincial capital of the Southwest province and former capital of the Southern Cameroon. Buea is situated at the foot of Mount Cameroon. There are good motorable roads connecting Buea to some of the neighbouring communities, including Bokwoango. The Bokwoango community covers an area of 1 sq. km and has a population of over 2,150 inhabitants.[19] Communities in the Mount Cameroon region actively involved in *Prunus africana* exploitation include; Bokwoango, Mapanja, Bonakanda, Bakingili, Wotelu, Bomana Bakweri, Ekona Lelu, Bafia, and Munyenge.

[19] This population is based on 1995 population censors by E. Molua, chief of Bokwoango.

Vegetation Type

The type of vegetation in the whole Mount Cameroon region comprises mainly of lowland afro-montane forest, highland savanna, and the bare summit. The lowland forest has been logged intensively for the past two decades and is at present no longer attractive to logging companies. However, small scale exploitation for building materials and local commercial uses, of which *Prunus africana* exploitation is one, remains a major threat to the integrity of accessible lowland forests. The indiscriminate burning of forest by subsistence farmers, hunters and honey gatherers is also considered a serious threat to the survival of the montane grassland and the upper fringe of the montane forest. This has caused the gradual conversion of the montane forest to grassland. The woodland is easily degraded by bush fires to savanna type with scattered shrubby trees and grasses.

2.1.2 TOPOGRAPHY, GEOLOGY AND CLIMATIC CONDITIONS

Topography

The Mount Cameroon region is gifted with very beautiful scenery. The mountain is an imposing structure that is clearly visible from all parts of the region during bright sunny days of the dry season. Clouds and foggy weather occasionally obscure this magnificent view during the cold rainy season. The mountain rises gently from sea level at the coast through the forest to the rough steep slopes and deep gorges of the savanna region right up to the vast summit.

Picture 2 - Sun rise on Mount Cameroon. Photo taken from Bokwoango (Photo, Ekane NB).

Soil and Geology

Mount Cameroon is an active volcano. The most recent volcanic activities took place in 1999 and 2000. The lava flow during these volcanic eruptions burnt down large portions of the forest killing numerous animals and plants, including the already endangered *Prunus africana* species. Numerous earlier lava flows in the 19th century have contributed to the rocky terrain in most parts of the region. The soils in this region are of recent origin, mostly on young volcanic rocks, and are rich in nutrients. This explains why the region is favourable for agriculture and has very rich natural vegetation. The permeable nature of volcanic soils in this region reduces run off and erosion rate.

Climatic Conditions

The Mount Cameroon region has very favourable climatic conditions. The dry season is usually hot, humid and sunny while the rainy season is cold, foggy and

very wet. During the rainy season, the forest floor becomes very slippery and inaccessible. Consequently, *Prunus africana* exploitation, farming, hunting, tourism, and many other forest related activities become almost impossible during this season. Very high rainfall and low temperatures are experienced at the windward side of the mountain where Bokwoango is situated. This region registers the highest amount of rainfall in the whole country. Debuncha at the southwestern part is known to be the second wettest place in the world.

2.1.3 AGRICULTURAL PRACTICES

Agriculture is one of the major activities in this region. The two main types of agricultural practices include; plantation agriculture and subsistence farming. A few people in the Bokwoango community are also involved in small scale rearing of goats and pigs. Vast portions of flat, fertile and very productive land in the Mount Cameroon region were converted into oil palm, banana, rubber and tea plantations by the Germans during the colonial period and later on handed over to the Cameroon Development Corporation (CDC)[20]. The creation of these plantations increased the demand for labour causing an influx of immigrants into the region. Majority of the indigenous people are actively involved in subsistence farming on which their livelihood depends. Chief E. Molua of Bokwoango declares that as a result of the customary tenure system, all the families in the Bokwoango community own farm land and over 75 farmers still rent land for farming. Thus, the main constraint Bokwoango farmers face is with the size and productivity of the land they own. The most common crops they grow include; cocoyams, plantains, yams, maize, groundnuts and a variety of vegetables. Encroachment by these subsistence farmers and the practice of shifting cultivation has led to the rapid conversion of large areas of lowland forest to agricultural land. Loss of soil

[20] Cameroon Development Corporation (CDC) – a government parastatal agency, which has recently been privatised. CDC is the second highest employer in Cameroon after the State.

quality due to poor farming practices, including slash and burn has greatly reduced agricultural yield and made farming less productive.

2.2 BIODIVERSITY VALUE

Mount Cameroon region is endowed with very rich and diverse flora and fauna. This region is known to have about 42 endemic plant species, including *Prunus africana*, and approximately 20 endemic bird species (8 of which are threatened). There are also 5 primate species (3 of which are endemic) and the highly endangered forest elephant.[21] The region supports the most important population of *Prunus africana* in Cameroon and probably in West Africa. *Prunus africana* is the third most abundant canopy tree species in the upper montane forest of the mountain (Njombe Ewusi, 1998). Therefore, it is an important part of the montane ecosystem. Tree death from bark stripping affects the integrity of the forest and reduces food resources for rare birds (Cunningham and Mbenkum, 1993; CITES proposal, 1994). Because of the interrelationship between organisms in the ecosystem, animals are affected as well. Some examples of birds and animal species found in this region include: the endangered Bannerman's Turaco (*Tauraco bannermani*), the near threatened Cameroon Mountain Greenbul (*Andropagus montanus*) and the near threatened primate Preuss's Guenon (*Cercopithecus preusii*). They all feed on *Prunus africana* fruits in addition to fruits of other trees (Fotso and Parrott, 1991). The fruits are important dietary components for these birds and animals. The occurrence of thermal springs on the mountain is an indication of volcanic activity. Most of the streams and rivers flowing into the surrounding communities in the Mount Cameroon region and neighbouring towns of the Fako Division take their source from this mountain. Forest reserves in the Mount Cameroon region include: Bomboko forest reserve, Mokoko river forest reserve, Southern Bakundu forest reserve, and Meme river forest reserve, which extends into Meme Division (Appendix A).

[21] Planting to replace: Helping local communities to conserve forest resources, by Ewane Sumelong, LBZG.

2.2.1 ENVIRONMENTAL CONDITIONS

Mount Cameroon's natural vegetation and the rich biodiversity it supports are under increasing pressure from land clearance for commercial and subsistence agriculture. There is also uncontrolled burning of the montane grassland, illegal and unsustainable exploitation of the forest for fuel wood, timber and other forest products such as *Prunus africana*. These practices have led to the destruction of trees on which birds and animals depend for food and shelter. Evidence that wildlife populations in the Mount Cameroon region are sliding rapidly downhill is the increasing scarcity of game. Both hunters and traders in 'bush beef' can testify.[22] Loss of forest cover in certain parts of the forest has made the soil susceptible to soil erosion. Also, destruction of forest around watersheds and catchment areas in the mountain region has contributed to the reduced flow and even disappearance of some natural springs. This is one of the causes of the serious problem of water scarcity experienced in certain parts of the Mount Cameroon region, including the Bokwoango community today.

[22] 'Bush Beef' Mania in Cameroon. Raising awareness on the effects of indiscriminate hunting of wildlife in Cameroon. By Ekane NB, published in the Know Your Environment column (a forum for debate on environmental issues) of The Post, a national newspaper, July 26th 1999.

Picture 3 - A poorly debarked *Prunus africana* tree. The bark of this stem has been completely stripped – a glaring example of the effects of unsustainable harvesting techniques in the Bokwoango forest (Photo, Ekane NB).

2.3 SOCIAL SITUATION

Education

There are government primary schools in most communities in the Mount Cameroon region. Out of all these primary schools, the government primary school in Bokwoango has the highest number of pupils (854 pupils). The Bokwoango community is privileged to have a government high school (GHS Buea) situated in its environs. GHS Buea is one of the biggest and most populated institutions in the Fako Division with over 2,195 students. About seven out of ten youths in the Bokwoango community can boast of at least a primary school experience. Three out of these seven primary school pupils get into college. Few of them get to higher educational levels. Most children in this community drop out of school after their primary education or even before completing primary school. The majority of these drop out cases are as a result of inadequate finances to support further education and to a lesser extent the lack of interest in education. Most drop outs join their parents in farming, carpentry, hunting, honey gathering, *Prunus africana* harvesting,

etc. Others with some technical skills move into Buea for vocational training and job opportunities. Only 500 students from the Bokwoango community attend GHS Buea. From all indications, the indigenes of the Bokwoango community are not making very good use of the college around them. This is easily noticeable from the multitude of students from different parts of the country, including the neighbouring communities in the Mount Cameroon region constituting more than half the population of GHS Buea.

Employment Situation

Some of the men, women and youths in the Mount Cameroon region are labourers in the CDC plantations. Because of their meager salaries, they are forced to actively involve themselves in hunting and subsistence farming to make ends meet. Farming, hunting, honey gathering, timber and NTFP exploitation are the major income generating activities of the Bokwoango people. Only few of the inhabitants of the Bokwoango community with some formal educational background or professional training of any kind work for the government. The bulk of the unemployed, of which the youths form a greater proportion, are also involved in hunting, farming, timber exploitation, *Prunus africana* harvesting, carpentry, brick laying and other small businesses. The rest of the youths without interest in either education or agriculture just idle around with nothing else to do but to get involved in crime and mischief.

2.4 ECONOMIC SITUATION

The prevailing economic crisis in Cameroon has forced several people to turn to agriculture. The head of State in one of his speeches asked Cameroonians not to always depend on the government but to turn to agriculture as a source of livelihood. Even though Cameroon has enjoyed relative political stability, which has permitted the development of agriculture, poor farming practices by subsistence farmers and over hunting of wildlife in Bokwoango have caused a reduction in

agricultural productivity and wildlife respectively. Farmers testify that they have noticed a decrease in the total farm yield, as well as a reduction in the size of some crops e.g. the reduction in the size of yams and cocoyams. The economic situation in Bokwoango, like in most rural areas in Cameroon, is exacerbated by the poor employment situation and massive retrenchment of workers following the privatization of some State owned corporations such as the CDC and a host of others. This situation indirectly affects the sales of farm produce as some people tend to open up small gardens around their homes to grow crops, vegetables in particular, which they usually got from the market. Some farmers who sell their farm produce in the Bokwoango market, which opens on tuesdays and saturdays, declare that they do not make as much profit from sales as they did in the past. This has in a way affected their business and has forced them into other lucrative activities such as *Prunus africana* exploitation and the collection of rare species of beetles, birds and chameleons. The high international demand for *Prunus africana* and large extent of its market, however, gives it some potentials of contributing to an improvement in the economy of the Bokwoango community in the long run if managed sustainably.

2.5 CULTURAL CHARACTERISTICS

The population in the Mount Cameroon region is about 300,000 people[23] and is made up of the indigenous Bakweri, Bomboko and Balondo tribes. There are also immigrants from other parts of the country and from neighbouring countries like Nigeria, Ghana and Benin. The local community is therefore diverse and complex with a blend of cultures. The Bokwoango people belong to the Bakweri tribe. The Bakweri people belong to a group called Bantu. They have been living around Mount Cameroon for at least 4,000 years. The establishment of the plantations in this region forced the coastal Bakweri people to settle up the mountain. Immigrants are referred to as 'strangers' whether they are first, second or third generation

[23] MCP, 2000.

settlers (Jeanrenaud, 1991). In some Bakweri villages, it is not uncommon to find stranger quarters separate from the rest of the village and only partially incorporated into the Bakwerian power structure (Sharpe, 1996). This may be as a result of the demographic and cultural crises brought about by the loss of land (Jeanrenaud, 1991). Loss of native land to plantation agriculture during the colonial period has undoubtedly contributed to the present socio-cultural and environmental situation in the Mount Cameroon region. There are numerous shrines in the Mount Cameroon forest where important traditional rituals and sacrifices are performed. Social organizations among the Bakwerians are strongly based on various secret societies. The most important groups for men are 'Male' and 'Nganya', while women organize themselves in the 'Liengu' and 'Maloa' secret societies. 'Male' means medicine and tree. The male and female secret societies attach a lot of traditional beliefs to the 'Njoku' (the highly endangered forest elephant) and 'Ngoa Wanga' (wild pig) respectively. 'Efasa Moto', believed to be half man and half stone is the god of the mountain. It is also believed that 'Efasa Moto' takes care of people on the mountain by providing water, food and shelter during their journey. Visitors are allowed to harvest what ever they can consume during their stay on the mountain – but 'Efasa Moto' forbids them from carrying anything home. These myths portray an interesting cultural link between the environment, tourism and sustainability of resource use.

2.6 TOURISTIC ACTIVITIES

The region has a lot to offer in terms of tourism. In addition to the favourable climatic conditions, it has unique scenery with numerous touristic sites and habitats to explore, as well as a wide variety of wildlife to see. It is indeed ideal for the enjoyment of the beauty that nature has to offer. Buea has a few historical monuments and houses that are remnants of the German colonization. The Mount Cameroon Race of Hope, formerly known as the Guinness Mount Cameroon Race is organized every year with athletes from all over the world. Touristic activities in

this region are coordinated by the Mount Cameroon Ecotourism Organization (Mount-CEO), which is an NGO created and funded by MCP (GTZ) in cooperation with the German Development Service (DED). The aim of Mount-CEO is to develop and promote sustainable tourism in the Mount Cameroon region so as to contribute to the improvement of the living standard of local communities. Guided tours accompanied by cultural evenings usually start from the villages through the farmlands and forest in the Mount Cameroon region. These tours continue through the flourishing savanna to the summit and back to the villages.

CHAPTER THREE
INSTITUTIONS, POLICIES, LAWS, ACTIONS AND INITIATIVES

3.1 INSTITUTIONS RESPONSIBLE FOR NATURAL RESOURCE MANAGEMENT IN CAMEROON

The State

Management of natural resources in Cameroon is championed by the State. In the 1980s, the forest sector was an integral part of the agricultural sector. Presently, the management of forest resources is the responsibility of MINEF while the Ministry of Mines and Power is responsible for issues relating to mineral exploitation and utility services (water and power supply). These ministries work in close collaboration with other Ministries and the parliament to enact and enforce legislations pertaining to the use of natural resources. Since the resource on which this study is based is a forest resource, more emphasis is laid on institutions responsible for the management of forest resources in Cameroon. Before the legislative reforms on forest management, the State had for a long time been the sole proprietor and manager of forest resources in Cameroon. The forestry sector in Cameroon can be broken down into three different sectors depending on the type and magnitude of the activities. These include: the timber exploitation sector, the plantation sector, and lastly the community forestry sector introduced after the 1994 forestry reforms.

Who are the major Stakeholders or actors?

Borrini-Feyerabend *et al.* (2000) define institutional actors or stakeholders as a community, public entity, a group or an individual who organizes itself, takes action to gain social recognition of its own interests and concerns and is willing to assume some tasks and responsibilities for a given natural resource management unit According to Besong *et al.* (1997), the way in which a forest is used, which groups and individuals have access, what is removed from the forest and the way it is

removed, are all considerations that define the management regime. Management regimes are mechanisms that determine the future of forests. How well the regime is conceived and how well it is implemented will determine how secure the future of the forest can be. Management regimes vary from State ownership and control to communal and private forests. From the management perspective, the major user groups and their roles are: government agents as managers; commercial loggers, including *Prunus africana* exploiters and hunters as product extractors; and local people sometimes with customary rights recently considered as encroachers. Also included in this list are non-governmental organizations (NGOs) as well as international agencies with vested interest in scientific research and biodiversity conservation. All these groups can be identified as the major stakeholders in the management of natural resources in Cameroon. The participation of various stakeholders in sustainable management of tropical forests is recognized by the international community and, for some years now, has been required under Cameroon law (Lescuyer *et al.*, 2001).

NGOs, National and International Agencies

The major international agencies involved in environmental protection and conservation of forests in Cameroon include: International Center for Research in Agroforestry (ICRAF), Worldwide Fund for Nature (WWF), German Technical Corporation (GTZ), German Development Service (DED), Global Environmental Facility (GEF) of the World Bank, Overseas Development Institute (ODI), Netherlands Development Organization (SNV), International Fund for Agricultural Development (IFAD), etc. A host of national agencies and NGOs also work in this sector. Some national agencies responsible for forestry activities include: MINEF, ONADEF, Institut de Recherche Agricole pour le Développement (IRAD), Southwest Development Authority (SOWEDA) and CDC. Some NGOs operating in the Southwest and Northwest provinces include:

Mount Cameroon Project (MCP)[24], Mount Kupe Forest Project (MKFP), Centre for the Environment and Rural Transformation (CERUT), Kilum/Ijim Mountain Forest Project (KIMFP), and the Mixed Farming Common Initiative Group (MIFACIG) in Boyo Division.

Community-Based Approach

Community-based approach to natural resource management has the potential to provide an umbrella for integrated natural resource planning and management by local communities as well as an institutional model for other sectors (Jones, 1999). Integrated approach here encompasses environmental, cultural, gender and socio-economic considerations. Cameroon's forest sector recently went through profound institutional and legislative reforms which resulted in the creation of MINEF and the drawing up of a new law in 1994 to lay down forestry, wildlife and fishery regulations. Community forestry is one of the major innovations offered by the 1994 Forestry Law. It aims at explicitly involving rural populations in the sustainable management of their own forests, providing them with income generating mechanisms for equitable socio-economic development of their communities (Fomété and Vermaat, 2001). The introduction of participatory approach has indeed been a great innovation in the move towards the achievement of a decentralized natural resource management system not only in Cameroon but also in most other countries in the West and the Central African sub-region.

Cameroon's National Forestry Action Plan (NFAP)

Cameroon's National Forestry Action Plan (NFAP) aims at developing all the components of the Cameroon forest, thus maintaining its biodiversity reservoir and gene pool. It sets out to ensure the conservation, further development and the sustainable use of forests. Strategies to be adopted to achieve this are as follows:

[24] Mount Cameroon Project (MCP) – a multilateral biodiversity conservation project working directly within MINEF since 1995. It has as central objective to develop participatory approach to natural resource management and to maintain biodiversity in the region.

- Maintaining sustainability and biodiversity throughout permanent forest estates;
- Drawing up measures for the protection, improvement and conservation of all forest resources;
- Increasing participation of the local population in forest conservation and management to contribute in raising their living standards. This strategy would be to involve rural communities in the management of forest resources;
- Creation of alternative activities capable of generating reasonable amounts of revenue with the aim of reducing man's pressure on the environment, and include environmental awareness in local populations;
- Rational exploitation of non-timber forest products (NTFP) e.g. *Prunus africana*;
- Ensuring resource renewal through regeneration and reforestation with a view to perpetuating the potentials and also reconstituting species threatened with extinction.[25]

The success of Cameroon's NFAP necessitates the participation of all stakeholders whose activities are related to the forest. These include: MINEF and the delegations involved in the sector, national and international NGOs, local communities, etc.

Involving local communities in the forest management process

One important prerequisite for sustainable development as stated in the UNCED documents is the active participation of people in the management of their own resources. The involvement of local communities in forestry management in Cameroon was made obligatory after the 1994 forestry reforms. Since then, most

[25] Article by Ndamukong (Ph.D) in the Culture and the Environment publication (1999). A publication of the University of Strathclyde, Glasgow and the University of Buea, Cameroon.

forestry programmes in the country have been working towards the achievement of this goal. Westoby (1987); Gilmour and Fisher (1991) assert that there are many reasons for supporting forestry activities by local people. Lengeler *et al.* (1997) confirm this by stating that one cogent argument is the sheer impracticality of ignoring local people's forest interests, or of giving them inadequate attention. This can be seen whenever forests are part of local people's livelihood. However, the most cogent argument of all for greater local participation in forestry activities is when this is demanded by local people themselves. This is the event that led to the creation of *Prunus africana* harvesters' unions in the Mapanja and Bokwoango communities.

3.2 MANAGEMENT OF PRUNUS AFRICANA IN CAMEROON

Historical Background

Cameroon is a major source of *Prunus africana* bark, where it has been harvested since 1972. As early as 1976, the government first expressed concern about over-exploitation of internationally traded medicinal plants (United Republic of Cameroon, 1976). Over a six year period (1986-1991), 11,537 metric tons of bark were processed by Plantecam Medicam[26]. All bark harvested in Cameroon was processed and exported by Plantecam Medicam before it closed its extraction factory in the country. Plantecam Medicam's exploitation license in the Mount Cameroon region expired in the year 2000. The role that Plantecam Medicam played in processing and exportation of *Prunus africana* bark has now been taken over by the French pharmaceutical company itself. For fifteen years, Plantecam Medicam employed its own workers to harvest bark. Harvesting was systematic and controlled, with most trees surviving. This system broke down in 1985 when about 50 additional licenses were provided to Cameroonian entrepreneurs or contractors. Bark harvesting was no longer under monopoly control of Plantecam Medicam

[26] Plantecam Medicam – the processing facility and exportation enterprise (company) of Laboratoires Fournier or Le Groupe Fournier – a French pharmaceutical company.

although it remained the sole exporter of *Prunus africana* bark and other bark extracts. Although licensing of local contractors was intended to stimulate industry, it also encouraged over-exploitation of wild stock (Cunningham and Mbenkum, 1993). According to Cunningham and Mbenkum (1993) *Prunus* bark is the most important medicinal plant material to this company, representing 88.6 % of medicinal plant material acquired for export between 1985/86 and 1990/91. Collar and Stuart (1988) confirm that commercial harvesting of this plant has been taking place in all of Cameroon's most important forests (Mount Oku, Mount Cameroon and Mount Kupe). A recent study by Kristine Stewart of Consultants keith and Schnars in Florida, shows that exports of dried bark halved between 1997 and 2000 as a result of the high commercial pressures and unsustainable exploitation practices that were recorded before this period.[27]

Present Situation

Indiscriminate exploitation of forest resources coupled with the clearing up of forest for agricultural land is considered a serious threat to the future of Cameroon's forest. This has led to notable destruction of *Prunus* species in natural forests, leading to concerns on the long-term sustainability of harvesting and conservation of the species (Muchugi *et al.*, 2005). As a result of this, the *Prunus africana* species is now listed as an endangered species by the Department of Forestry in Cameroon (CITES proposal, 1994). Under the present Cameroon Forestry Law, the exploitation of *Prunus africana* must be preceded by: an inventory; the establishment of a sustainable quota; and the development of a management plan, which includes procedures for resource exploitation and renewal. All the countries exporting *Prunus* bark are signatories to CITES[28], meaning that the bark exported to Western countries is harvested from a sustainable source. The reality,

[27] Cited in Herbal medicine boom threatens plants, by Rob Edwards. January 2004. Exclusive from New Scientist Print Edition. http://www.newscientist.com/article.ns?id=dn4538

[28] CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora. Also cited by Cunningham *et al.* (1997) in : Trade in *Prunus africana* and the implementation of CITES. German Federal Agency for Nature Conservation.

however, is something different and despite the legislation the unsustainable exploitation of this species is well recorded. Undoubtedly, quotas and permits are being issued without reference to adequate biological baseline information.[29]

Major Setbacks

In addition to the problem of inadequate biological information, there is also the problem of inadequate and inaccurate baseline information on the extent and productivity of the *Prunus africana* species. The aforementioned shortcomings coupled with the problems of poor enforcement measures, corrupt practices and poor involvement of local communities lead to the failure of some conservation initiatives in Cameroon. For instance, there was a temporary ban on *Prunus africana* exploitation between 1991 and 1992. Amazingly, greater quantities of bark were harvested during this period than ever before. Despite the commendable efforts by the government to ensure conservation of this species, there are many cases where the management guidelines are not followed. This is particularly the case in the Northwest province. The events that occurred between 1991 and 1992 were due to the loss of monopoly of Plantecam Medicam, with a resultant opportunistic scramble for wild stocks in the Northwest province by licensed entrepreneurs. This instigated the felling and/or complete stripping of trees by some local bark harvesters (Cunningham and Mbenkum, 1993). Besong *et al.* (1991) report the insufficient control of bark exploitation, lack of respect for quotas or forestry regulations and consequent resource degradation.

Responsibilities of the various stakeholders

Government agencies and services are responsible for supervising the exploitation of *Prunus africana* as a forest resource in Cameroon. These are well-established

[29] *Prunus* Net Database – an output from a research project funded by the UK, Department for International Development (DFID) for the benefit of developing countries. (http://www.worldagroforestry.org/sites/treedbs/prunus.htm). Also cited by C.H Sunderland and C. Tanyi Tako (1999) in The exploitation of *Prunus africana* on the Island of Bioko, Equatorial Guinea.

institutions working in collaboration with local communities and national as well as international NGOs. These organizations have different responsibilities and therefore their activities vary depending on the level of specialization and competence. The major activities include: harvesting, marketing, regeneration, monitoring, and inventory of *Prunus africana.*

Conservation projects in the Southwest and Northwest forests where *Prunus africana* exploitation occurs include: MCP, Limbe Botanical and Zoological Garden (LBZG), MKFP, which also operates in the Mount Muanenguba forest, KIMFP, and the Nkom-Wum forest reserve. These projects were formed by the Cameroon government in collaboration with international agencies to ensure environmental protection and biodiversity conservation. In the Southwest province for instance, MCP works in collaboration with GTZ while LBZG works in collaboration with ODA.

The *Prunus* bark harvesters do harvesting and marketing of *Prunus africana* at the local level. They are also responsible for enforcing the rules and regulations set by MINEF, MCP and the exportation company to ensure sustainable harvesting. Bark harvesting is generally considered to be very hard work suitable for strong young men because of the difficulties involved in climbing *Prunus africana* trees and transporting wet *Prunus africana* bark through the mountain forest. Women are not involved in *Prunus africana* bark harvesting (Cunningham and Mbenkum, 1993). During the illegal period, the quantity of *Prunus africana* bark harvested was not fixed because people were harvesting as much bark as they could carry. The quantity of bark they harvested per day ranged from 50 to 70 kg. Even though harvesting has always been considered a task for men only, 50 to 70 kg of bark was still not that easy for some of them to transport from the forest, especially from the Mount Cameroon forest. As a strategy to cut down the exploitation of *Prunus africana* and also to establish a fair and transparent system in *Prunus africana* transactions, MINEF and MCP had to organize interested communities in the region into *Prunus africana* harvesters' unions. MINEF and MCP also reduced the

daily quota for each harvester to 32 kg. This reduced the quantity of bark harvested and eased the harvesting and transportation tasks for the harvesters.

Regeneration of *Prunus* in Cameroon is done in two ways: by seeds and by cuttings. Regeneration by seeds is mostly done by: individual farmers, *Prunus* planter groups, and the LBZG. In the Northwest province, ICRAF works with local CIGs to regenerate *Prunus africana* from cuttings. MIFACIG in Boyo Division of the Northwest province is one of the local CIGs working with ICRAF. Regeneration of *Prunus africana* by cuttings is also done in Mbalmayo in the South province. Studies carried out by Cunningham and Mbenkum (1993) show that cultivation of *Prunus africana* is easier than other forest trees with slower growth rates and more specific habitat requirements. They think the commercial value of the bark is well known to small farmers in Cameroon, and that farmers are also aware of the damage to wild *Prunus africana* populations that has occurred in some areas. According to them, scarcity of *Prunus* bark encouraged farmers in the Northwest province (Table 2) to cultivate *Prunus africana* from seed on a large scale than Plantecam Medicam. They also say although some farmers in the Oku area started planting *Prunus africana* as early as 1977, most *Prunus africana* cultivation has taken place since 1990 with encouragement from KIMFP. It is for this reason that they say more trees were under cultivation by rural farmers in either Oku or Nso than in the Plantecam Medicam supported nursery in Buea in the Southwest province.

Table 1 - *Prunus africana* cultivation in the Southwest province

Place/ Locality	Type of *Prunus africana* cultivation	Altitude (m)	Year planted	Number of trees planted	Trees monitored	Dead trees	Disease attacks (insects, fungi, virus, etc)	DBH range (cm)	Height range (m)
Saxenhof	Plantation	710	1997	800	147	-	136	1.9-10.5	2-10
Moliwe	Plantation	191	1997	9500	9	-	9	6-10.3	6-10
Likombe 1	Farm	820	1997	12	12	-	8	1.5-10	1.5-7
Likombe 2	Farm	820	1997	8	8	-	2	1-3.5	1.5-4
Likombe 3	Farm	710	1997	10	7	-	5	2-7	4.5-7
Likoko Membea 1	Planted along community road	1150	1998-2000	29	29	-	16	1-3	2-5
Bova 1	Farm	1024	1994-1998	380	13	2	7	1.5-8	3-11

Source: MCP.

Table 2 - *Prunus africana* cultivation in the Northwest province

Place/ Locality	Type of *Prunus africana* cultivation	Altitude (m)	Year planted	Number of trees planted	Trees monitored	Dead trees	Disease attacks (insects, fungi, virus, etc)	DBH range (cm)	Height range (m)
Njinikejem	Farm	1250	1997	47	47	-	41	0.5-3	0.6-3
Fundong	Farm	1410	1989	300	19	-	13	8-16.5	7-13
Njinikom	Farm	1380	1992	600	37	-	21	4.5-23	6-20
Jakiri 1	Farm	1500	1995	350	65	23	26	4-12	5-12
Jakiri 2	Plantation	1600	1990	750	113	34	63	5-18	4-10
Jakiri 3	Farm	1650	1990	150	28	1	13	3-10	4-10
Ndu	Farm	2040	1994	5	5	-	3	9.5-31.5	9-12

Source: MCP.

The local communities, NGOs, MINEF and the exportation company jointly do monitoring of *Prunus africana*. Monitoring is done regularly to assess the resource base and also to determine whether sustainable harvesting techniques are being applied. *Prunus africana* inventory in Cameroon is championed by ONADEF. Local communities, NGOs and MINEF work hand in gloves with ONADEF during these inventories. Harvesting activities are suspended in any region where monitoring and inventory of *Prunus africana* are in process. It is only after an inventory that MINEF allocates portions of the forest for the exportation company and local communities to exploit. Harvesting beyond the allocated region is prohibited.

A brief overview of the extent of exploitation and conservation efforts in some *Prunus africana* rich forests, mountain and highland regions in the Southwest and Northwest provinces of Cameroon (Table 3) is outlined below:

The Kupe Mountain

Apparently, the *Prunus africana* species was abundant in this region, occurring on large surface areas. It has recently been reduced by incidences of legal and illegal exploitation. Individuals did exploitation with little or no knowledge on sustainable exploitation techniques. In addition to this, majority of the harvesters were people from out of the region with little or no interest in sustainable management of the resource. The local people expressed concern over the management of the resource and were very much interested in getting involved in all management activities. The local people also expressed willingness to carryout eventual exploitation of *Prunus africana* by themselves in view of obtaining maximum benefits from the resource. The Mount Kupe forest is experiencing acceptable levels of management and protective interventions mainly from traditional rulers of the region supported by the MKFP.

Akwaya Highlands

Some villagers who had been previously involved in illegal exploitation expressed willingness to participate in any future management initiatives. Plantecam Medicam, however, carried out meetings to sensitize the local population on the regeneration of *Prunus africana.*

Northwest Province

Easy access into forests in this province resulted to rampant and intensive exploitation of *Prunus africana* for several years. Unsustainable exploitation, farming on slopes, bush fires and ignorance on the value of this tree species in the past greatly contributed to the depletion of natural stock in the Northwest province. Regeneration schemes were set up following the indiscriminate exploitation. Today, this province is one of the leading provinces of *Prunus africana* cultivation in Cameroon (Table 2) and could serve as a principal source of this valuable resource in future.

Oku Mountains (Kilum/Ijim)

The Oku mountain region is considered a region of high *Prunus africana* occurrence in the Northwest province. The high degree of exploitation can be attributed to the relatively good accessibility into the forest and also to limited local initiatives to protect the resource in the past. Another reason for the indiscriminate exploitation was the scramble by villagers to benefit from the resource by harvesting and supplying bark to permit holders. Since 1996, increased awareness on the importance of the resource and the negative impacts of uncoordinated exploitation led to remarkable changes in the management of *Prunus africana* by local people. Traditional rulers instituted a ban on the exploitation of the resource. A village committee was set up to protect the resource and also to ensure the integral management of the mountain forest. *Prunus africana* management features prominently in the community management plan of all forest management

committees. The KIMFP in close collaboration with the village community is in the process of creating community forestry in the Oku Mountain region.

Nkom-Wum Forest Reserve

The Nkom-Wum reserve has undergone intensive *Prunus africana* exploitation over the years. Exploitation started as early as 1978 by Plantecam Medicam and continued up to mid 1990s. The local population actively participated in the exploitation of *Prunus africana* bark but the management of the resource by this population was relatively weak. However, local NGOs such as Ozone Friendly People (OFP) and local MINEF services sensitized the population on the advantages of sustainable management of *Prunus africana*. There is little or no management intervention in the Nkom-Wum area despite these sensitization efforts.

Mount Muanenguba

Prunus africana occurs in vast areas of the Mount Muanenguba forest but the resource has been badly exploited. Uncoordinated influx of exploiters caused massive destruction of this tree species. Despite the damage inflicted on the species and poor state of the forest, MINEF went ahead and issued an exploitation license to Ets. AP et Fils in May 2000 to exploit *Prunus africana* in this region. It was regrettable to observe the quantity of bark harvested under this permit. *Prunus africana* trees of diameter less than 10 cm were harvested. Presently, the damage to the resource base is almost complete even though the presence of harvesters still indicates the existence of *Prunus africana* on the mountain. This is just one glaring example of the flaws of the government in the enforcement of legislation regarding the management of *Prunus africana*. Fortunately enough, the villagers expressed willingness to collaborate in management interventions geared towards the protection of *Prunus africana* (Okenye Mambo *et al*., 2000). CERUT, a national

NGO is seriously working with the people in the Muanenguba region to achieve this goal.

Table 3 - Synthesis of results of the national *Prunus africana* inventory

Site/region	Availability of *Prunus africana*	Accessibility into the forest	Socio-economic & cultural consideration	Interest of local people in management	*Prunus africana* Exploitation history	Existence of local Partners in the region	Biodiversity Conservation
Rumpi Hills	No	-	-	-	-	-	-
Nta Ali	No	-	-	-	-	-	-
Bakossi Mountain	No	Good	-	-	-	-	-
Kupe Mountain	Available	Good	Good	Very High	Exploited fairly bad	MKFP CERUT	High
Mount Muanenguba	Available	Good	Good	High	Destructive exploitation	MKFP CERUT	Average
Mount Nlonako	Few	Good	Weak	Low	Fairly good	None	Low
Lebialem Highlands	Few	Barely passable	Good	High	Destructive	None	Low
Akwaya Highlands	Available	Extremely difficult	Good	High	Fairly good	PROFA	Low
Oku Mountains	Available	Good	Good	Very high	Fairly good	KIMFP	High
Nkom-Wum Reserve	Available	Good	Good	Low	Fairly good	None	Average
Bembe Reserve	Available	Extremely difficult	Fair	low	Little exploitation	None	Low

Source: Okenye Mambo *et al.*, 2000.

3.3 LEGAL AND INSTITUTIONAL FRAMEWORK

Before the decentralization of the forestry sector and enactment of the 1995 forestry legislation in Mali, Cameroon and perhaps a few other Central and West African countries had already made reforms in the forestry sector. Cameroon had its institutional and legislative reforms in the forestry sector in 1994. Prior to this period, forestry activities and environmental issues in general were coordinated by

the Ministry of Agriculture, Divisional Section of Forestry. The 1994 forestry reforms gave birth to a new legislation and MINEF, which is presently in charge of issues related to the environment and forestry. The new Forestry Law No 94/01 of 24th January 1994 lays down forestry, wildlife and fishery regulations. According to Egbe (2001) this Law was enacted with the objective of involving communities in the management and protection of forest resources. It constitutes an important aspect of the democratization and liberalization process initiated by the State in the early 1990s. Djeumo (2001) confirms this by stating that the passing of this new forest law was a clear expression of Cameroon's desire to improve the level of participation of local communities in the management and conservation of forests. Since the beginning of the 1990s, there has been particular emphasis on environmental protection in Cameroon and, even more, on the sustainable management of forest resources. This new idea is supported by two new texts: the already mentioned Forestry Law No 94/01, and Law No 96/12 of 5th August 1996 concerning the management of the environment. These are supplemented by specific regulatory texts for production forests and community forests. The Law provides for two types of status for forested areas, with different types of management (Box 1). These include: the Permanent Forest Estate, which is the private estate of the State and is classified and managed under supervision of MINEF. There is also the Non-Permanent Forest Estate consisting of communal forests and forests owned by private individuals - These are neither classified nor subject to specific management plans (Lescuyer *et al.*, 2001). *Prunus africana* exploitation has been extensive in Non-Permanent Forest Estates and harvesters are now encroaching into Permanent Forest Estates. Article 9 of the Law on the management of the environment recognizes the principle of participation. MINEF agrees that "local populations should participate in every phase of consultation and follow-up throughout the process, from the preparation phase to the implementation of the management plan" (MINEF, 1998). According to the

aforementioned texts, the involvement of local communities in forestry activities and decision-making processes is imperative.

Box 1

Classification of forests in Cameroon

The 1994 Law classifies forests in Cameroon into two main categories:

A. The Permanent Forest Estate, also known as `Classified forest´, which can only be used for forestry or as wildlife habitat. The law specifies that at least 30 % of the national territory should be classed as permanent forest. This can be of two types:
    a. State Forests – comprising protected areas (national parks, wildlife reserves) and production forest reserves;
    b. Council Forests – managed in a decentralized manner by elected local councils on the basis of management plans approved by MINEF.
B. The Non-permanent Forest Estate, consisting of forested land, which can be converted to non-forest uses. These include:
    a. Private Forests belonging to individuals;
    b. Communal Forests, a residual class, including all forests not included in category A or B (a) above

Source: Adapted from Djeumo, 2001.

It is stated in section 25 of Law No 94/01 that State forests shall form part of the private property of the State and that forests shall be exploited either under State management or under license. State management here implies strict supervision by MINEF. Private exploiters of all kinds of forest products, including *Prunus africana* exploitation are subjected to operate under licenses issued by the State. Medicinal plant harvesting is controlled by the preliminary acquisition of an exploitation license of forest species; the prerequisite or qualifications are described in the new Forest, Faunal and Fisheries Regime - Law No. 94/01 and in the directions of use of this regime - Decree No. 94/436 of August 23rd 1994. The delivery of this license is accompanied by a report book. This book describes clearly the harvesting practices in accordance to the vegetative structure to be extracted. The exportation company and other exploitation license holders are required by law to use this report book for *Prunus africana* debarking.

Legal and Institutional Setbacks

According to Bigombe (1998), local populations have been marginalized in forest management in Cameroon since the period of French colonization where the State dictated everything and monopolized the flows and networks for the use of resources, relegating populations to the role of mere bit-part players. The 1994 reform, carried out in a context of restructuring the political landscape in Cameroon, and under pressure from calls for democratization, for the first time formalized the involvement of local populations in forest management through community forestry (Djeumo, 2001). This reform is a legal instrument delegating responsibility to the local communities (Vabi *et al.*, 2000). Strangely enough, there is still some degree of marginalization of local communities in the forestry sector as well as in other sectors, including the provision of services and infrastructure in Cameroon today. As it is the case in Cameroon, major decisions concerning local communities such as those on forest exploitation are often made without considering the opinion of local people and even when attempts are made to fully involve the local people, their contributions are usually shaped by their elites, politicians, and other community representatives. Egbe (2001) blames this to the lack of significant domestic support for the new forestry law, coupled with the conflicting interests and the highly centralized administrative machinery of the country. Djeumo (2001) describes those at the helm of this machinery as being very much interested in accumulating wealth to the detriment of the State and especially the increasing impoverishment of local populations. Brown (1999) concludes that Cameroon's legislators have been faulted for the lack of guidance. For instance, the government went ahead and issued exploitation licenses to local contractors regardless of the bad state of the *Prunus africana* resource base in the Muanenguba forest area. Generally, *Prunus africana* bark is accepted by the exportation company only from holders of valid *Prunus africana* exploitation licenses. Some holders of valid licenses, however, were the primary culprits of illegal practices as they in turn

involved illegal buyers of *Prunus africana* bark in their transactions. These illegal buyers were not very much concerned about the harvesting techniques employed by the local harvesters, but instead encouraged them to supply as much bark as possible. They were interested in making much profit and cared little about the forest, which provided their raw material. For similar reasons perhaps, Plantecam Medicam was seemingly not concerned about this situation, as it did not make enough effort to stop legal license holders from carrying on with illegal practices. Plantecam's intervention in the illegal practices came only after MINEF and MCP raised awareness on the poor harvesting techniques and bad state of the resource. Eben Ebai *et al.* (1992), however, state that in 1991, Plantecam Medicam funded the Forestry Department to carry out a survey to determine the availability and distribution of *Prunus africana* on Mount Cameroon.

Jones (1999) recognizes the need for governments to secure and strengthen policies focused on decentralization, poverty alleviation in rural areas and the removal of discrimination since the community-based natural resource management approach could be identified with each of these policies and 'sold' politically as not only a conservation programme, but also a programme for rural development, democratization and good governance. Though the harvesters in various communities can be blamed for destroying their own forest in the past, whether knowingly or not, through unsustainable exploitation of *Prunus africana*, it is clear that the government and Plantecam Medicam failed in their duty of securing the enforcement of legislation and controlling the management of this resource. This amongst others is an example of the weakness of the old natural resource management paradigm, specifically of *Prunus africana* management with the government as 'managers'.

Communities as Legal Entities

MINEF recently identified the lack of a clear-cut definition of a community as an obstacle to implementing the 1994 Law (MINEF, 1999). For the purpose of the

1994 Law and the Wildlife Decree, a community must be a recognized legal entity. To obtain this status, a community must demonstrate proof of its existence to the government. Despite the requirement for communities - traditional and otherwise - to obtain legal recognition, no clear definition of 'community' exists. The fact that the forestry and wildlife regulations were enacted in the politically volatile mid 1990s may explain legislators' choice to favour 'all components of the community' or 'all members of the community' over exclusionary social, ethnic or tribal definitions. An exclusionary definition might have compromised attempts to forge national integration amongst Cameroon's two hundred and fifty tribes. Responsibility for ensuring that communities are sufficiently inclusive for the purpose of forest and wildlife management has been delegated to local administrative authorities (Prefects and Sub-Prefects). Local Prefects, as leaders of the Land Consultative Board, which manages national land, are empowered to settle disputes relating to the membership and boundaries of a community (Egbe, 2001). The very heterogeneous community makes use of a variety of resources from the forests around Mount Cameroon. Coupled with the weak traditional authority, low government capacity to agree and implement legal forest management, and confusing land tenure arrangement, which leads to lack of clarity over ownership and regulations for community management of their forest resources (Tekwe and Percy, 2001). Integrating community members nationwide is important in meeting the government's much talked about goal of maintaining national integrity amongst people with tribal, political and religious differences. Living in the Mount Cameroon region with the Bakwerians are people from all over the country with different social, tribal, religious and political standing. The participation in community management of natural resources in this region, therefore, should be open regardless of these differences.

3.4 ACTORS AND ACTIVITIES IN PRUNUS AFRICANA MANAGEMENT IN THE MOUNT CAMEROON REGION

The main actors or stakeholders in *Prunus africana* management in the Mount Cameroon region in general include: MCP, LBZG, the local communities whose livelihood partly depends on *Prunus africana* exploitation (individual *Prunus* planters, *Prunus* planter groups and *Prunus* harvesters' unions), ICRAF[30], local CIGs (Greenfield and FAAFNET), CDC, the exportation company, ONADEF, and MINEF. MCP has been working towards community management of the forest in collaboration with MINEF since 1995 (Tekwe and Percy, 2001). These actors operate at different levels in the management process, which include; harvesting, marketing, regeneration, monitoring, inventory, training and capacity building.

Harvesting

Harvesting is mainly done by the *Prunus africana* harvesters' unions, though some individuals also harvest illegally. The yearly quota (tons) and daily quota (kg) to be harvested from any part of the forest in the Mount Cameroon region is set by MINEF. In the past, harvesting was done by Plantecam Medicam workers assisted by local harvesters from nearby communities. But as the harvesters' unions became existent and took over control of harvesting activities in these communities, the functions of Plantecam Medicam workers became restricted to the buying and transportation of already harvested *Prunus* bark from these communities. The prescribed harvesting norm is that only two quarters (north and south or east and west) is to be taken off from each *Prunus africana* main stem up to the first branch.[31] If the bark is partially stripped according to prescribed norms (two opposite quarters or panels), it will regenerate in 5 to 8 years and can be repeatedly exploited without killing the tree (Cunningham and Mbenkum, 1993).

[30] ICRAF's work on *Prunus africana* is funded by the International Fund for Agricultural Development (IFAD) based in Rome, Italy and the British Department for International Development (DFID).
[31] Limbe Botanical and Zoological Garden, LBZG.

Picture 4 - A freshly debarked *Prunus africana* tree in the Bokwoango forest (Photo, Ekane NB).

Picture 5 - A *Prunus africana* tree that has been stripped and left for bark to regenerate (Photo, Ekane NB).

Marketing

Marketing of *Prunus africana* is done by the harvesters' unions at the community level and by the exportation company in the international market. The price at which a kg of *Prunus africana* bark was bought from the local *Prunus* harvesters was determined by Plantecam Medicam until the year 2000 when its exploitation license in the Mount Cameroon region expired.

Regeneration

LBZG, ICRAF and CDC are actively involved in *Prunus africana* regeneration in the Mount Cameroon region (Box 2). MCP and MINEF help communities in this region to start off and maintain regeneration programmes. The Bokwoango, Likoko Membea, Ewongoa, Bova II and Bonakanda communities now have *Prunus africana* farms thanks to MCP (Appendix B). Individual farmers (individual *Prunus* planters) and groups of farmers (*Prunus* planter groups) grow *Prunus* in their farms along side other crops (Table 1). Local NGOs (Greenfield and FAAFNET) are

also involved in sensitization of the public on the need for regeneration of *Prunus africana*. The rural women in the Southwest and Northwest provinces have also participated in the regeneration of *Prunus africana* through their 'Women in Development' cooperatives (Box 2).

Box 2

Some Community benefits from the LBZG nursery include:

- CDC established a 3 ha plantation of *Prunus africana* in Moliwe. It was the first plantation of *Prunus africana* anywhere in the world and is a direct result of the propagation programme of LBZG. CDC has already planted 7000 seedlings supplied by LBZG nursery;
- in the Northwest Province, a 'Women in Development' cooperative has planted a further 1.5 ha of *Prunus africana*, with seedlings from LBZG nursery;
- the Forestry Research Division of the Mbalmayo Forestry School received *Prunus africana* material to undertake further trials in vegetation propagation;
- a 'Women in Development' cooperative in Fako Division received 1000 *Prunus africana* seedlings from the LBZG nursery for small-scale planting in fallow areas;
- *Prunus africana* is prominent in the medicinal plant area of the LBZG. The area was developed using material from the 'Conservation through Conservation' Programme;
- the Community Development Unit of the MCP has distributed 250 seedlings of *Prunus africana* to some villages.

Source: LBZG.

Monitoring

Monitoring of *Prunus africana* is now jointly done by the harvesters' unions, the exportation company, MCP and MINEF.

Inventory

Inventory of *Prunus africana* is done to determine the sustainable exploitable quota around the Mount Cameroon region. Inventory is championed by ONADEF. Also involved in this process are: the *Prunus* harvesters' unions, MINEF and the exportation company. Before commencing harvesting in any part of the forest in

this region, there must first of all be: an inventory to determine the resource base of the area in question; and training of harvesters on how to harvest sustainably.

Training and Capacity Building

MCP and LBZG organize regular capacity building workshops and training courses to help empower the local communities (harvesters, non-harvesters, chiefs, and local CIGs) in the Mount Cameroon region on how to carry on with sustainable harvesting and regeneration of *Prunus africana*. MCP, LBZG and MINEF invest for studies in price variations as well as future trade of *Prunus africana*. Results of these studies are presented to *Prunus africana* harvesters' unions and farmers involved in *Prunus* regeneration.

3.5 THE PRUNUS HARVESTERS' UNIONS

3.5.1 ORIGIN

From 1994 there was an outbreak of illegal exploitation in the Mount Cameroon forest fuelled by unauthorized or illegal buyers who had exhausted *Prunus africana* stocks in other parts of the country following the licensing of more contractors. These buyers encouraged local *Prunus africana* harvesters in the Mount Cameroon region to harvest for them, giving the latter much greater rewards than they had ever had before, but still significantly lower than what Plantecam Medicam offered to its legal suppliers. These buyers either sold their produce to Plantecam Medicam or to other international agents. Transactions with the illegal buyers were done at night. The illegal buyers otherwise known as the middlemen took advantage of the local *Prunus africana* harvesters leaving them with very little benefits from the *Prunus africana* trade. The Mapanja and Bokwoango communities, which were the two main communities involved in these activities, were not getting the benefits they deserved. Instead, the middlemen and employees of Plantecam Medicam benefited a great deal from the chaotic situation. The middlemen and employees of

Plantecam Medicam were mostly people from different parts of the country with little or no interest in the development of the communities around Mount Cameroon where they operated. According to Njombe Ewusi (1998), this situation sparked conflicts between members of these communities and the workers of the forestry services, MCP and Plantecam Medicam. There were also conflicts in the field between Plantecam Medicam workers and the local *Prunus africana* harvesters. Because of the scramble to make maximum benefits from the *Prunus africana* trade, trees were either felled or totally debarked by local harvesters to meet up with the demands of the illegal buyers. Despite attempts made by the local MINEF services and Plantecam Medicam, the illegal activities continued until November 1996. Haven had enough of these conflicts, the people of Mapanja chased Plantecam Medicam workers and the illegal buyers away from their forest. In response to the growing conflicts within Mapanja and Bokwoango and between members of these communities and outside stakeholders, MCP facilitated a process of conflict management in an attempt to solve the problems related to harvesting and trading of *Prunus africana*. The premise of this conflict management process was that:

a) by developing partnership between local communities, government, and business, sustainable harvesting of *Prunus africana* could be achieved; and

b) for this to work in the long term, the benefits accruing from *Prunus africana* exploitation to local communities needed to be increased. After MCP's intervention, local *Prunus* harvesters in Mapanja who had been involved in illegal harvesting of *Prunus africana* willingly decided to form a *Prunus africana* harvesters' union with the authorization and support of their chief. This example was later followed by the Bokwoango *Prunus africana* harvesters. The chiefs of these two communities realized that the scramble for *Prunus africana* bark and the frequent conflicts in their communities posed a serious problem that required timely intervention. The local *Prunus* harvesters elected an executive and drew up rules and regulations to bind the union. A mixed team was also formed made up of representatives from the harvesters' union, community elders, including women,

and the traditional council to represent these communities in negotiations with outside stakeholders. After a series of negotiations between MINEF, Plantecam Medicam, and the representatives of these communities, MCP facilitated an agreement between the harvesters' unions and Plantecam that allowed the local *Prunus* harvesters to operate legally under Plantecam's license. This excluded middlemen and initiated direct transaction between the harvesters' unions and Plantecam Medicam. The agreement set forth terms, which regulated the amount to be harvested per month, methods of harvesting and supervision, punishment for non respect of norms, modalities for *Prunus africana* regeneration, and a system of benefit sharing to the community. All bark harvested was sold directly to Plantecam Medicam, thereby increasing income to the unions by at least 3 fold. To ensure that the system works, MCP initiated and put in practice a participatory monitoring and evaluation (PME) system involving all stakeholders. The purpose of the PME system is to ensure that all the agreements reached so far continue to work to guarantee the sustainable management of the resource. It permits learning from experience and enables stakeholders to improve the efficiency and effectiveness of the PME system.[32]

3.5.2 THE BOKWOANGO PRUNUS AFRICANA HARVESTERS' UNION

Shortly after the creation of the Mapanja *Prunus africana* harvesters' union, MINEF and MCP assisted the Bokwoango *Prunus africana* harvesters to form the Bokwoango *Prunus africana* harvesters' union in 1997. The function of this union is mainly to ensure sustainable harvesting of *Prunus* bark in the Bokwoango forest. Its role is to defend the interest of the harvesters at all levels so as to maximize benefits from the *Prunus africana* exploitation process. Members of this union were trained and supervised by MCP workers assisted by Plantecam Medicam workers

[32] The sustainable management of *Prunus africana* in the Mount Cameroon region, by Bruno Njombe Ewusi. 1998. World Bank/ WBI's Community-Based Natural Resource Management (CBNRM) Initiative.

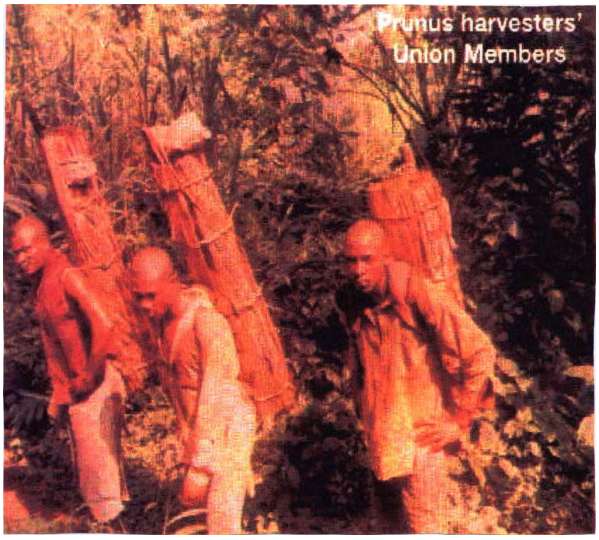
on good harvesting techniques until 1999 when they could implement these techniques themselves.

Picture 6 - Members of the Bokwoango *Prunus africana* harvesters' union gathering for a meeting (Photo, Ekane NB).

3.5.3 EXECUTIVE AND OPERATIONAL SET-UP

Each *Prunus africana* harvesters' union has its executive committee that is recognized by the chief, MINEF and MCP. The executive committee of the Bokwoango *Prunus africana* harvesters' union consists of: a president, secretary, treasurer, financial secretary, publicity secretary, co-ordinator, auditor and supervisors. Each executive member has a specific function. Selection of executive members is done through democratic elections. The floor members are also entitled to stand for elections into any executive post of their choice. This union is presently made up of over 50 members with ages ranging from 18 to 40 years. Membership is generally not open to women. Only strong and healthy men from 18 years and above holding a national identity card are accepted into the union. Physical fitness is an

added advantage considering the tasks involved in harvesting and transportation of bark from the mountain forest.



Picture 7 - Bokwoango *Prunus africana* harvesters' union members transporting freshly harvested *Prunus africana* bark from the forest (Source: MCP).

Picture 8 - Harvester splitting *Prunus africana* bark into small pieces for sale (Source: Future Harvest, 2004).

OPERATIONAL SET-UP

The members of the Bokwoango *Prunus africana* harvesters' union are divided into two equal groups. One group goes for harvesting on mondays, wednesdays and fridays, while the other group goes for harvesting on tuesdays, thursdays and saturdays. This schedule was made in such a way that members could have a day off to rest and carryout other activities. Executive members are also involved in the harvesting process. Members are given number tags to affix to each tree they debark. With the help of MCP, the union developed a bark delivery recording sheet in which all relevant information about the harvester, as well as date, nature and quantity of harvest are recorded. These records are kept as reference to guide future harvest (Appendix C).

Daily Quota

The Bokwoango and Mapanja *Prunus africana* harvesters' unions are now working together as a CIG – The Mount Cameroon *Prunus africana* harvesters' Common Initiative Group (MOCAPCIG). They intend to harmonize the management and harvesting activities of all the communities exploiting *Prunus africana* in the Mount Cameroon region. Through this CIG, they are hoping to become exposed to the international market where they may possibly compare prices and do business with different international exporters other than the present exporter. The present quota as regards yearly and daily harvest of *Prunus africana* was set by MINEF to ensure sustainability following the indiscriminate exploitation that caused the reduction of *Prunus africana* stock in the Mount Cameroon forest. The annual quota of *Prunus africana* bark for both the Bokwoango *Prunus africana* harvesters' union and the Mapanja *Prunus africana* harvesters' union is 100 tons i.e. 50 tons for each union. Each union member is supposed to harvest not more than 32 kg per day. The union members themselves came to a consensus that the least amount of bark each member has to carry per day should be 20 kg. Figures of the income and tax collections of both the Bokwoango and Mapanja *Prunus africana* harvesters' unions for the year 2004 are as follows:

- Annual tonnage – 100 tons;
- Annual income – 260,000,000 FCFA[33];
- Annual *Prunus africana* regeneration tax – 1,000,000 FCFA;
- Annual *Prunus africana* monitoring tax – 1,000,000 FCFA;
- Annual contribution to the community development funds – 4,000,000 FCFA;

[33] FCFA is the same as CFA Francs. Presently, 1 Euro = 655.957 FCFA, 1 US $ = 557.69 FCFA. 1£ = 962.63 FCFA and 1 French Franc (FRF) = 100.00 FCFA (This exchange rate is as of 29 November. 2005). January 1, 1960 to January 11, 1994 - 1 CFA franc = 0.02 FRF (January 1, 1960: 100 'old' francs became 1 'new' franc) January 12, 1994 to December 31, 1998 - 1 CFA franc = 0.01 FRF (sharp devaluation of the CFA franc to help African exports) January 1, 1999 onward - 100 CFA franc = 0.152449 Euro or 1 Euro = 655.957 CFA francs (January 1, 1999: Euro replaced FRF at the rate of 6.55957 FRF for 1 Euro). http://www.answers.com/topic/cfa-franc

- Annual contribution to the union funds – 2,000,000 FCFA;
- Annual salary to harvesters of both unions – 180,000,000 FCFA (Source: the president of the Bokwoango *Prunus africana* harvesters' union, 2005).

The management of both the Bokwoango and Mapanja *Prunus africana* harvesters' unions is organized in such a way that the money earned from *Prunus africana* harvesting may assist the members, their families and the entire community in one way or the other. For instances, these unions have the community development fund and the union fund. Both unions also made provision for *Prunus africana* regeneration and monitoring tax. These contributions are deducted from the price of each kg of *Prunus africana* bark that each member harvests. In both the Bokwoango and Mapanja *Prunus africana* harvesters' unions, deduction is done as follows:

- 10 FCFA/kg is deducted as regeneration tax;
- 10 FCFA/kg is deducted as monitoring tax;
- 40 FCFA/kg is deducted for the community development fund;
- 20 FCFA/kg is deducted for the union fund.

Union Fund

The purpose of this fund is to help in problem solving within the Bokwoango *Prunus africana* harvesters' union. It is from this fund that union members contract loans in times of need. The union fund also caters for feeding and transportation of members attending meetings or training courses out of the community.

Members involved in monitoring, inventory and supervision exercises are each paid a sum of 4,000 FCFA per day from the monitoring tax.

Community Development Fund

This fund was opened to ensure that the benefits from the Bokwoango *Prunus africana* harvesters' union trickle to the entire community through the participation in community development projects. The chief of Bokwoango was made the chairperson of the community development fund.

Share of Individual Members

After all the tax deductions and contributions of each member to the union and community development, what is left is given to the members at the end of the month as their salaries. The salary of each member depends on the quantity of bark he brings from the forest, which in turn is dependent on strength. Not all members are strong enough to bring down 32 kg of bark per day from the forest, so they are advised to debark as much as they can carry without exceeding 32 kg.

Table 4 - Price variation, daily quota and daily income of *Prunus africana* harvesters from 1996 to 2005.

Year	Price/kg (FCFA/kg)	Daily quota (kg)	Daily Income in FCFA (min. of 20 kg to max. of 32 kg)
Early 1996	60	-	-
Late 1996	100	-	-
1997 (under union)	185	32	3200 – 5100
1998 (under suspension)	-	-	-
1999	215	32	3200 – 6600
2000	215	32	3200 – 6600
2001	200	32	3200 – 6400
2002	200	32	3200 – 6400
2003	180	32	3200 – 5760
2004	160	32	3200 – 5120
2005	160	Not precise	8000 – above

Source: Bokwoango *Prunus africana* harvesters' union, 2005.

Price Variation of *Prunus africana* Bark

At the beginning of the year 1996, a kg of *Prunus africana* bark was bought by middlemen from the local *Prunus* harvesters at the price of 60 FCFA. The

middlemen in turn sold the same quantity to Plantecam at a higher price. According to studies of Cunningham and Mbenkum (1993), *Prunus* bark was bought for 150-170 FCFA per kg (US$ 0.6-0.7) in Cameroon by Plantecam Medicam while this same quantity was bought in Kenya at a higher price of 11 French francs (US$ 2). This means that the middlemen were buying *Prunus* bark from the local harvesters at low prices and selling the same quantity of bark to Plantecam Medicam at higher prices. The harvesting exercise at that time was not only environmentally unfriendly but also took a toll on the health of harvesters who were struggling to make as much money as possible. The price of a kg of bark went up to 100 FCFA towards the end of the year 1996. The intervention of MINEF and MCP, which resulted in the formation of the *Prunus africana* harvesters' union and the introduction of sustainable harvesting techniques in 1997, made it impossible for middlemen to continue their activities in the region. Direct transaction between the union and the exportation company was established and the price per kg of bark went up to 185 FCFA. In 1998, some union members were caught carrying out unsustainable harvesting techniques. This resulted to the suspension of the union by MINEF. Harvesting, however, resumed in 1999 with MINEF's permission. During the period from 1999 to 2000, the price of a kg of *Prunus* bark went up to 215 FCFA.

Even though union members were unwilling to explain why there has been a sudden increase in their daily income from sales (8,000 FCFA and above) of bark in the year 2005 (Table 4) despite a slight reduction in the price of a kilogram of bark, it is very likely that the management of this union is crumbling and as a result of this, members are harvesting more than required.

3.5.4 STRENGTHS AND WEAKNESSES

There have been some achievements and flaws in the management and operations of the Bokwoango *Prunus africana* harvesters' union. The achievements of this union can be attributed to the rules and regulations that govern the union and the

commitment that some of the members have shown so far to ensure the smooth functioning of the union.

Rules and Regulations

The union members formed rules and regulations with the help of MINEF and MCP. These rules and regulations bind the union and serve as a working document to guide their activities and operations. The rules and regulations include:

- Conflict among members is not encouraged. Any member found at fault pays the sum of 5,000 FCFA or is asked to buy a crate of beer;
- No illegal exploitation of any kind is accepted. This is enforced by MINEF;
- Any member found guilty of harvesting unsustainably must be punished. The type of punishment varies depending on how bad the harvesting was done. The supervisors keep records in the field as far as harvesting is concerned and they are responsible for determining the type of punishment that defaulters receive. For instance, a member who totally debarks a tree is asked to pay the sum of 30,000 FCFA. 7,000 FCFA is paid by a member who peels up a small branch or who harvests below 1.3 m above ground level. In some cases, culprits are even suspended from work for two harvesting days;
- No waste of any sort is to be disposed in the forest;
- No defecation in the forest. If need arises, a hole should be dug and the act done in it and covered.

These rules and regulations are not always followed even though they may seem so well formulated. There are cases where members breach one or more of them. Those found guilty of going contrary to these rules and regulations are punished as stipulated. The greatest shortcoming of the Bokwoango harvesters' union is the mismanagement of the community development fund by the chief and his authorities. This sparked conflicts between the union members and the authorities.

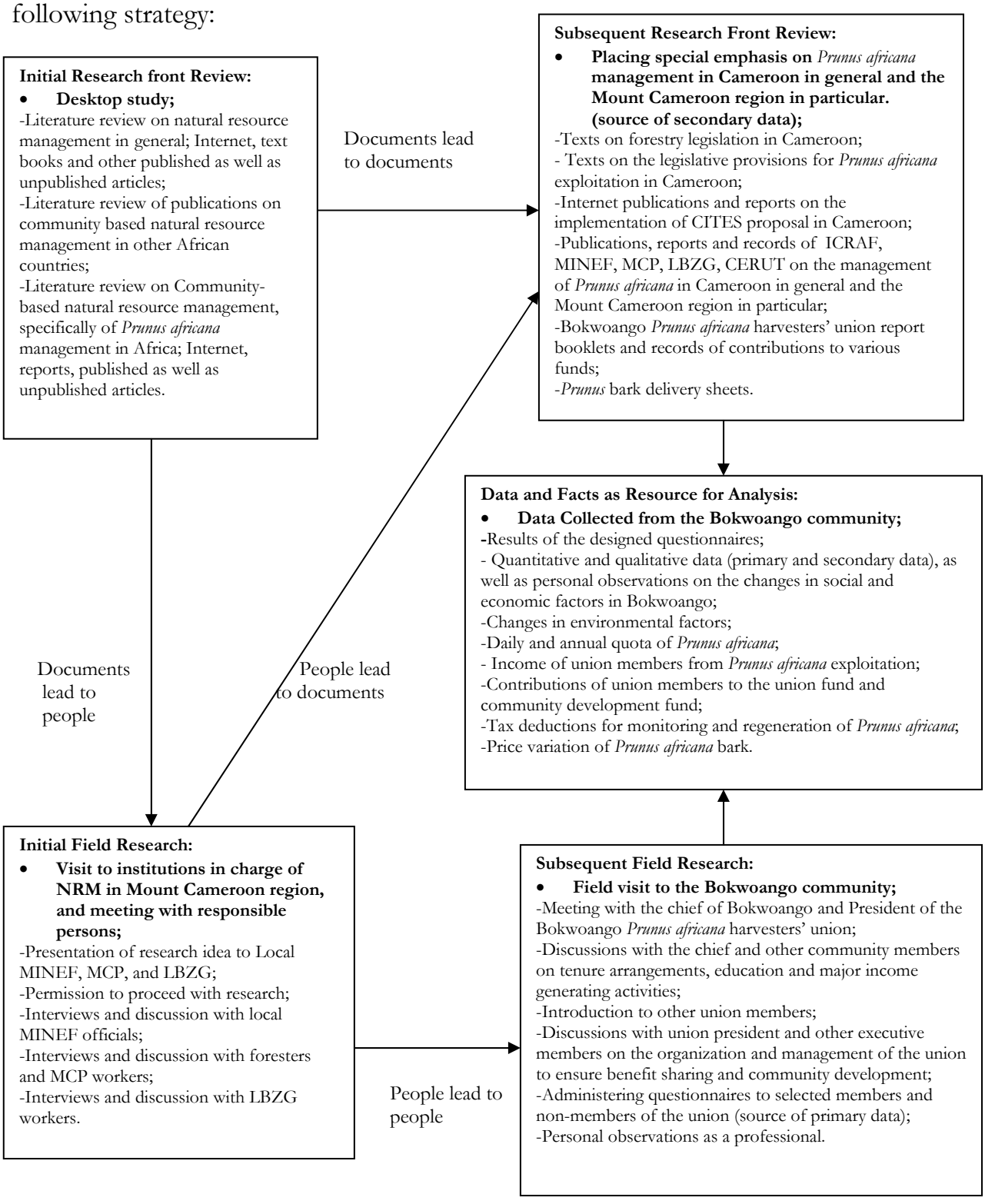
3.5.5 PARTICIPATION OF WOMEN

Generally, females are excluded from being members of the *Prunus africana* harvesters' unions because of the task involved in harvesting and transportation of *Prunus* bark. According to the men, this exercise requires a lot of physical strength and endurance that will take a toll on the health and general well-being of women. Moreover, the harvesters leave their homes early in the morning and only get back in the evenings. They practically spend the whole day in the forest. The domestic responsibilities of women in the Bokwoango community, like in many other rural communities, cannot permit them to stay out for such long hours. Although the harvesting of *Prunus africana* is considered a job for men only, some union members find it hard to meet up with the task and are often unwilling to accept openly that the exercise weighs physically on them for fear that it might be interpreted by others as a sign of weakness. Others, however, openly accept that the task is tough, but worth it.

Women are often active and interested in environmental improvements, which have to do with their work in obtaining water, fuel and fodder, but it is often difficult for them to take part in institutions dominated by men (Agarwal, 1993). It is important to involve both men and women in participatory planning of resource use regardless of their stance. The inclusion of women in the mixed team of representatives by MCP was a positive step towards gender sensitive development, which is an impetus for equitable benefit sharing and socio-economic growth. However, since the Bokwoango women are not directly involved in *Prunus africana* harvesting, they use this as a reason to shy away from union meetings and do not show much interest in the activities of the union. To overcome such situations, Agarwal believes that clearly defined subunits with legally defined roles, rights and access to funds could be a possibility.

CHAPTER FOUR
ANALYSIS OF DATA – SOCIO-ECONOMIC CHANGES

The data and other information used in this study were assembled based on the following strategy:



This strategy is adapted from Weimer and Vining, 1999.

The data and all other relevant information, which are the results or product of the above strategy, have been analyzed quantitatively to bring out the extent of socio-economic changes in the livelihood of members (direct beneficiaries) and non-members of the Bokwoango *Prunus africana* harvesters' union.

To quantitatively analyze the data obtained from the administered questionnaires so as to bring out the extent of socio-economic impact of *Prunus africana* management so far on members and non-members of the Bokwoango *Prunus africana* harvesters' union, weightings were assigned to the questions in the questionnaire (Appendix D). From these weightings, the total score for the social impact – social status, conflict resolution, leisure hours, community development, personal development, participation of women - is 16 and that for the economic impact – income from *Prunus* exploitation, income from other activities, importance of *Prunus* exploitation as source of income and livelihood, investment in other activities, expenditure on health, education, feeding, etc. is 22 out of a total socio-economic score of 38. Questionnaires were administered to 40 people in the Bokwoango community. Out of these 40 people, 18 were members of the Bokwoango *Prunus africana* harvesters' union and 22 were non-members of the union.

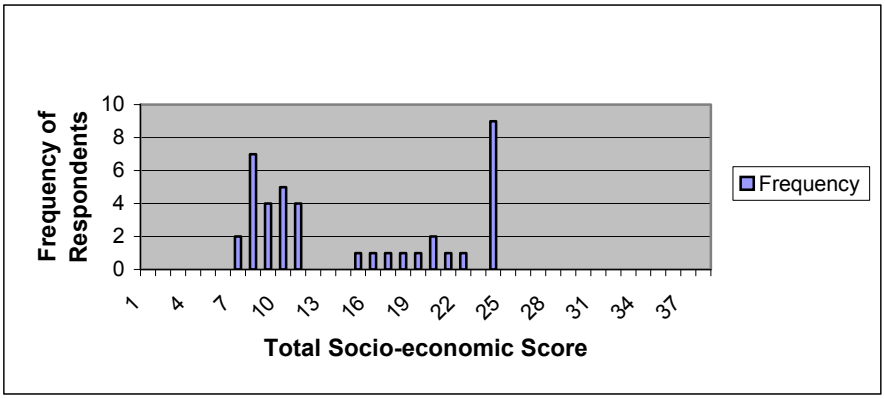


Figure 3 - Socio-economic impact on both members and non-members of the Bokwoango *Prunus africana* harvesters' union.

From figure 3 above, it is clear that only 9 out of 40 respondents had a score of 24 out of a total score of 38 for the socio-economic impact on both members and non-members of the union. This implies that even though the existence of the Bokwoango *Prunus africana* harvesters' union has initiated some socio-economic changes, much has not yet been attained in this respect.

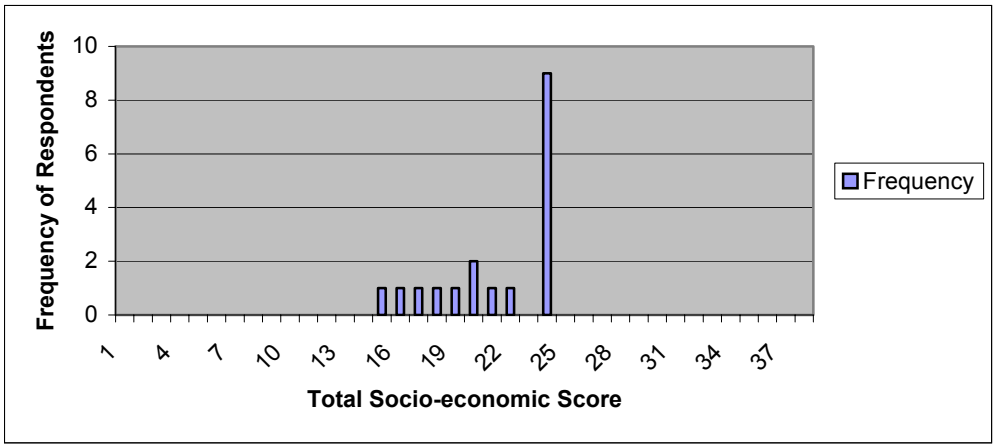


Figure 4 - Socio-economic impact on members of the Bokwoango *Prunus africana* harvesters' union.

Figure 4 depicts some similar characteristics as figure 3, implying that all the 9 respondents with the score of 24 out of 38 for the total socio-economic score are union members. This is because they are directly connected with the exploitation of *Prunus africana*. Even though only 18 members of the union were interviewed, they were carefully selected on the basis that majority of them had been members of the union since 1997 and have made some noticeable investments with their earnings from the trade in *Prunus africana*. All 9 respondents with the score of 24 had been union members since 1997. The general opinion of both old and new union members, however, is that their socio-economic well-being in general has not been increased by more than 50 %.

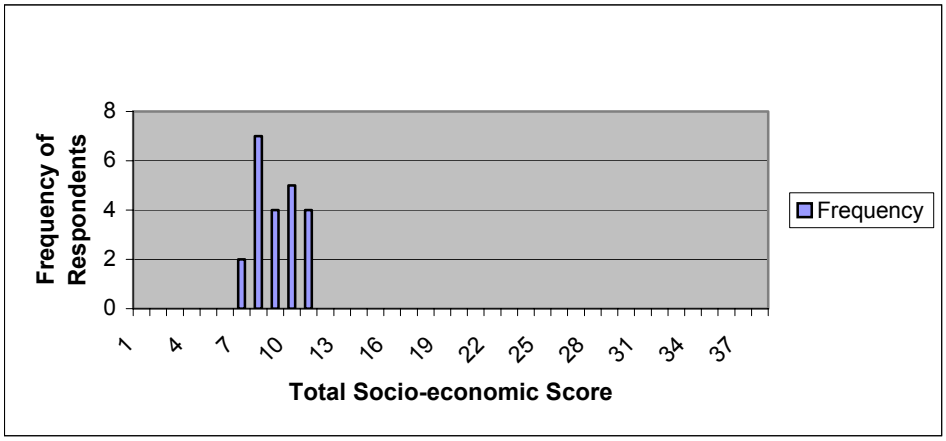


Figure 5 - Socio-economic impact on non-members of the Bokwoango *Prunus africana* harvesters' union.

From figure 5, 7 respondents scored 8 and only 4 scored 11, which in this case is the highest score out of 38 for the total socio-economic score. It is clear from this figure that there has not been a general improvement in the socio-economic well-being of all the 22 non-members interviewed. Even though a quick conclusion can not be drawn based on the opinion of only 22 respondents in the whole community, their response could, however, be representative for the bulk of the community.

Qualitative changes in the social and economic factors in the Bokwoango community have been observed from a poverty alleviation perspective. The rationale for this is that the proper usage of natural resources can contribute to poverty alleviation because of the interrelationship that exists between environmental management and poverty. Thus, proper allocation and usage of natural resources has some potentials of developing sustainable livelihoods and empowering most forest dwellers in general who depend greatly on their surrounding resources for survival. As a result of this therefore, the opportunities, security, health, etc, of these forest dwellers is affected in one way or the other by the way they manage their forest resources and earnings they derive from the trade. Some changes in the social and economic factors in the Bokwoango community as

a result of the management activities of the *Prunus africana* harvesters' union are discussed below.

4.1 (a) SOCIAL IMPACT OF PRUNUS AFRICANA MANAGEMENT ON MEMBERS AND NON-MEMBERS OF THE BOKWOANGO PRUNUS AFRICANA HARVESTERS' UNION

4.1.1 (a) HEALTH

From the earnings of *Prunus africana* exploitation, some union members have been able to buy drugs and pay hospital bills for themselves and other family members.

4.1.2 (a) EDUCATION

One of the reasons why most children in this community stay away or drop out from school is that their parents do not have sufficient funds to cater for their fees and other school needs. With the earnings from *Prunus africana* exploitation, majority of the union members having families have been able to provide school needs for their children and other dependents. Through the capacity building programmes and regular workshops organized by MINEF, MCP and LBZG, union members have learnt how to harvest and manage *Prunus africana* sustainably. Union members have also participated in leadership courses on how to organize and manage the activities of the union. They have acquired skills of cultivating *Prunus africana* and other plant species in their farms. The interest in *Prunus africana* cultivation is not restricted to members of the Bokwoango harvesters' union alone. Some non-members have also shown interest and are presently growing a small number of *Prunus africana* trees in their farms. Majority of the Bokwoango people are now aware of the importance and economic value of *Prunus africana*, including other forest resources in their community, and are hoping that these resources will continue to serve as a source of income in future. Since the intervention of MINEF and MCP and the creation of the harvesters' union in this community, there has

been a gradual positive change in the general behaviour of the Bokwoango people towards their environment. Generally, some formal education has become available to union members through the workshops and other capacity building programmes organized by MINEF, MCP and LBZG.

4.1.3 (a) COMMUNITY DEVELOPMENT

All the members of the Bokwoango *Prunus africana* harvesters' union contribute to the community development fund, which is intended to assist in community development projects in Bokwoango. The participation in the construction of the Bokwoango community hall was given priority by union members because the community needed a community hall. It is, however, alleged that the chief of Bokwoango and his authorities mismanaged the funds that the union allocated for this project. As a result of this, the only development that the chief and his project committee have been able to start so far is the molding of building blocks for the construction of the hall. This has strained the relationship between the union members and the chief. Notwithstanding, the Bokwoango *Prunus* harvesters' union helps in solving conflicts between members of the community. The union also gives assistance to needy community members and participates in regular clean up campaigns.

4.1 (b) ECONOMIC IMPACT OF PRUNUS AFRICANA MANAGEMENT ON MEMBERS AND NON-MEMBERS OF THE BOKWOANGO PRUNUS AFRICANA HARVESTERS' UNION

4.1.1 (b) EMPLOYMENT

The exploitation of *Prunus africana* is an additional occupation for the youths and young men in particular in the Bokwoango community given their poor educational background and the poor employment situation in general. Some union members declare that they no longer have time to idle around because of their activities in

the union. Others admit that they have learnt how to be responsible through the union. The youths of this union consider *Prunus* exploitation as a stepping stone from where they can possibly be exposed to other job opportunities. This explains why some of the union members have used their earnings to open small businesses in the community. Those with some basic primary education have registered for vocational training at workshops in Buea as well as within the Bokwoango community itself. Some others register regularly for public examinations into the civil service. Two union members have been successful in the military recruitment and are now serving in the army. Since MCP works closely with the union, the organization has employed one of the union members to serve as a driver for the project.

4.1.2 (b) FINANCIAL SECURITY

All union members are encouraged to open saving accounts as some kind of security. These savings are handled together with the union fund. The purpose of this is to allow the members and the rest of their families to meet unexpected financial challenges - 'rainy days' - such as unexpected medical expenses, home repairs and other emergency situations. Most harvesters were not saving before the formation of this union. The importance of savings is seen during periods of illness or the rainy season when harvesting ceases. In times of need, union members can as well contract loans payable with interests from the union fund. With their savings from *Prunus africana* exploitation, some union members have been able to construct houses, repair houses, provide fees as well as other school needs for their dependents, start small businesses, and buy furniture, farms and farm tools. Few have even gotten married just because they think their earnings from the *Prunus* harvesting exercise permits them to start families.

4.1.3 (b) INCOME

The search for alternative sources of income forced the Bokwoango people to engage in *Prunus africana* exploitation and other lucrative forest related activities.

Since most members of this union are also involved in farming, hunting and other activities, which are presently not as lucrative as they used to be, they now greatly depend on their regular earnings from *Prunus africana* exploitation. With these earnings, some members have been able to start small businesses in the community, which adds to their income from the trade in *Prunus africana* bark. The women selling breakfast, drinks and a variety of meals in this community testify that the union members are their favorite customers because they buy from them regularly. During their leisure hours, most union members often seat together with other community members in these business places and converse for hours. Such social gatherings have fostered unity between community members and have also helped in resolving some conflicts between them.

4.1.4 (b) EQUITABLE BENEFIT SHARING

To ensure benefits sharing within the union, transparency is encouraged in all the transactions of the union. One of the reasons why harvesters were unable to reap enough benefits from the *Prunus* harvesting exercise before the formation of the union was because of the dubious transactions they had with the middlemen. This was the source of the numerous conflicts in the community at that time. Initially, some union members still had difficulties to trust others due to their past experiences. In 1999, MCP organized a leadership training course in Mapanja for both *Prunus africana* harvesters' unions in the region. This course was aimed at conveying management skills to union members and sensitizing them on the need for transparency and trust within their various unions. After this course, the Bokwoango *Prunus africana* harvesters' union members made changes in the management team. Since access to information, which is now increasingly being recognized as a fundamental human right, is the foundation for any transparency effort, all union members were given the right to regularly consult the financial secretary's records to verify their accounts.

CHAPTER FIVE
DISCUSSION AND RECOMMENDATIONS

5.1 (a) DISCUSSION

How can the economic productivity of forests be increased whilst allowing them to remain intact and the lives of the forest dwellers be protected? This is the question asked by Forster (1997). Most forest dwellers around the world are presently faced with the problem of scarcity of their surrounding resources on which they greatly depend for survival. The intrinsic value and ready international market of *Prunus africana* cannot be overemphasized. A lot has already been mentioned about the lucrative nature of the trade in *Prunus africana* bark and the devastation of wild stock in most regions where it occurs. What remains influential, however, is that there is an increasing interest in the exploitation of *Prunus africana* despite its reduced resource base. The lucrative nature of the trade in this species is substantiated by the increasing interest in its exploitation and the scramble for the diminished wild stock. The exploiters of *Prunus africana* all over Africa, including Bokwoango depend on their earnings from sales of *Prunus* bark. It is therefore important to know if the income they get from *Prunus africana* exploitation is really meeting their needs, and if it does, to what extent has the *Prunus* harvesting exercise affected their livelihood and general well-being? In the context of the Poverty Reduction Strategy Paper (PRSP), environment and poverty are linked in two major ways: (1) poverty alleviation should not damage the environment of the poor, which would only substitute gains in one area for losses in another, and (2) improving environmental conditions can help reduce poverty. Environmental conditions have major effects on the health, opportunity, and security of poor people. Environmental activities can also provide effective ways to empower the poor.[34] As an income generating activity, the trade in *Prunus africana* bark should at least bring some changes in the well-being of those involved in its exploitation. But if no changes are noticed, then

[34] PovertyNet. Environment. http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPRS/0,,contentMDK:20177457~pagePK:148956~piPK:216618~theSitePK:384201,00.html

it is worthless to continue exerting pressure on the resource at the expense of the environment.

The Bokwoango *Prunus* exploiters have, undoubtedly, experienced some encouraging changes in their well-being as a result of the management of *Prunus africana* exploitation by the Bokwoango *Prunus africana* harvesters' union, which has put in place a better benefit sharing mechanism. However, there are certain factors that impede socio-economic growth in this community like in many others. The socio-economic changes experienced by local communities involved in community management of natural resources are not always positive. There are negative changes as well, and in certain cases no changes are experienced. Weak institutional capacity of authorities to effectively control natural resource management activities and conflict of interest between these authorities and communities, as well as differences between community members themselves are some of the major setbacks to socio-economic development. Most African countries, including Cameroon, Mali and Namibia have introduced community-based natural resource management in their government forestry policies and are presently trying to work in line with the new paradigm, which is seemingly a promising way forward. However, the community-based management system is difficult to effectively implement because of numerous institutional, policy and legal setbacks in some of these countries. Some of the major setbacks in Cameroon in particular have been highlighted in this study. Despite the broad scope of Forster's question, it, however, covers specific issues such as those examined in this study. Sustainable livelihood of forest dwellers depends on the sustainable management of their forest resources. This is certainly one of the answers to Forster's question. Through sustainable forest management, the Bokwoango people can conveniently utilize their surrounding resources as a source of livelihood and at the same time live in harmony with it, without destroying the inherent resource base. This is exactly what MINEF, MCP and the *Prunus africana* harvesters' unions in the entire Mount Cameroon region are presently seeking to achieve. Thus, the socio-economic

impact of *Prunus africana* exploitation is dependent on the sustainable management of not only the *Prunus africana* resource itself but also the earnings from the sales of the bark.

5.1.1 (a) SUMMARY OF FINDINGS

From figures 3, 4 and 5 in the previous chapter, it can be observed that the extent of socio-economic attainment in Bokwoango as a result of the management activities of the *Prunus africana* harvesters' union is in line with the opinion of the respondents. Even though some respondents were unwilling to disclose some requested information for reasons of secrecy and illiteracy, the questionnaires designed for this study were satisfactorily administered. Since *Prunus africana* exploitation and membership of the harvesters' union is restricted to men only, who are just a fraction of the entire Bokwoango population, strategic selection was carried out on some union members as well as on some non-members of the union. Delimiting this study to the Bokwoango community eased the follow up of activities of the harvesters' union in such a way that it was possible to make assessments of changes in some socio-economic and environmental factors during the short period of field placement. There have been some socio-economic and environmental changes in the Bokwoango community as a result of the existence of the *Prunus africana* harvesters' union. Recent interventions by MINEF, international environmental out-fits and NGOs operating in the region have led to the creation of awareness on the great need for conservation, environmental protection and sustainable development. This has reformed forest exploitation practices and made *Prunus* harvesters to cease from looking at *Prunus africana* as inexhaustible. There is a continuous increase in awareness amongst the Bokwoango people on the importance of preserving their forest in general for their livelihoods. Under the management of the Bokwoango *Prunus africana* harvesters' union, some of the problems related to equitable benefit sharing that posed a great problem for harvesters in the past have been solved and union members can now conveniently save parts of their earnings from the exercise. These savings have enabled some of

them to meet up with certain financial commitments and also to invest in development projects. The socio-economic attainment of *Prunus africana* management so far in Bokwoango i.e. 40.3 % (Appendix D) is not small given the short period that the *Prunus africana* harvesters' union has existed i.e. since 1997. It is, however, possible that more socio-economic changes - greater than 50 % - will be achieved in future if the union is continuously well managed by its members and adequately supported by the government and other local NGOs. But for this to be ensured, both members and non-members of this union must continue to actively engage in *Prunus africana* regeneration. This is because to ensure the sustainable management of any forest resource, whether threatened or not, forest regeneration is inevitable. Forest regeneration is a sure means of reducing losses caused by indiscriminate and selective exploitation of the forest and rapidly reconstituting threatened species such as *Prunus africana*.

5.1.2 (a) SOME KEY STRATEGIES FOR ACHIEVING IMPROVED LIVELIHOOD THROUGH EFFICIENT NATURAL RESOURCE MANAGEMENT

Local people have no doubt driven several tree species to extinction and have influenced the numbers of many. Having caused change, they have more or less successfully varied their activities in response to it (Kajembe, 1994). Enhancing the development of alternative activities to increase revenue and most of all decrease the pressure exerted on already threatened forest resources is imperative. Before introducing any alternative income generating activity, there must be a socio-economic and cultural survey to understand the culture and assess the interests of the forest dwellers and the lucrative nature of their current activities as well as that of the proposed alternative income generating activities. This will necessitate reaching the local people first before getting to the environment. Results of socio-economic and cultural survey ease the task of field workers because it helps them formulate appropriate techniques and strategies for successful implementation in a particular context. This approach permits forest dwellers to first of all understand

and accept the idea of conservation and sustainable resource management so that they can be able to fully participate in the process. Therefore, there should be socio-economic, cultural and environmental studies in Bokwoango to determine the appropriate alternative income generating activities and the interest of the people in these activities. CERUT uses this approach in its conservation efforts in the Bangem forest area. Through this approach, CERUT can only extend its activities to other areas in the region after a positive impact must have been created in the previous areas.

MCP has introduced some alternative income generating activities in most communities in the Mount Cameroon region, including Bokwoango. The efforts of MCP and LBZG to ensure *Prunus africana* regeneration in this region have been considerable. Some farmers in Bokwoango are presently practicing agroforestry wherein they grow trees, including *Prunus africana* along side food crops. But since most of these farmers face problems with the size and productivity of their farms, it could be an interesting option if CDC leases some of the productive land it occupies for them to cultivate food crops and form afforestation schemes to regenerate *Prunus africana* in larger nurseries. This would increase food security and give the Bokwoango farmers the possibility of selling the nursed *Prunus africana* plants.

Apiforestry and organic gardening are of great importance to rural farmers. Apiforestry involves the planting of trees that produce flowers to attract bees. The effect of this is that trees are indirectly being planted. Organic gardening involves the use of household vegetable wastes to produce manure in farms. This reduces the use of chemical fertilizers, which farmers in Bokwoango can hardly afford. There is also the possibility of introducing ecological sanitation in the Bokwoango community. Ecological sanitation involves - as one method - the separation of human urine and faeces in such a way that the waste products become useful and valuable. This system causes minimum pollution of the environment and poses no threat to human health if it is well managed. Bokwoango farmers could be taught

how to handle and treat these wastes so that they can use them as manure in their farms to boost crop yield. Those interested in the ecological sanitation system could also sell their wastes to other farmers in the community.

Instead of depending solely on the income from hunting, *Prunus africana* exploitation and sales of cash crops, Bokwoango farmers could turn to poultry, rearing rabbits, cane rat domestication, improved rearing of goats and sheep, pig farming, mushroom farming (alternative source of protein) and fish farming. These are all potential sources of income. Since most high schools in the region and even the University of Buea sometimes use rabbits for biological practicals, farmers and hunters in Bokwoango could rear rabbits in a large scale for sale to these institutions.

Tool and micro credit schemes are also important for poor rural farmers. This enables them to acquire farm tools and finances to improve on their agricultural yield. The 'Sumediang' women's group in the Bangem region is supported by micro credit schemes. This group is today actively engaged in bee farming, tree planting and coffee farming, which are all practices that had been considered a taboo for women in the past. Since the involvement of local women in conservation and environmental protection is a core pillar in the fight against poverty, the Bokwoango women need to be sensitized and encouraged with incentives to show interest and participate fully in activities geared towards biodiversity conservation and sustainable livelihood in their community. The 'Women in Development' cooperative already involved in *Prunus africana* regeneration in the Southwest province should be supported financially and technically by MINEF and other environmental agencies operating in the region so that the women can acquire more regeneration and management skills, involve more women and expand their activities. The support could be regular sensitization campaigns on the need for women to participate in environmental protection, capacity building workshops on management, tool and micro credit schemes, and allocation of land for *Prunus africana* regeneration.

In the past, the local communities in the Mount Cameroon region had little control over tourism activities and limited access to direct benefits from tourism. The promotion of community-based tourism provides a framework for ensuring that local communities have access to opportunities in tourism development and are able to get fair shares of the benefits of tourism activities that take place in their land (Jones, 1999). The Mount Cameroon region is blessed with one of the major touristic attractions in Africa but because of political reasons, the tourism sector in this region is not receiving the attention it deserves from the government. Instead, it is the foreign funded NGO (Mount-CEO), which promotes sustainable tourism activities in the region and employs some youths as tourist guides and porters. Improving the infrastructure and organization of the tourism sector in this region will certainly create many more opportunities for the inhabitants of the region. Thus, the government should work closely with the local communities and Mount-CEO to promote sustainable tourism activities. The government should also provide resources for the improvement of already existing infrastructure and the development of new infrastructure needed to boost the tourism sector in the entire region.

5.1 (b) RECOMMENDATIONS

Haven identified and discussed certain factors that retard the development of community forestry as well as those that have contributed to the destruction of the *Prunus africana* resource base in Cameroon in general, and Bokwoango in particular, some specific recommendations for changes and improvement on institutional set-up, policies, research, and community-based management of *Prunus africana* in the Bokwoango context are worth mentioning.

5.1.1 (b) RECOMMENDATIONS FOR INSTITUTIONAL REFORMS

Institutional reforms concerning community-based natural resource management should focus on putting in place community-based institutions having ownership

and control over the resources in their area. This means that the Bokwoango people should be given full responsibility of protecting the resources in their community and managing the revenue they get from the trade in *Prunus africana* bark. The government should only come in to provide assistance in the management process. An example that is worth citing here is the Duru-Haitemba forests in Babati District, Northern Tanzania, which were seriously degraded by encroachment, frequent fires and excessive timber harvesting. Today, there is good regeneration, soil erosion is much reduced and streams that had dried up in the past are now flowing again. This dramatic change is simply because the forests are now being managed by local communities. Tanzania's 1998 Forest Policy actively promotes community involvement in forest management. It is particularly significant that villages can be given tenure over the forests they use. It is the view of Professor George Kajembe that "the whole idea of sustainability is correlated with ownership. Without ownership, there is no sense of responsibility." And when there is no sense of responsibility, local people have little incentive to manage the forests sustainably. Most of the villages of Babati District now have title to the forests, and this according to Kajembe, has been central to the success of the community-based forest management approach in the District.[35] Because of the lack of clear cut definition of communities, the recognition of communities as legal entities in Cameroon has so far been only on paper. This has been one of the barriers for the development of community forestry in the country. It therefore becomes important for forestry policy makers in Cameroon to draw from the experience of community forestry in Northern Tanzania. But it is worth noting that community chiefs, elders, elites and politicians such as those of Bokwoango and other communities in the Mount Cameroon region should have goodwill, stay committed to their people, and work transparently with existing unions, including the *Prunus africana* harvesters' unions and MOCAPCIG in making rational decisions on planning, usage and management of their resources.

[35]Community forestry in Northern Tanzania. CIFOR. www.cifor.cgiar.org/docs/_ref/publications/newsonline

5.1.2 (b) RECOMMENDATIONS FOR POLICY REFORMS

Most of the policy reforms in the forestry sector and the NFAP in Cameroon have been well-formulated and written down on paper but are poorly executed in the field by some unscrupulous authorities. One of the reasons for the indiscriminate exploitation of *Prunus africana* in Cameroon is the poor allocation of exploitation licenses and weak institutional capacity to monitor and follow up the activities of these license holders in the field. Because of the link that exists between poor governance, poverty and environmental degradation, efforts made by local communities to improve their livelihood are hindered by incidences of poor governance. Since good governance is vital for improving rural livelihoods, MINEF should strengthen and secure the enforcement of legislation pertaining to decentralization of management functions in the community forestry sector. MINEF should also promote transparency in the allocation of *Prunus africana* exploitation permits so as to eliminate illegal practices that put vulnerable people at a disadvantage. Strict monitoring of sustainable harvestable quota allocated to the Bokwoango *Prunus africana* harvesters' union should be maintained by MINEF and MCP to make sure that this quota is not exceeded.

Even though women are not allowed to join the *Prunus africana* harvesters' unions, they should be encouraged to participate actively and allowed to contribute ideas in the management of *Prunus africana* in the Mount Cameroon region. MCP should organize regular meetings with all the local stakeholders, including women in the Bokwoango community, so that different views on *Prunus africana* management and regeneration could be shared. All the Bokwoango community representatives who were part of the mixed team at the beginning of the Bokwoango *Prunus africana* harvesters' union should be given the opportunity to participate in these meetings. MCP and MINEF should organize regular capacity building programmes on rural development for the Bokwoango women. It is through such programmes that women could acquire the skills to participate actively in community development and make vital contributions in activities where

they are not directly involved and do not expect direct benefits. Since women are generally considered agents of development and managers of households, their contributions could be significant for the management of the earnings from *Prunus africana* exploitation.

The efforts of MOCAPCIG to operate on a larger scale should be acknowledged and supported by MINEF and MCP. MOCAPCIG should be issued the license to exploit and sell *Prunus africana* internationally. In addition to this, MINEF and the Ministry of Trade and Industry should protect the interest of MOCAPCIG at the international market so that MOCAPCIG can trade conveniently with international buyers of *Prunus africana* bark. MOCAPCIG should also be provided with processing machines to process dried *Prunus africana* bark to powder before exportation. Other resource users involved in the exploitation of not only *Prunus africana* but other resources as well should be encouraged and supported to form unions aimed at achieving sustainable resource management.

The exportation company in the Mount Cameroon region presently involved in international trade in *Prunus africana* bark should be given the responsibility of regenerating *Prunus africana* on a large scale since the bark of the plant is its raw material. Also, the pharmaceutical companies around the world using *Prunus africana* for the manufacture of drugs should participate in the regeneration of this species by providing technical and financial resources for regular monitoring, research in regeneration, and conservation of the remaining *Prunus africana* stock. Since *Prunus africana* bark is in increasing demand in the international market, it is important for these pharmaceutical companies to be actively involved in the management of *Prunus africana* plantations.

Sensitization and raising awareness on the need for conservation of threatened resources such as *Prunus africana* is imperative. Thus, the Bokwoango people should be continuously encouraged to plant more trees as they exploit the forest. All *Prunus africana* harvesters should be asked to plant at least one *Prunus* tree to compensate for each tree they debark. Environmental education should be made

part of the curriculum in elementary and secondary schools all over Cameroon. There should also be incentives such as prizes and scholarships to encourage pupils and students to develop interest in learning more about the environment and ways of protecting it.

5.1.3 (b) RECOMMENDATIONS FOR FURTHER RESEARCH IN THIS FIELD

The threatened nature of the *Prunus africana* species and the increasing interest in its exploitation are reasons for further research. Firstly, research in regeneration of *Prunus africana* from seeds, cuttings and even through modern genetic engineering techniques should be intensified. Secondly, since the inhabitants of the entire Mount Cameroon region depend on the threatened *Prunus africana* species for income, research should be carried out on how to increase the productivity of their farmland and also on how to introduce appropriate alternative income generating activities to make them more economically viable so that they can reduce the pressure they exert on *Prunus africana*. There should also be studies on how to acquire productive land from CDC for *Prunus africana* regeneration on a large scale. Thirdly, research on how to represent the distribution and abundance of the remaining *Prunus africana* stock in the entire Mount Cameroon region with a modern GIS system is needed. This could facilitate future conservation efforts as well as the allocation of sustainable quota to communities in the Mount Cameroon region as precise data on the abundance and distribution of *Prunus africana* in the entire region will be made available. Lastly, a life cycle analysis (LCA) should be carried out on the process of producing remedies for prostrate gland disorders from *Prunus africana* as well as from other sources having the same pharmaceutical effects so as to have an idea of the extent of environmental effects of the different production processes. If results of this LCA show that the process of producing prostrate remedies from *Prunus africana* has a greater impact on the environment, then it could be worthwhile to reduce or even stop its usage in the pharmaceutical industry.

Conclusion

All in all, the information gathered on *Prunus africana* reflects its importance both as a medicinal plant and a source of income for the inhabitants of the Mount Cameroon region. It also reflects the increasing awareness over the years of the sustainable management of the plant species by the natives of this area for their own interest and that of the future generations. The momentary benefits from *Prunus africana* exploitation pales when the consequences of the extinction of the species are taken in to consideration. However, if continuous attempts are made by forest dwellers to judiciously manage this species as it is done today by the Bokwoango and Mapanja *Prunus africana* harvesters' unions, it could continue to be an alternative and very important source of income for the present and future generations in these communities. It is often said that a community without culture has no future. Since the Bakweri people in the entire Mount Cameroon region attach a lot of cultural importance to their forest, the issue today is no longer simply that of biodiversity conservation, but also involves the conservation of cultural heritage. Both humans and all other forms of nature are, and will always remain very essential components of the ecosystem. They are, to an extent, inseparable. Thus, humans, being one of the major predators, should always bear in mind that the quality of their own lives and that of future generations shall be seriously affected, negatively, if they completely wipe out other forms of nature on which their survival depends. We should respect the adage - "do not bite the finger that feeds you."

REFERENCES

- Agarwal, A. 1993. People's management of natural resources and the environment: Voices from a workshop. Local control, management and development. Sarec, Stockholm.
- Azasu, S. 1999. The Volta community water and sanitation programme: An assessment of participatory methods with special emphasis on the role of women in the Ho District, Ghana. Thesis Report Series 1999. 9, KTH, p. 7.
- Besong, J., Abeng Abe Meka, P., Ebamane-Nkoumba, S. 1991. Etude sur l'exploitation du *Pygeum*: Rapport de mission effectuée dans les provinces du Sud-Ouest, de l'Ouest et du Nord-Ouest. Direction des Fôrets, Min. de L'Agriculture, United Republic of Cameroon.
- Bigombe, P. 1998. Towards decentralization of forest management in Cameroon: The dynamics pf the contest between the forester State and the construction of participatory management of forest resources, Forest, Trees and People. Newsletter no. 15 and 16.
- Borrini-Feyerabend, G.; Farrar, M. Taghi; Nguinguiri, J.; Ndangang, V. 2000. Co-management of natural resources: Organising, negotiating and learning-by-doing. Heidelberg, Germany: GTZ and International Union for the Conservation of Nature (IUCN), Kasparek Verlag.
- Brown, C. 1996. The outlook for the future. In: Namibia Environment. Vol. 1. Directorate of Environmental Affairs, Windhoek.
- Brown, D. 1999. Principles and practice of forest co-management: Evidence from West-Central Africa. European Union Tropical Forestry Paper 2, ODI, London.
- Catalano, S., Ferretti, M., Marsili, A. and Morelli, I. 1984. New constituents of *Prunus africana* bark extract. Journal of Natural Products.
- CITES proposal. 1994. Proposal to include *Prunus africana* in Appendix II of the CITES convention.

- Cleaver, K. and Schreiber, G. 1994. Reversing the spiral. The population, agriculture and environment nexus in Sub-Saharan Africa. Washington, DC: The World Bank.
- Collar, N. and Stuart, S. 1988. Key forests for threatened birds in Africa. International Council for Bird Preservation Monograph no. 3.
- Cox, P. and Elmquist, T. 1997. Ecocolonialism and indigenous-controlled rainforest preserves in Samoa. Ambio Vol. 26 no. 2. Royal Swedish Academy of Science.
- Cunningham, A. and Mbenkum, F. 1993. Sustainability of harvesting *Prunus africana* bark in Cameroon. People and Plant Working Papers, Division of Ecological Science, UNESCO, Paris.
- Dawson, I. and Rabevohitra, R. 1996. Status of *Prunus africana* resources in Madagascar. Survey Report.
- Debat, J. 1966. Br. App., 25.893/66, June, 10.
- Deininger, K. 2004. Land policies for growth and poverty reduction: Key issues and challenges ahead. World Bank.
- Djeumo, A. 2001. The development of community forests in Cameroon: Origins, currrent situation and constraints. Rural Development Forestry Network (RDFN) Paper 25b (i) – July 2001. ODI.
- Dème, Y. 1998. Natural resource management by local associations in the Kelka region of Mali. Issue Paper no. 74, iied Drylands Programme.
- Eben Ebai, S.; Ewusi, N.; Asanga, C. A.; Nkongo, J. 1992. An evaluation of the quantity and distribution of *Pygeum africanum* on the slopes of Mount Cameroon. Divisional Service of Forestry, Limbe, Cameroon.
- Egbe, S. 2001. The law, communities and wildlife management in Cameroon. Rural Development Forestry Network (RDFN) Paper 25e (i) – July 2001. ODI.

- Ekane, N. 1999. 'Bush beef' mania in Cameroon. Know Your Environment Column. The Post News Paper, Buea.
- Essama-Nssah, B. and Gockowski, J. 2000. Cameroon forest sector development in a difficult political economy: Evaluation country case study series. The World Bank Operation Evaluation Department, Washington, D.C.
- Essimbi, P., Nkuinkeu, R., Okenye, M. and Owono, P. 2000. National *Prunus africana* inventory: Prioritisation of sites for the Southwest, Littoral and Northwest provinces.
- Fomété, T. and Vermaat, J. 2001. Community forestry and poverty alleviation in Cameroon. Rural Development Forestry Network (RDFN) Paper 25h(i) – July 2001. ODI.
- Forster, R., Lengeler, J. and Besong, J. 1997. African rainforest and the conservation of biodiversity. Earth Watch.
- Fotso, R. and Parrot, J. 1991. Ecology and breeding biology of Bannerman's Turaco (*Turaco bannermani*). Bird Conservation International.
- Funk and Wagnalls Standard Dictionary. 1976. J.C Ferguson Publishing Company.
- Gilmour, D. and Fisher, R. 1991. Villagers, forests and foresters. The philosophy, process and practice of community forestry in Nepal. Sahayogi Press.
- Haas, P. 1990. Saving the Mediterranean. The politics of international environmental co-operation. Columbia University Press, p. xviii.
- Hornby, A. 1997. Oxford advanced learner's dictionary of current English. 7th Edition, Oxford University Press.
- Huckle, J. and Martin, A. 2001. Environments in a changing world. Pearson Education Limited, p.21.

- Ingles, A. W. *et al.* 1999. The participatory process for supporting collaborative management of natural resources: An overview, FAO, Rome.
- Jeanrenaud, S. 1991. The conservation-development interface: a study of forest use, agricultural practices, and perceptions of the rainforest. Etinde forest, South West Cameroon. Report submitted to the Overseas Development Administration.
- Jones, B. 1999. Community management of natural resources in Namibia. Issue Paper no. 90, iied Drylands Programme.
- Kajembe, G. 1994. Indigenous management systems as a basis for community forestry. Tropical Resource Management Papers, Wageningen Agricultural University.
- Kalkman, C. 1965. The old world species of *Prunus* sub-genus Laurocerasus. Blumea, 13 (1), p. 33-35.
- Komjathy, K. and Nichols, S. 2001. Women's Access to Land. FIG Guidelines. Copenhagen, Denmark.
- Lescuyer, G., Emerit, A., Essiane, E. and She, J. (2001). Community involvement in forest management: A full-scale experiment in the South Cameroon forest. Rural Development Forestry Network (RDFN) Paper 25c – July 2001. ODI
- Longo, R. and Tira, S. 1981. Constituents of *Pygeum africanum* bark. Planta Medica.
- Marrison, C. and Larson, E. 1995. "A preliminary estimate of the biomass energy production potential in Africa for 2025". Submitted to Biomass and Bioenergy, Centre for Energy and Environmental Studies, Princeton University.
- Mortimore, M. 1998. Roots in the African dust. Sustaining the drylands. Cambridge University Press.
- Ministry of Agriculture. 1984. Annual Report of Activities 1983-1984. Conservation of forests. Buea, Southwest province.

- MINEF. 1999. Report of the national seminar on community forestry, Yaoundé, 29-30th November 1999.
- Muchugi, A., Lengkeek, G., Agufa, C., Muluvi, G., Njagi, E., Dawson, I. 2005. Genetic variation in the threatened medicinal tree *Prunus africana* in Cameroon and Kenya: Implications for current management and evolutionary history. The role of Biotechnology. Villa Gualino, Turin, Italy.
- Murphree, M. 1995. Optimal principles and pragmatic strategies: creating an enabling politico-legal environment for community-based natural resource management (CBNRM). In E. Rihoy (ed) The commons without the tragedy. Strategies for community based natural resources management in Southern Africa. Proceedings of the Regional Natural Resources Management Programme Annual Conference. SADC Wildlife Technical Co-ordination Unit, Lilongwe, Malawi.
- Njombe, E. 1998. The sustainable management of *Prunus africana* in the Mount Cameroon region. Community Based Natural Resource Management (CBNRM) Initiative. World Bank/ WBI's.
- Nsom, C. and Dick, J. 1992. An ethnobotanical tree survey of the Kom area. Unpublished document. Ijim Mountain Forest Project (KIMFP).
- Perman, R., Yue, M., McGilvray, J. and Common, M. 1999. Natural resources and environmental economics. Pearson Education Limited, p. 261.
- Poffenberger, M. 1993. People's management of natural resources and the environment: Voices from a workshop. Joint management of forests. Sarec, Stockholm.
- Schippmann, U. 2001. Medical plants significant trade. CITES project S-109, Plants committee Document PC9 9.1.3 (rev). BFN Scripten-39, BFN-German Federal Agency for Nature Conservation, p. 51 – 58.
- Sharpe, B. 1996. First the forest…Settlement history. Conservation and vision of the forest future in Southwest Cameroon. Paper presented to

Contested Terrains: West African Forestry Relations, Lanscapes and Processes Conference, Birmingham, 12-13th April 1996.

- Tekwe, C. and Percy, F. 2001. The 4RS: A valuable tool for management and benefit sharing decision for the Bimbia Bonadikombo forest, Cameroon. Rural Development Forestry Network (RDFN) Paper 25h(iii) – July 2001.
- Uberti, E., Martinelli, E., Pfifferi, G. and Gagliardi, L. 1990. HPLC analysis of N-docosyl ferulate in *Pygeum africanum* extracts and pharmaceutical formulations. Fitoterapia, 61 (4), p. 342- 347.
- United Republic of Cameroon. 1976. Fourth 5 year economic, social and cultural development plan (1976-1981) Yaoundé, Ministry of Economic Affairs and Planning.
- Vabi, M.B., Ngwasiri, C.N., Galega, P.T. and Oyono, P. 2000. Devolution of responsibilities linked with forest management to local communities: Context and obstacles to realization in Cameroon. WWF-CPO Publication, p. 40.
- Weimer, D. and Vining, A. 1999. Policy analysis: Concepts and practice. 3rd Edition. Prentice-Hall, Inc. Upper Saddle River, NJ.
- Westoby, J. 1987. Follies of development. Basil Blackwell Ltd. Oxford, UK.
- Wijkman, A. 1993. People's management of natural resources and the environment: Voices from a workshop. Research in support of sustainable livelihoods. Sarec, Stockholm, p. 2.
- Wily, L. 1995a. What future for community forestry in Nepal? Vol. 3 (1) of 1995 Social Development Newsletter. Overseas Development Administration, London, p. 8.
- World Resources Institute. 1994. World resource report, 1994-1995. New York: Oxford University Press, p.10, 33.

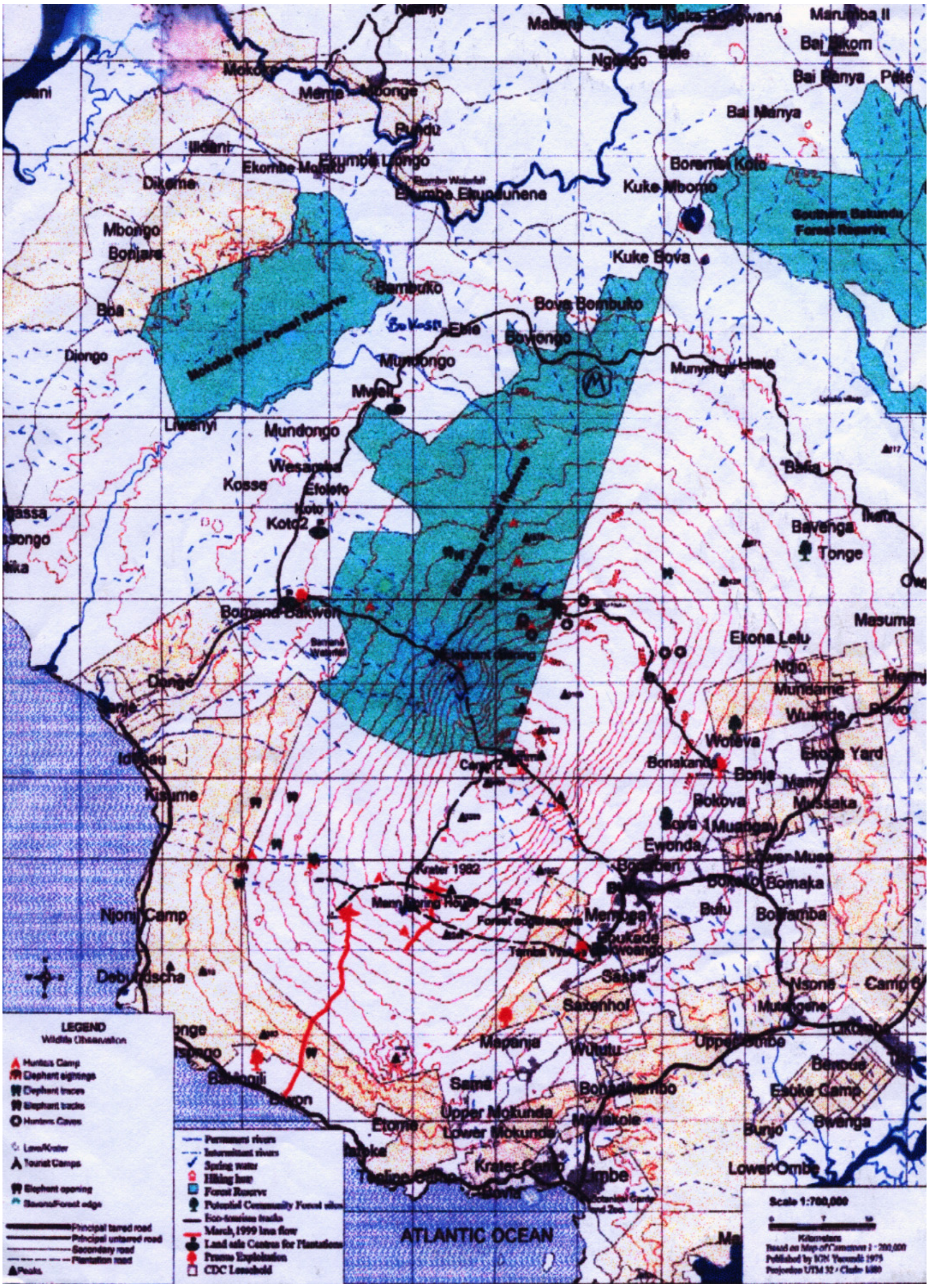
WEB LINKS

- Future Harvest 2000 press release. Ancient medicinal tree threatened with extinction; tree is leading remedy for prostrate disorder worldwide. Retrieved 21st of November 2005 from: http://www.futureharvest.org/news/prunusrelease.shtml
- Part II-Policy, Planning and Institutional Arrangements: Issues in National Forest Planning, Policy and Legislation. Retrieved 29th of June 2005 from: http://www.fao.org//docrep/W9950E/w9950e06.htm
- CIA World Factbook, 2005 – profiles of countries and non–self- governing territories around the world. Information on geography, people, government, etc. Retrieved 3rd of November 2005 from: http://www.cia.gov/cia/publications/factbook/
- Herbal medicine boom threatens plants, by Rob Edwards. January 2004. Exclusive from New Scientist Print Edition. Retrieved 25th of September 2005 from: http://www.newscientist.com/article.ns?id=dn4538
- *Prunus* Net Database – an output from a research project funded by the UK, Department for International Development (DFID) for the benefit of developing countries. Retrieved 4th of July 2005 from: http://www.worldagroforestry.org/sites/treedbs/prunus.htm
- Franc CFA exchange rates. Retrieved 15th of September 2005 from: http://www.answers.com/topic/cfa-franc
- Poverty Net. Environment. Retrieved 2nd of December 2005 from: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPRS/0,,contentMDK:20177457~pagePK:148956~piPK:216618~theSitePK:384201,00.html
- CBNRM Net. 2001. Retrieved 15th December 2005 from: http://www.cbnrm.net/resources/terminology/terms_processual.html

- Community forestry in Northern Tanzania. Center for International Forestry Research (CIFOR). Retrieved 20th February 2006 from http://www.cifor.cgiar.org/docs/_ref/publications/newsonline/30/tanzania.htm

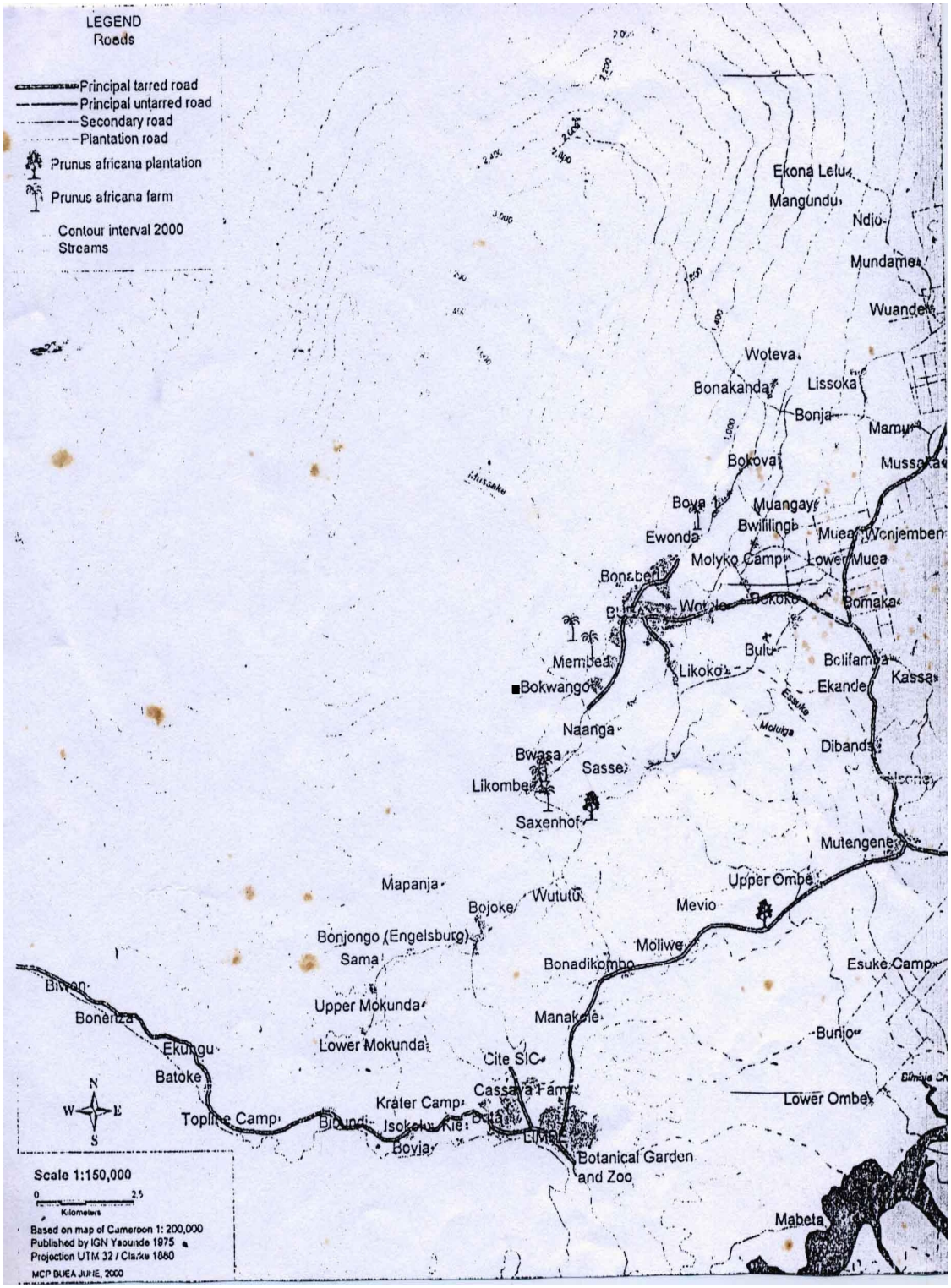
APPENDICES

Appendix A



Map showing land uses in the Mount Cameroon region (Source: MCP Buea).

Appendix B



Map of the Mount Cameroon region showing location of some cultivated *Prunus africana* (Source: MCP Buea).

Appendix C

Village Prunus Harvesting Union — *BARK DELIVERY RECORDING SHEET* — TO BE FILLED IN WHEN BARK IS DELIVERED TO VILLAGE

Date:	Village Union	Bark coming from :
Block No:	Names of Bark Weighers & Data recorders	Any other Notes
Transect No.	1	
Plot No.	2	

Name of Harvester	Tree Tag Number	Date of harvesting	Name of supervisor in field	Bundle No. (if more than one per tree)	Weight of Bundle	Signature of Bark Harvester	Signature of Data Recorder
Family Name, First Name	#	day/month/year	Family Name, First Name	1/3, 2/3 etc	kg		

Name of Recorder..... Date..... Checked by:..... Date:.....

A sample of the bark delivery recording sheet used by the Bokwoango *Prunus africana* harvesters' union (Source: Bokwoango *Prunus africana* harvesters' union).

Appendix D

SAMPLE OF RESEARCH QUESTIONNAIRE AND DATA ANALYSIS

Please, mark an 'X' in the corresponding box (only one), and fill in the blank spaces where necessary.

Personal Information

1. Sex: Male □ Female □

2. Age: 18-26 yrs □ 27-34 yrs □ 35-42 yrs □ Over 42 yrs □

3. Member of *Prunus africana* (Pygeum) harvesters' union □ Non-member of *Prunus africana* harvesters' union □

4. When did you join the union?……

5. Level of formal education: Primary □ Secondary □ None □

6. Marital status: Married □ Single □

7. (a) Do you have any dependents (Children, Relatives, etc)?

Yes □ No □

(b) If Yes, how many?……

Economic Impact

8. What proportion of your income comes from *Prunus africana* harvesting?

□ None □ 1-25% □ 25-50% □ 50-75% □ above 75%

9. (a) Has this earning increased since you became a member of the *Prunus africana* harvesters' union?

Yes □ No □

(b) If Yes, by how much (%)?……

□ 10-50% □ 50-100% □ above 100%

10. What are your other sources of income besides *Prunus africana* (Pygeum) harvesting? Farming □ Hunting □ Business □ Other……

11. If you are involved in farming, what is your main farming practice (Slash and burn, etc)? Please specify,……

12. On what have you spent most of your income earned from *Prunus africana* harvesting?

Repairing your house □ Education of your children □ Clothing □ Health care □ Food □ Business □ Other…….

13. Do you find that with the income from *Prunus africana* harvesting, education has become more available to you, your children, any other dependents and your community?

Yes □ No □

14. Generally speaking, how important is this union to your source of livelihood?

Not important □ Important □ Very important □

Social Impact

15. To what extent has the existence of this union improved your social status?

Very little □ Little □ Very much □ Not at all □

16. (a) Have you invested in any personal development project(s) with the money earned from this trade?

Yes □ No □

(b) If yes, name it (them)……

17. List the development project(s) that has/have been realized in the community with the aid of the *Prunus africana* harvesters union.

……

18. Has the *Prunus africana* harvesters union helped to solve conflicts in the community? Yes □ No □

19. Have your leisure hours increased since you became a member of this union?

Yes □ No □

20. To what extent has your livelihood improved because of *Prunus africana* harvesting?

Very little □ Little □ Very much □ Not at all □

21. (a) Do women participate in community meetings and development projects in your community?

Yes □ No □

(b)If Yes, what role(s) do they play?……

Environmental Impact

22. To what extent has your behaviour and activities towards the environment changed since you became a member of the *Prunus africana* harvesters union?

Very little □ Little □ Very much □ Not at all □

23. (a) Are you presently involved in *Prunus africana* regeneration?

Yes □ No □

(b) If Yes, what is/are the reasons for getting involved?……

(c) Do you grow *Prunus africana* individually or as part of a group (Farm or Plantation)?

Please specify,……

24. (a) Do you own land?

Yes □ No □

(b) If Yes, how was it acquired?……

(c) Do you find this land enough for subsistence farming and *Prunus africana* regeneration?

Yes □ No □

(d) What is/are the conditions for acquiring land in this community?……

(e) What form(s) of land tenure exist in this community?……

WEIGHTINGS GIVEN TO QUESTIONS IN QUESTIONNAIRE

	None	1 – 25 %	25 – 50 %	50 – 75 %	above 75 %
Weighting	0	1	2	3	4

	Yes	No
Weighting	1	0

	10 – 50 %	50 – 100 %	above 100 %
Weighting	1	2	3

	Not important	Important	Very important
Weighting	0	1	2

	Very little	Little	Very much	Not at all
Weighting	1	2	3	0

The total Socio-economic score from questionnaire is 16 + 22 = 38

Questionnaires were administered to 40 people in the Bokwoango community.

Respondents	Social Impact (Score)	Economic Impact (Score)	Social + Economic score
1	7	3	10
2	10	9	19
3	12	12	24
4	12	12	24
5	12	12	24
6	12	12	24
7	12	12	24
8	12	12	24
9	12	12	24
10	12	8	20

11	12	8	20
12	12	12	24
13	5	3	8
14	6	5	11
15	7	3	10
16	6	4	10
17	7	4	11
18	7	3	10
19	7	2	9
20	5	3	8
21	7	2	9
22	6	3	9
23	5	3	8
24	7	3	10
25	4	4	8
26	4	3	7
27	4	3	7
28	5	4	9
29	6	2	8
30	12	12	24
31	5	3	8
32	7	4	11
33	5	3	8
34	10	8	18
35	12	10	22
36	12	9	21
37	8	7	15
38	11	6	17
39	7	4	11
40	10	6	16
	334	**250**	**584**

SOCIO-ECONOMIC IMPACT ON BOTH MEMBERS AND NON-MEMBERS OF THE BOKWOANGO PRUNUS AFRICANA HARVESTERS' UNION

9/40, which is 22.5 % of respondents scored 24/38.

SOCIO-ECONOMIC IMPACT ON MEMBERS OF THE BOKWOANGO PRUNUS AFRICANA HARVESTERS' UNION

18 members of the Bokwoango *Prunus africana* harvesters' union were interviewed (18/40 * 100 = 45 %).

9/40, which is 22.5 % of respondents scored 24/38.

SOCIO-ECONOMIC IMPACT ON NON-MEMBERS OF THE BOKWOANGO PRUNUS AFRICANA HARVESTERS' UNION

22 non-members of the union were interviewed (22/40 * 100 = 55 %).

7/40, which is 17.5 % of respondents scored 8/38.

Average value of Social Impact = Σ Social Impact ÷ Number of Respondents

= 334/40 = 8.35

Average value of Social Impact ÷ Total Social score * 100 %

(Total Social score = 16).

8.35/16 * 100 = 52.2 %

Average value of Economic Impact = Σ Economic Impact ÷ Number of Respondents

= 250/40 = 6.25

Average value of Economic Impact ÷ Total Economic score * 100 %

(Total Economic score = 22).

6.25/22 * 100 = 28.4 %

Sum of Social and Economic Impacts: 52.2 % + 28.4 % = 80.6 %

Therefore, the actual Socio-economic Impact expressed in percentage: 80.6 %/2 = **40.3 %**