Sustaining the Livelihoods of Forest-Adjacent Villages in the Kilum-Ejim (Ijim) Mountain, Cameroon

NDENECHO Emmanuel Neba
Department of Geography, University of Yaounde I, Cameroon
Email: ndenecho@yahoo.com - Tel: 77 38 66 20

ABSTRACT

It is now being realized by development agencies that using state power to enforce protection status for forests has failed to come to grips with crucial social issues and has provoked conflicts which often undermine the possibility of implementing and achieving basic conservation objectives. This approach ignores the livelihoods of forest adjacent communities. The search for new wildlife management models has yielded the community forest management concept. The paper appraises the implementation of this concept. It identifies the forest-dependent livelihoods and their impacts on the sustainability of the resource by using an ethnobotanical survey and a forest damage assessment rating. Group interviews of forest management institutions identified the constraints of the model from the perspective of traditional communities. The study concludes that community forest management is yet to resolve the problem of forest resource depletion due to socio-economic and political constraints and the lack of local institutional capacities to enforce management regulations and plans. Finally, it identifies the scope for supporting and strengthening existing structures and institutions and creating new ones as a basis for enforcing management plans and regulations.

Key words: Sustainable management, forest-dependent livelihoods, community forest management model, implementation constraints, strategies and control systems.

RESUME

Il est aujourd'hui évident que la protection des forêts par les pouvoirs publiques à travers la création des réserves ou des aires protégés n'a pas réussi. Il n'a pas été pris en compte les réalités de la communauté locale, ce qui a engendré des conflits quant à la réalisation des objectifs escomptés. La recherche de nouveaux modèles à abouti à l'adoption de la stratégie de la gestion de forêts communautaires. Cette étude examine l'application de ce concept. Elle identifie le mode de vie des populations locales et son impact sur les ressources forestières, ceci à travers une étude ethnobotanique et une mesure qualitative du degré de destruction de forêts. Les contraintes de ce modèle on été établies à partir des points de vue des communautaires locales. Il ressort de cette étude que la stratégie de gestion des forêts communautés n'a pas encore enregistrées des succès notables, ceci à cause des contraintes politiques et socio – économiques, et les manques des capacités humaine et institutionnelles au niveau local. L'étude identifie donc des stratégies nécessaires à la résolution de ces contraintes.

Mot clés : Gestion durable, mode de vie lié à l'existence des forêts, modèle de la gestion forêt communautaire, contraintes à l'application, stratégie de mesures de contrôle.

INTRODUCTION

Mountain areas are examples of less recognized regions with critical types of biodiversity (Roy, 2001). Mountain dwellers typically live on the economic margins as nomads, part-time hunters and foragers, small farmers and herders, blacksmiths, craftsmen and loggers. Given the imperative to survive, these people have acquired unique knowledge and skills by adapting to the specific constraints and advantages of their fragile, inhospitable environments. They possess millennia of experience in shifting cultivation, terraced fields, and medicinal use of native plants, migratory grazing, and sustainable harvesting of food, fodder, and fuel from forests (Pratap, 2001). With increasing demographic pressure, the failure of the state to protect wildlife (Macleod, 1986; Denniston, 1995), the failure of protected areas to complement their surroundings and recognize the world they fit into (Stem et al, 2003 Daniel et al, 2005; Kruger, 2005), and access to markets there are emerging threats due to unsustainable forest resource use. Can rural peoples derive livelihoods from forests while protecting them? According to Tucker (2000) this question challenges communities for which forests represent a primary resource.

This paper seeks to identify the forest dependent livelihoods, to assess their impacts on the forest and to appraise the implementation of the community forest management concept in order to identify the scope for designing sustainable strategies and control systems from the perspective of traditional forest management.

THE STUDY AREA AND PROBLEM BACKGROUND

The grid reference of the summit of the mountain is 6°12'N, 10°23'E and Lake Oku 6°12'N, 10°27'E. The northern portion of the mountain is called the Kilum Mountain by Oku villages while the southern portion is called the Ijim or Ejim Mountain by Kom villages. Geographers refer to the mountain as Mount Oku. The forest is found mainly between 2022 and 3011 metres (summit of the mountain) above sea level. Hawkins and Brunt (1965) describe the climate of the summit as "cool, very cloudy and misty" with maximum temperatures of 16.5°c to 19°c and minimum temperatures of 90°c to 10°c. The rainfall is in excess of 3350mm/ year. The sub-montane area has been described as "cool and misty' with mean maximum temperatures of 20°c to 22°c and mean minimum temperatures of 13°c to 14°c. This rainfall varies from 1780 mm to 2290 mm per year. Most rainfall occurs between July and September. A dry season occurs from mid-October to mid – March (Hollier, 1981).

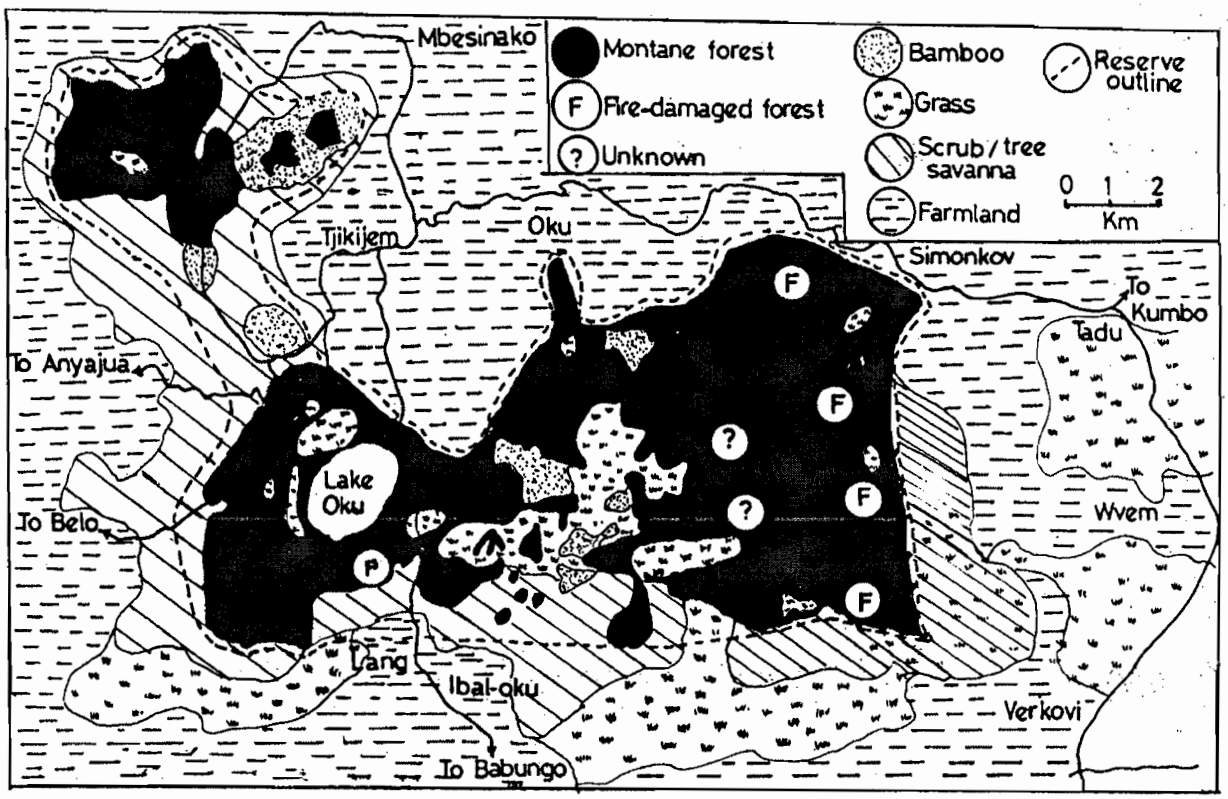

Figure 1: Vegetation derivatives of Kilum-Ijim Mountain Forest: anthropogenic degradation (Situation in 1986 after Macleod).

Geographically the study area is part of the Cameroonian Highlands ecoregion which encompasses the mountains and highland areas of the border region between Nigeria and Cameroon (Stuart, 1986; Gartland, 1989 and Stattersfield *et al*,1998). Mount Oku is at an altitude of 3011m above sea level. Most of the area around the mountain is below 2600 m in elevation. The lower boundary of the forest is now determined by conversion to agricultural land. In White's (1983) phytogeographical classification, the area falls within the Afromontane archipelago-like regional centre of endemisms that spans the entire continent.

Macleod (1986) estimates that in 1963, there were approximately 17,500 hectares of forest. By 1986 less than half remained. 33% of the forest was highly degraded (Figure 1). Actual and potential threats causing forest degradation include demographic pressure (72 inhabitants / km^2), grazing, fire damage, a deepening economic crisis at the national level due to the fall in the price of coffee (the main export crop) on the world market and the lack of alternative employment. (Macleod, 1986, Ngwah, 2001).
Jai (2007) and Mbenmbem (2007) also observed that the extraction of timber and non-timber forest products is a major threat due to bad harvesting techniques (unsustainable harvesting of forest products). Between 1983 and 1986 the annual deforestation rate was 567 hectares per year (Macleod, 1986). The retreat of the forest during this period is presented in figure 2.

The forests are of great ecological significance. They contain a disjunct vegetation association found no where else in West Africa, and several endangered species of plants and animals, including two bird species which are totally dependent on these forests for their survival (Alpert 1993; Stuart 1986 and Macleod 1986). The forest provides local employment and livelihood (Ngwah, 2001). Efforts have been made by the national government since the 1930s to protect the forest but these have so far been unsuccessful. Of the forest which occupied the area 50 years ago, less than half remains and at least 33% is highly degraded (Macleod 1986).

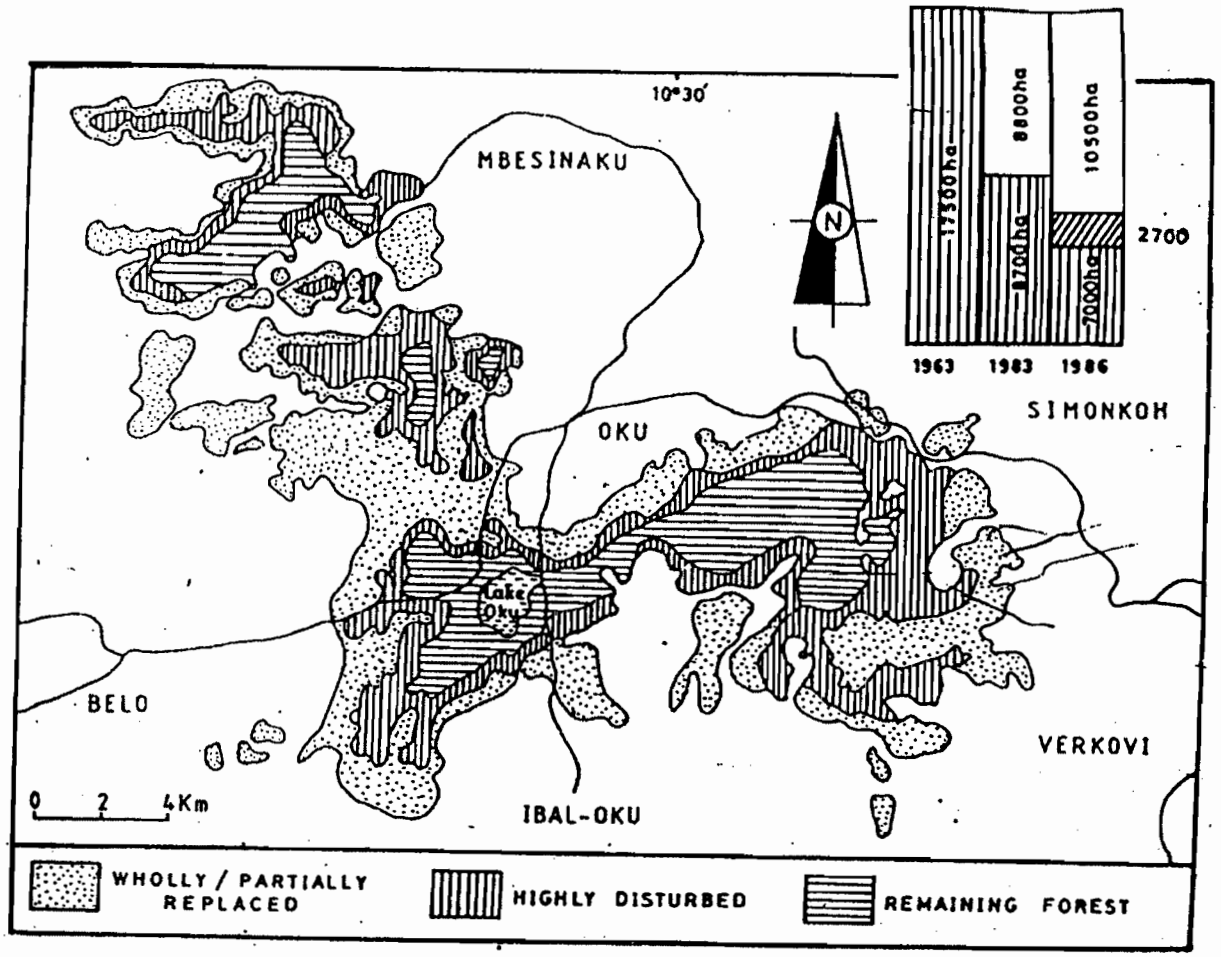

Figure 2: Retreat of Kilum – Ejim forest: Situation at the initiation of the community forestry project in 1986 (Source: Macleod, 1986)

Macleod (1986) notes that there have been efforts to declare Oku Mountain forest a reserve since the 1930s. In 1931 it was approved as a forest reserve by the government. In 1985 the reserve status was enforced (Bawden and Langdale –Brown, 1961; Hawkins and Brunt 1965). Partial demarcation of the forest boundary began in 1975 to delimit a zone beyond which farming should not exceed and discouraged forest destruction. The demarcation process was never completed and was not adequate. Demarcation pillars were small in size, were disregarded by forest-adjacent villages and so were easily moved. In July 1982, there was a retracing of the 1975 demarcation to find out the extent of encroachment by farming and grazing and the illegal exploitation of forest resources (Figure 1 and 2). In many areas, there had been extensive encroachment and pillars had been uprooted and moved. The area was gazetted a protection forest under the forestry regulation of Cameroon (Law No. 81-13 of 27/11/1981). Within a protection forest, livelihood activities were still allowed to continue provided that they were not in conflict with the conservation of the area and were strictly controlled.

More than 80% of the 300.000 inhabitants derive livelihoods from forest-related activities. Since the 1930s there has been a wide gulf between rhetoric and policy objectives, on the one hand and the reality of policy and project implementation on the other. Numerous environmental laws and regulations remain unenforced, programmes and projects poorly implemented, while measures coined to protect or rehabilitate ecosystems often impinge negatively on livelihoods at the village or local level. (Ndenecho, 2005). In most protected sites technocratic formulae have often been imposed which generally ignore the socio-economic and cultural situation of thousands of families whose livelihoods depend on the forest. This approach has provoked social conflicts which often undermine the possibility of implementing and achieving basic conservation objectives (Gengiz, 2007; Ndenecho, 2007a; Ndenecho, 2007b, Tucker, 2000) Coupled with limited human and financial resources necessary for the administration of protected areas, most reserve status often exist only on paper (Denniston, 1995). The community forest management concept which involves participatory management with local people was adopted in 1995 (Asanga, 1995). Following the promulgation of law No. 94/01 of 20th January 1994, and its decree of application of the 23rd August 1995 the community forestry concept was adopted in the protection of the forest. The local communities co-manage the natural resource base in partnership with the government

DATA SOURCES AND METHODS

In order to identify the livelihoods dependent on the forest data was obtained using ethnobotanical surveys (Ndenecho, 2006 a; Ndenecho, 2006 b; Duncan, 1989; Thomas, 1986). The survey summarized the useful plant species using their scientific names, local names, plant organs used and the local uses. Based on the work of Ndenecho (2006 b) the useful plants were subsequently classified according to life form, that is, emergent trees, small trees, shrubs, climbers, herbs, epiphytes, succulents, bulbs, corms and tubers. The impact of livelihood activities on the forest was made using a forest damage assessment rating by the Lang Forest user Group (Ngwah, 2001). Sixteen forest user groups under six forest management institutions were identified and mapped (Jai, 2007). The study then conducted a single interview for each community forest management institution using the group leaders. Information was collected in six single interviews on their assessment of the impact of livelihood activities on the forest, the institutionalization of a community forest management strategy and the major constraints involved in its management. The basic hypothesis underlying the group interview is that the group leaders have an excellent "feel" for the community problems and conditions unlike a survey where the respondent is asked to generalize about himself and his livelihoods. In this study the group leaders were asked to generalize about the community and the functioning of user groups.

RESULTS AND DISCUSSIONS

Table 1: Forest user groups (FUG) and institutions in Kilum-Ejim Mountain Forest (Figure 3).

Forest User Groups (FUGs)	Length of Forest Boundary (m)	Forest Management Institution (MFI)
Ngashie	3.332	Emfveh mii
Keyon	1.505	
Manchok	3.296	
Ngvuinkei II	1.295	
Mbockevu	8.466	Upper Shinga
Lang	5.466	
Ngemsiba	1.486	
Ngvuinkei I	4.113	
Mbockenghas	3.860	Nchiiy
Simonkoh	3.139	Mbai
Ichim	3.139	Ijim
Jikijem	2.711	
Mbockejikijem	3.618	
Mboh	2.412	Kejem-mawes
Kesoten	2.982	
Jiyane	3.615	

Source: Jai, 2007

Table 1 and figure 3 present the forest-adjacent villages and the forest management institutions (FMI). A forest management institution is composed of forest user groups (FUG). The area has six FMI and sixteen FUG. The forest management institutions are grouped under an umbrella organisation known as the Association of Forest management Institutions (AFMI). The forest management institutions work with village traditional institutions (Chief, notables, indigenous religious institutions) and related government agencies to design a management plan for the forest. Technical and financial support is rendered by the government of Cameroon through a Technical Operation Unit (TOU) of the Ministry of Forest and the Environment. Between 1986 and 1989 Birdlife International supported the Kilum and Ejim Mountain Forest Projects in the conservation of biodiversity and the promotion of sustainable livelihoods. After 1989 the project facilitated the formation of forest user groups and management institutions. International support ended in 1995 and it was expected that the government will continue to give technical and financial assistance to the villages managing their forest through the Technical Operation Unit.

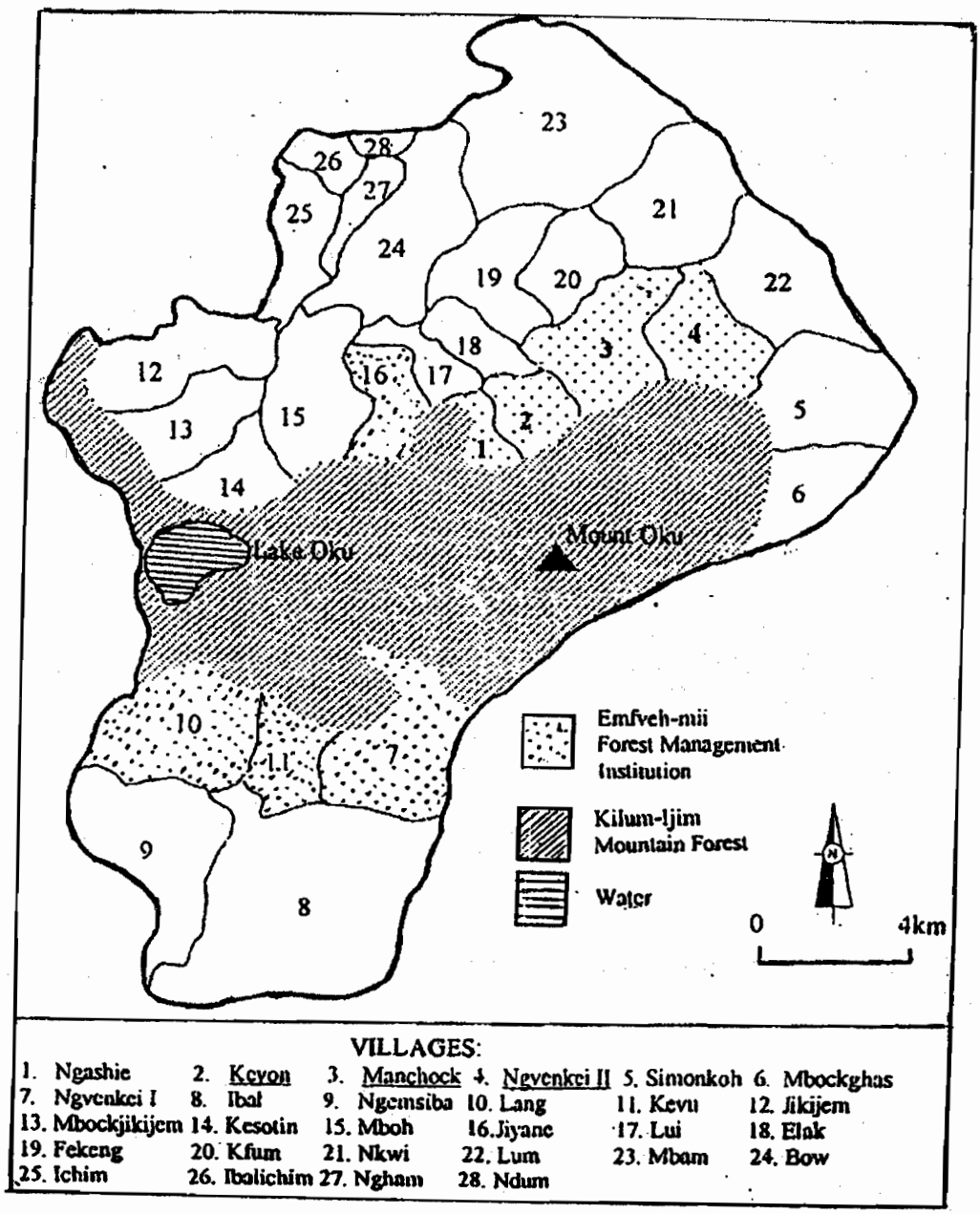

Figure 3: Kilum – Ejim forest –adjacent villages and community forest management institutions (Ndenecho, 2006 a).

The main components of the community forest management plan are decided upon by the user groups in group meetings. These include the objectives and the management rules. The rules guide both the primary and secondary users. The primary users are villagers whose main livelihoods depend on forest products (timber and non-timber forest products). Forest management decisions are made by the primary users. Secondary users are villagers who do not directly depend on the forest. They have grazing and farming rights in designated sites at the forest periphery. Tertiary users are villagers who do not directly use the forest as a source of livelihood. Management plans generally include routine fire-tracing of the forest periphery, routine policing by group members to enforce voluntarily agreed upon rules and regulations, rehabilitation of critically degraded sites and the development and enforcement of land use plans to accommodate the main livelihoods provided by the forest (Table 2).

Table 2: Distribution of plants of Kilum –Ejim forest according to life form, habitat and indigenous uses.

Species	Local name	Form	Habitat	Uses
AGAVACEAE				
Sanseviera trifasciata	*Elang*	HB, CT	CT	FW
Dracaena deisteliana	*Nkeng*	SB	CT	TR
ALANGIACEAE				
Alaugium Chinese	*Febom*	TL	FO;SC	IN
ANACARDIACEAE				
Sorindeia peleoides	*Kentieh'she*	TS, SB	SC,CT	TR;TC
ARALIACEAE				
Polyscias fulva	*Keghang Kebongsa*	TS;TL	FO;CT	TC;OT
Schefflera abyssinica	*Djia*	TL	FO	TC;HO
Schefflera barteri	*Elang*	TS;EP	FO	FE;MD
Schefflera mannii	*Ebwos-rewus*	T;	FO	TC;HO
APOCYNACEAE				
Rauvolfia vomitoria	*Ebtum*	TS	SC;FO	TC
Tabernaemontana	*Ebtum*	TS	SC;FO	TC
Voacanga Africana	*Ebtum*	TS	FO;CT	MD
BALSAMINACAEAE				
Impatients bartonia	*Kimvas*	HB	SC	FO
BASELLACEAE				
Bassala alba	*Kefu feyin*	LN	SC;FM	MD
BIGNONIA				
Kigelia Africana	*Kinlieh'she*	TS	SC;CT	TR;TC
Markhamia tomentosa	*Enggweh*	TS	SC;CT	MD
BARAGINACEAE				
Cynoglossum	*Imbanen*	HB	SF;FO	MD
Coreopsis barteri	*Foll*	HB	FM;SC	
COMPOSITAE				HO
Crassocephalum manni	*Ngangang*	TS	SC	
Emelia coccinea	*Ebjenen*	HB	SC	AG
Vernonia leucocalyx	*Keghanghang*	SB;TS	SC	MD
Vernomia sp.	*Keghanghang*	SB	SC	
CRASSULACEAE				D
Bryophyllum pinnatum	*King-ketuleh*	HB	SC	MD
Kolancchoe lacintiata	*Ketuhleh*	HB	SC	
Kolancchoe laciniata	*Ketuhleh*	HB	SC;FO	MD
CUCURBITACEAE				MD
Momordica foetida	*Ebifierfer Nak*	LH	SC	MD
ERICACEAE				
Aguaria salicifolia	*Bhang*	TS	FO;SC	MD
EUPHORBIACEAE				
Bridelia speciosa	*Eblum*	TS	SC	FE
Croton marcrostacyus	*Ebjam*	TS;TL	FO;SC	TC
Euphorbia kamerunica		HB	CT	MD

Neoboutonia velutina	*Fa'ngum*	TS	FO;SC	MU
Ricinus communis	*Jang*	TS;SB	CT	MD
Sapium ellipticum	*Kehtorh*	TL	FO;SC	MD
FABACEAE				
Phaseolus vulgaris	*Ekuum*	HB	CT	MD
GRAMINAE				
Arundinaria alpina	*Ebtotom*	SB	FO	CF
Melinis minutiflora	*Fejang-e-egwei*	HB	GR	MD
Oxytenanthrea abyssinica	*Mbangsehtotom*	SB	GRLCT	CF
Zea imperata sp.		HB	FM	MD
Leptanlus daphnoides	*Salangang*	TS	FO;GL	DY
LABTATAE				
Plechinthus esculenths	*Ndongfenkeir*	SB	GR;CT;FM	FO
Satureja robusta	*Fegis*	HB	SC	MD
LEEACEAE				
Leea guineensis	*Cheng*	SB	FIMSC	MD
LILIACAEAE				
Albuca nigritata	*Kelend fejin*	SB	GR	MD
MALVACEAE				
Sida rhombifolia	*Nshim*	SB	SC	FB
MARATTIACEAE				
Marattia frazinea	*Kelang*	SB	AQ;FO	MD
MALTACEAE				
Carapa grandiflora	*Evum*	TL	FO	FW
MOSACEAE				
Albizia gummifera	*Fuim*	TL	FO	TB
Newtonia buchananii	*Kilarni*	TL	FO	TB
MONIMIACEAE				
Xymalos monospora	*Fegei*	TS	FO	CF
MORACEAE				
Ficus exasperate	*Keghawus*	SB	FO	MD
F. oreodryadum	*K'ghumfigak*	TL	FO	TR;FE
Ficus sp.	*Ntoh*	TL	FO	FF
MYRSINACEAE	*Kenlimlim*	LW	FO	FE;MD
Maesa lanceolata	*Seim*	TS	FO;SC	MD
Rapanea melanoeneura	*Ntohkoh*	TL	FO	CF
MYRTACEAE				
Syzgium staudtii	*Oweh*	TL	FO	HO;FN
PALMAE				
Raphia farinifera	*Eluk*	TS	CT	CF;AL
PAPILLIONACEAE				
Crotalaria	-	SB	SC;FM	AG
Millettia conraui	*Efeumen*	TS	SB	OT
Sesbania sesban	*Eyis*	SB	CT;FM	AG
Tephrosia preussii	-	SB	SC;GR	AG
Tephrosia vogelii	*Kohlen*	SB	CT;FO	AG,MD
PHYTOLACCACEAE				
Phytolacca aodecandra	*Etohtam*	SB	FO	TR
PIPERACEAE				
Piper capense	*Boboi*	EPIHB	FO	MD
Piperomia fernadopoisna	*Mboi*	TS	FO	MD
RHIZOPHORACEAE				
Cossipourea ugandensis	*Elung*	TL	FO	TB
ROSACEAE				

ROSACEAE				
Prunus africanus	*Eblah*	TL	FO	MD;TB
Rubus piñata	*Bakoh*	TF	SC	FO
RUBIACEAE				
Canthium dunlapii	*Bangefonembessei*	TS	FO	TR
Corynanthe pachyuras	*Owing*	TL	FO	FW
Curiera longifolia	*Ketyelum*	TS	FO	FO
RUTACEAE				
Clausena aniseta	*Fii*	TS	FO	IN;MD
Fagara rubescens	*Bjung*	TS	FO	MU
SAPINDACEA				
Allophyllus bullatus	*Njiabas*	TS	FO	CF
SOLANACEAE				
Datura candida	*Eytohkin*	SB	CT	FE

KEY:

*** Life form**
TL = large tree =emergent trees
TS=small tree
LN = climber
SB = shrub
HB = HERB
EP = epithyte
BB =bulb/tuber/corm
SU = succulent

• **Habitat**
FO= Forest
GR = grassland
CT = cultivated fields
AQ = aquatic
SC = scrub
FM = farmland

*** Uses (Livelihoods)**
AG= agroforestry
FO = food
TB = timber
AL = alcohol
FW = firewood
TC = wood carving
CF = construction fibre
HO = honey
OT = others
IN = insecticide
DY= dye
MU = musical instruments
FE= fence
MD = medical
TR = ritual rites/traditional uses.

Table 2 presents the useful plants of Mount Oku and the livelihoods they support (Ndenecho, 2006 a, Ndenecho, 2006 b; Duncan, 1989). It presents the particular use of plant species and the plant organs used. These plants are native to the area. A total of 86 plant species support various livelihood purposes (Ndencho, 2006 a).

Table 3: Distribution of the useful plants species according to life-form (Ndenecho, 2006 a).

	Number of useful plant species per life form							
Uses	**Large trees**	**Small trees**	**Shrubs**	**Climbers**	**Epiphytes**	**Herbs**	**Bulbs, tubers & corms**	**Succulents**
Timber	5	0	0	0	0	0	0	0
Alcohol	0	1	0	0	0	0	0	0
Firewood	3	0	1	0	0	0	0	0
Wood carving	4	0	1	0	0	0	0	0
Construction fibre	0	5	1	0	0	0	0	0
Honey(apiculture)	3	2	1	0	0	0	0	0
Insecticide	1	01	0	0	0	0	0	0
Dye	0	1	0	0	0	0	0	0
Musica instrument	0	2	0	0	0	0	0	0
Fencing poles	2	1	4	3	2	11	4	5
Medicinal	2	9	4	0	0	0	0	0
Agroforestry	0	2	1	0	0	1	0	0
Food	0	1						

Large trees = emergent trees.

Table 4: Damage assessment rating by the Lang Forest User Group

Livelihood	High Damage	Some Damage	No Damage
Hunting		*	
Grazing		*	
Honey (wild)		*	
Honey (hive)		*	*
Wood carving		*	
Firewood		*	
Trapping		*	
Tool handles	*		
Medicine		*	
Ropes			*
Edible fungi			*
Adhesive gum			*
Wild vegetables			*
Traditional red feathers			*
Oil containers			*
Agricultural encroachment	*		
Accidental bush fires	*		

Source: Ngwah, 2001

Table 3 analysis the plant life according to life form and uses. The main use categories were timber, alcohol, fuelwood, wood carving, construction wood, fibre, honey, dye, musical instruments, fencing poles, medicinal (remedies, flavourings), insecticides, construction material and agroforestry. Emergent trees, small trees and shrubs offer the highest number of uses. Herbs, bulbs, corms and succulents are mainly used for medicinal purposes. Herbs constitute 27.5%, small trees 22.5%, shrubs 10%, bulbs/corms/tubers 10%, climbers 2%, emergent trees 5% and epiphytes 5% of total medicinal plants. The total number of useful plants are distributed as follows: Medicinal plants 40 species, woodcarving 10 species, agroforestry 6 species, timber 5 species and fire wood 4 species. The rest of the plants offer only minor uses.

Table 4 presents a forest damage assessment rating per livelihood activity as perceived by the Lang Forest User Group. This is the largest group (Ngwah, 2001). Forest users identified agricultural encroachment, handicraft and accidental bush-fires as major threats to the forest. Hunting, grazing at the forest periphery and invasion of the forest by cattle and goats, wild honey collection resulting in accidental bush-fires, fuelwood collection and the harvesting of medicinal plant organs were judged to be causing some damage to the forest. These according to forest users threatens the sustainability of all livelihoods. From group discussions and informal interviews of forest users, the following constraints in the implementation of the community forest management concept were identified:

- Community environmental knowledge may have accumulated over many generations, but since it is gained from experience it encompasses only those aspects of the local environment which are important to people's livelihoods. Local people tend to have much more comprehensive knowledge of the many uses to which local trees and shrubs may be put, than how actively to grow them.

- Rural livelihoods systems are dynamic. They are open to changes brought about by the primary, secondary and tertiary forest users. Each groups applies knowledge in different ways to solve land management problems as they arise. They therefore, show interest in the management of the forest differently. For example, in the event of fighting a devastating forest fire bee keepers react fast because fires will destroy their hives and colonies. Fuel wood gatherers, herbalists, farmers and graziers are apathetic because it does not affect them directly and immediately. This often generates land use conflicts among user groups as the fire will favour some livelihood activities (grazing, farming, fuelwood collection, new growth of herbs and fibres) and will adversely affect other livelihoods (bee keeping, hunting, wood carving).

- The effective adoption and implementation of community forestry is adversely being affected by the process of commodification, that is, the ongoing

economic crisis, the lack of alternative livelihood activities and the demand for forest products. This often leads to a sacrifice of the common good for short term individual gain.

• Population pressure on the forest and incipient forest resource depletion in many villages are exceeding the capacity of local institutions to adapt and manage environmental change.

• Interventions of the Technical Operations Unit in community forest management such as the provision of external inputs (material, financial, technical) for the promotion and realization of local potentials have been wanting.

• The process of the participatory mapping and institutionalization of community forests has also been hindered by disputes over land tenure between villages. To resolve these disputes the boundary between the Ejim villages and Kilum villages was demarcated by a plant life sanctuary which today is poorly managed. The process of forest boundary negotiation between villages needs to be facilitated.

• Most importantly, local institutional capacities have been eroded and overwhelmed by the pace of change. The commodification of forest products (penetration of the cash economy) through the Honey Production and Marketing Cooperative, Handicraft Marketing Cooperative and Farmers Cooperatives, fuel wood demands by village bakeries and urban centres, and the commercial and industrial exploitation of *Pygeum africanus* bark have caused the poor and powerless to lack access to productive resources as powerful local interest groups, individuals and outsiders consolidate their control over them. This has led to resource "mining" of forests and natural pastures. The forest management institutions are therefore fragile due to the weakening of community controls and stability.

The forest management institutions charged with the conservation of their local forests, deriving livelihoods from them and exhorted to plant trees in critically degraded sites are failing to achieve these objectives. The community management scheme lacks both the real backing of the primary, secondary and tertiary users (local people) and the institutional means to make enforcement effective. Due to this failure land degradation is continuing (Jai, 2007; Mbenmbem, 2007; Ichick, 2007; Bekolo, 2001). Arnold and Campbell (1985) recommended that community sanctions are the ideal mechanism for the enforcement of rights through voluntary agreements of rights in fairly small and clearly defined village groups. They argue that this approach is more likely to put local people's priorities first, to be effective and to be sustainable in economic and social terms. Table 5 summarizes the many types of possible control systems which can be used in traditional

Table 5: Distribution of control systems in traditional forest management by illustration of uses.

	Basis of group rules	Examples
1	Harvesting only selected components	• Trees: timber, fuelwood, fruit, nuts, seeds, honey, leaf fooder, fibre, life mulch, other minor products (gums, resins, dyes, liquor, plated leaves, etc) • Grass:fodder, thatching, rope, • Other wild plants: medicinal herbs, food, bamboos, etc. • Other cultivated plants: maize, millet, wheat, potatoes, beans, vegetables, fruits, etc. • Wildlife: animals, birds, bees, other insects, etc.
2	Harvesting according to condition of products	• Stage of growth: maturity, alive or dead • Size, shape • Plant density, spacing • Season (flowering, leaves fallen, etc) • Part: branch, stem, shoot, flower.
3	Limiting amount of product	• By time: season, days, year, several years • By quantity: of trees, head loads, baskets, animals • By tools: sickles, saws, axes, hoes, cutlasses • By area: Zoning, block, types of terrain, altitude • By agency: women, hired labour, children, contractor, type of animal.
4	Using social means for protecting areas	• By watcher: paid in grains or cash • By rotational guard duty • By voluntary group action • By making mandatory the use of herders to watch animals

Source: Modified after Arnold and Campbell (1985)

management by villages.

The critical issue is not so much what rules are applied but the strength of community institutions which set the rules and ensure that they remain effective. Community sanctions are most likely to arise spontaneously and work where a cohesive social and administrative structure exists. This will tend to be in relatively isolated villages which are little affected by commodification and rapidly changing socio-economic framework conditions. There is a need to search for ways of strengthening the basis for the enforcement of management regulations in the villages. It may be possible to support and strengthen existing structures and institutions, or create new ones where the basis of rule making is totally lacking.

CONCLUSION AND RECOMMENDATIONS

The "conservationist" approach to biodiversity conservation has failed to come to grips with crucial social issues – it ignores the socio-economic and cultural situation of rural people whose livelihoods depend on the forest. It provokes conflicts which often undermine the possibility of implementing and achieving basic conservation objectives. There is need to search for new forest management models. The community management model can enhance the sustainable development of forest-adjacent communities if the following crucial aspects are considered.

- Access right must be transferred to fairly small and dearly defined user groups through voluntary agreement of use rights.

- Forest exploitation and communities empowered to undertake sustainable harvesting of products.

- Local institutions must be supported and strengthened as a base for the enforcement of control systems, rule making, provision of environmental education, supervision, organisation and use of resources and to ensure a fair distribution of income.

- The establishment of a control and functioning mechanism as a prerequisite for achieving ecological stability

- The setting up of large conservancies at village level with user groups that will monitor access, set quotas and control access.

- Promotion of conservation initiatives at the level of forest user groups based on sustainable management and self-financing. Current financing through international aid and state funding has failed.

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