

Research Article

Approaches and Drivers of Land Resource Management in Highland Communities: Reflections from Bui Division, Cameroon

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Abstract

Land resource management approaches have often generated complex challenges that manifest in unsustainable practices and outcomes. In Bui Division, there exist veritable geographical absurdities in land resource management approaches depicted in ecological dynamics, scarce land-based resources under degradation, uncontrolled exploitation in sensitive milieus and vulnerability to natural and man-made hazards. Planning irrationalities exist in the political ecology manifest by imperialist philosophies. This study investigates the major approaches and socio-ecological drivers influencing land resource management in highlands areas. Primary data were collected through direct observations, 504 questionnaires, formal and informal interviews in the three tribal communities, representing 20% of the population. Secondary data were obtained from published and unpublished sources. Findings reveal diverse land resource management approaches marked by the dynamics of multi-sectoral and multi-stakeholder interactions activities, interests, tools, approaches and socio-ecological drivers that significantly vary. Land acquisition and management approaches are guided by the Land Ordinance No 74-1 of 6th July 1974. The spatio-temporal dynamics displays 60% of the population employing participatory management approaches inclined on multiple socio-ecological drivers. Sustainable approaches (78%) are associated with strong relationships between intercommunity management interests, activities, tools and approaches. This study posits that holistic community participatory approaches are suitable land management signatures reversing the current tragedy of the commons and promoting resource sustainability. This is increasingly evident in highland vulnerable areas where the general welfare of all and sundry is primordial and ought to be valued and sustained.

Keywords

Highland, Indigenous Knowledge, Land Resources, Management Approaches, Tribal Communities

1. Introduction

Land-based resources (LBRs) are symptomatic living spaces and constitute one of the most indispensable resources for human survival and prosperity on the earth surface. They encompass all attributes of the biosphere [1]. The management

approaches of land throughout the history of planning are established on the main perception that land is the basis of wealth and power [2]. Such intuitions, anchored on geopolitical consternations, societal civilizations and technological advancements

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are hardly unidirectional, and in many cases breed management inconsistencies. Land management coerces a knowledge-based procedure that helps integrate land, water, biodiversity and environmental management to meet rising food and fiber demands while sustaining ecosystem services and livelihoods for the growing population [3].

Land resource management (LRM) approaches are largely grounded on ecological considerations requiring structural and biological methods [4]. This is enhanced with proper planning which heightens the economic and social status of the population and promotes the sustainable exploitation of LBRs [4, 5]. These processes are reflected in land tenure laws and systems governing land acquisition, ownership and use. The overarching objective of management is to maintain the earth's biological diversity at the local, national and global levels [6]. This is a holistic process where all the land resource species (renewable or non-renewable) and stakeholders are considered [7]. Management approaches are increasingly framed within environmental management paradigms that require strict adherence to the pillars of sustainability [8, 9].

In developed countries, Sustainable Land Management (SLM) has emerged as the dominant approach, focusing on land degradation, rehabilitating degraded areas and ensuring the optimal use of land resources. Through integrated management strategies [10], this approach aims to reverse irrational land use practices and secure long-term positive exploitation signatures for posterity. This is established on land resource conservation-oriented decision-making processes with management veracities emphasized in clear spectrums of coordination among multiple stakeholders. These stakeholders collectively determine how LBRs can be harnessed for the benefit of all at sundry. As remarked by [11], the approach is skewed on the implementation of sustainable development agendas, policy frameworks and agreements such as the Green Growth Strategy in Western Europe [12]. Management efforts increasingly pursue the promotion of environmentally friendly subsidies, green economy and the management of natural resources that generate economic growth opportunities. Key initiatives include comprehensive agricultural development programs, sustainable forest and biodiversity projects, conservation programs, regional development schemes and local planning schemes which are primordial [13].

In Africa, methodological advances in land management are tilted towards sustainability, good governance and transparency. However, top-down management approaches often mar interactive participatory land use planning possibilities [14]. Contemporary land management frameworks therefore emphasize integrated natural resource management, rational

land use planning and sectoral coordination aimed at allocating land uses efficiently across national economies. Management approaches in Cameroon are guided by policies, legal and institutional reforms established on Law N° 74/1 of July 1974, which regulates the acquisition, ownership and management of village lands [14, 15]. These reforms influence land resource distribution, exploitation patterns, management of border controls and trans-boundary resource conflicts which all shape the dynamics land-based resource management (LBRM) [16].

In Bui Division, LBRM is epitomised in common property prerequisites for the survival and sustenance of highland communities reliant thereof. These resources constitute physical, socio-economic, traditional and cultural significance as the identity of the indigenous people [17]. There exist veritable geographical absurdities in land management approaches depicted in ecological dynamics, scarce LBRs under degradation, concentration in sensitive milieus, vulnerability to natural and man-made hazards and difficult access to most resources. Planning incongruities abound and reflected in fluid and fuzzy resources boundaries, irrationalities in the political ecology manifest by imperialist philosophies. There is the non-respect of borders that are made and remade. The mismatch between physical and political borders are major specificities of management stakes and challenges in the highland area [18]. There is a need to seek participatory diplomatic and compatible approaches for inter-community LBRM for peaceful coexistence and scenarios for sustainable rural development in highlands defiant to space occupancy. This study investigates the major approaches and socio-ecological drivers influencing land resource management in Bui Division, postulating that the management approaches are significantly determined by multiple socio-ecological drivers in highlands communities.

2. Material and Methods

Bui Division is located in the Bamenda Highlands of Cameroon and constitute an extensive ecological zone of LBRs. The area lies between Latitudes 6°00'–6°20' North of Equator and Longitudes 10°30'–10°60' East of the Greenwich Meridian. Bui Division forms part of the Western High Lava Plateau that diagonally traverses Cameroon along the tectonic axis called the Cameroon Volcanic Line, extending from the Gulf of Guinea inland. It spans across a surface area of 2795 km², made up of three tribal communities in six administrative subdivisions with varied LBR sizes namely: Kumbo (630 km²), Jakiri (675 km²), Nkum (375.3 km²), Noni (307.7 km²), Mbiame (575 km²), and Oku (232 km²) [15, 19] (Figure 1).

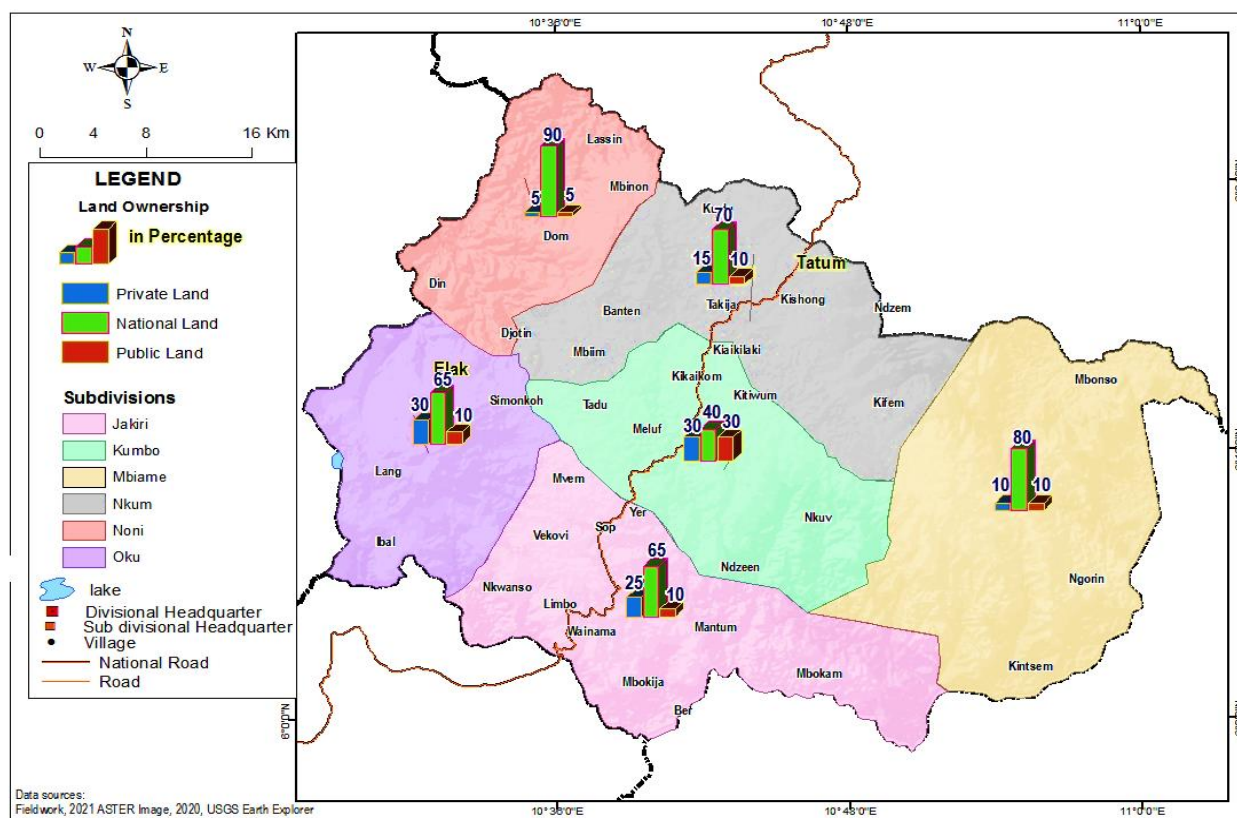


Figure 1. Location and distribution of land categories in Bui Division of Cameroon.

The highland area exhibits diversified geographical characteristics which constitute major components of LBRs and management interaction approaches. The highland ranges from 710 meters above sea level (masl) from the Mbaw–Tikar Plains to 3,011 masl in Mount Oku. The region experiences the highland tropical climate of the Cameroon highland interior type with rainfall ranging from 2200mm to 3000mm disposing deterministic propensities for LBRs distribution and management. This has ushered alterations in climatic elements, soil properties, relief, drainage, vegetation and population dynamics in the different zones [19]. The link between the geo-ecological components and factors are the origins and development LBRs. Bui Division has a growing population with 90% of the activities linked to land management approaches as seen in the exploitation of cropland, built-upland, grazing land and forest land for livelihood sustenance [20].

The study adopted a descriptive and historical research designs, covering 52-year period (1970-2022). This period was considered to represent the evolving myriads of inter-community LRM approaches across sectorial scales and sturdily illustrating multiple dynamics of management in a hyper coveted highland. The temporal framework was categorized into three distinct phases: 1970-1990, coinciding with the administrative; 1991-2009, representing community-based and 2010-2022, corresponding to the participatory approaches to LBRM. The study adopted a purposive sampling technique applied in three representative land resource zones (tribes) and

four LBR sectors (built-up, cropland, forest land and grazing land) with three land categories (private, public and state lands) in the highland communities of Bui. Primary data was collected from the field through three complementary techniques involving questionnaires, formal and informal interviews and direct observations of LBRs sites in all sectors. A total of 504 questionnaires were administered in the three tribes with a 20% sample size. The target population was the indigenous people, Civil Society Organizations and administrators directly involved in LRM.

This was complemented by secondary data obtained from published and unpublished sources in text books, websites, dissertations and thesis, journals, periodicals, magazines, laws and administrative texts. Institutions like Palaces, Councils, Civil Society Organizations, Sub-Divisional, Divisional and Regional Delegations linked to land management were consulted. Qualitative data from interviews and observations were analyzed thematically to identify the dominant approach of LRM and the drivers. Quantitative data from questionnaires and institutional sources were processed using descriptive statistical techniques, including frequency distributions and percentages. This was intended to assess the spatio-temporal variations in management approaches. The integration of qualitative and quantitative analyses facilitated a comprehensive understanding of the inter-community LBRM dynamics in Bui Division.

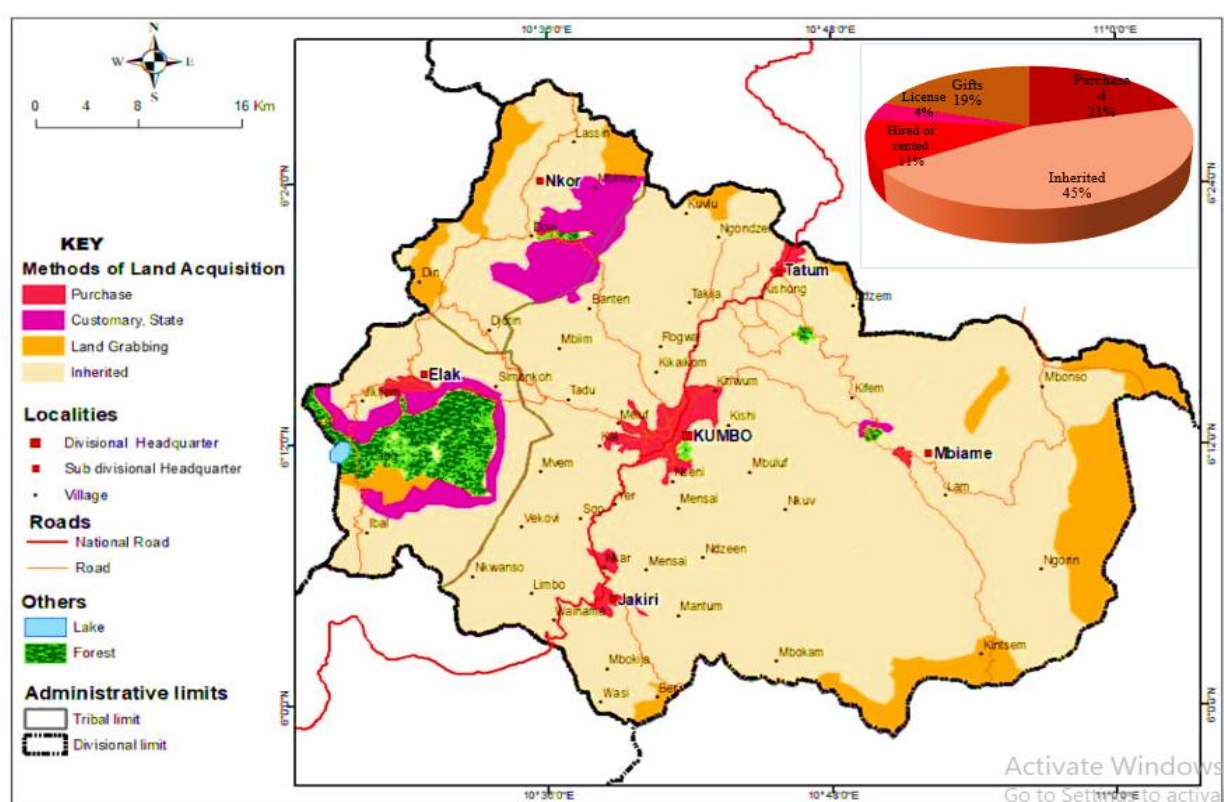
3. Results and Discussions

3.1. Spatio-temporal Dynamics in Land Resource Management Approaches in Bui Division

3.1.1. Inter-community Land Acquisition Approaches

The process of land acquisition and registration confer legally recognised property rights to individuals through the issuance of Land Titles. These rights vested are constitutional,

as the state recognizes their ownership once the land is registered. The procedure for land registration starts with surveys based on Section 2 of the 1974 Land Ordinance. Cadastral records are prepared based on surveyed parcels which must involve the establishment of boundaries for both public and private lands. Such boundary creations dictate the planting of numbered Cadastral Pillars (boundary stones). After the cadastral survey phase, the Land Consultative Board and Administrative Board allocate the land and the resources to the individual concerned [19, 10]. However, the management activities in the dimension of land acquisition in Bui Division are strongly shaped by indigenous land tenure systems which vary spatially across tribes with unique patterns reflecting deeply rooted customary norms (Figure 2).



Source: Field Survey (2022)

Figure 2. Patterns of land tenure systems in Bui Division.

Inheritance as the dominant method of land acquisition, accounting for 45% of cases. Spatially, the practice is particular prevalent in areas with common property land resources such as farmlands, grazing lands and build up lands. These are areas are predominantly occupied by indigenous populations who perceive land as an ancestral or communal resource governed by customs and traditions. The findings corroborate earlier studies [15, 18] which emphasized that land acquisition in tribal communities is passed down through family lineages under the authority of family heads. Conversely, licensed land

tenure system remains marginal and strongly observed in zones with strong state involvement such as the fringes of protected areas and where there are land use conflicts that need administrative regulations. Land grabbing is common along border areas and hollow frontiers. This seen in the analysis of [21] who considered these fronts (LBRs hubs) as 'no man's land', the phenomenon of pioneer fronting is common, pushing tribes on either side to be scrambling for land resources [22]. Land acquisition and ownership in Bui Division is formalised through various legal documents (Table 1).

Table 1. Land ownership documents in Bui Division.

Land ownership document	Frequency	Percentage
No document	210	41.6
Land title	61	12.1
Traditional Right of occupancy	115	22.8
Sales certificate	84	16.7
Deed of Conveyance	34	7.1
Total	504	100.0

Source: Field Survey (2022); [19]

However, results reveal that 41.6% of land users lack any form of ownership documents. This is one of the germs of state-population conflicts over LBRs in Bui Division. Temporal analysis shows fluctuations in Land Titles and Building Permits acquisition between 2012 and 2020 (Table 2).

Table 2. Land Titles acquired from 2012-2020 in Bui Division.

Year	Number of land titles	%	Number of building permits	%
2012	52	10.8	52	15
2013	23	4.8	23	6.6
2014	160	33.3	155	44.8
2015	146	30.4	83	24
2016-2020	100	20.8	33	9.5
Total	481	100	346	100

Source: [19]

There was a significant increase in the number of Land Titles (33.3%) and Building Permits (44.8%) in 2014. This was the period of optimum built-up land exploitation in all the Sub-Divisions. This was accounted for by intensified land speculation, rapid population growth and increasing demand for urban and peri-urban lands as opined by previous studies [16].

3.1.2. Stakeholders Approaches to Land Resources Management Bui Division

The management of LBRs in Bui Division has evolved and changed over time. The management dynamics is based on the spatio-temporal changes in stakeholders, changes in management interests, activities, tools and approaches (Table 3).

Table 3. Logical dynamic specificities in the management of LBRs in Bui Division.

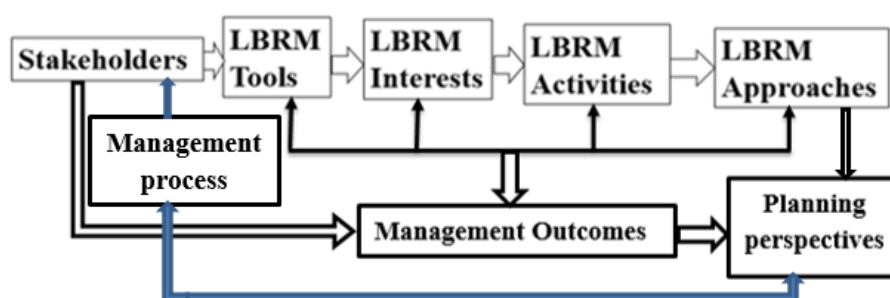
Stakeholders	Tools	Interests	Activities	Approaches
Local indigenous people and institutions	Ancestral laws, indigenous institutions, IKP	Livelihood, community development, employment, protecting customs and traditions, profits, jobs	LBRs acquisition, exploitation, utilisation	Participatory
Civil Society Organisations	International, national and community laws	Corporate social responsibility, reduction of negative externalities, good governance, equality	Conflict management, sensitisation, conservation	Community and participatory

Stakeholders	Tools	Interests	Activities	Approaches
Regional, Sub-Divisional/Divisional delegations	National and international laws	Protecting state laws, socio-economic development and environmental; sustainability and reduction of negative externalities	Protection, conservation, land use planning and regeneration	Administrative
National	State laws and institutions, scientific methods	Protection, politics, rural development, employment, protecting administrative laws, corporate social responsibility	Conflict management, Conservation, sensitisation, governance	Administrative
International	State, Regional & international laws	Conservation, protection and international cooperation	Conservation and sensitisation	Community and participatory

Source: Field Survey (2022); [16]

The results reveal a dynamic, multi-stage management process characterised by cyclical and independent stakeholder interactions across sectors and scales. These interrelated activities, interests, tools and approaches reflect all the spheres of stakeholders' operations. Consistent with the [7, 8], the findings underscore the importance of stakeholder interdependence and collaboration sustaining LBR management practices.

Drawing from Ostrom's Model of Socio-Ecological Coevolution System framework [6, 23] and considering that participatory collaboration is pivotal in the management of LBRs, a participatory management framework was developed (Figure 3). This emphasizes on institutional diversity, self-governance and active co-management in multicultural inter-community settings.



Source: Author's Conception (2022)

Figure 3. Framework for the management of LBRs in Multi-cultural settings in Bui Division.

The management matrix is interrelated ranging from stakeholder identification and regulatory tool application to outcome evaluation and policy reformulation. These are operational at multi-stakeholders, multi-sectorial, multi-resource and multi-cultural settings. In the 1st stage, stakeholders are directly or indirectly involved in the management (exploitation, use and conservation) processes. The 2nd stage uses management tools (legal instruments) regulating in diverse sectorial spheres of common property resources to ensure sustainability and management practices of indigenous stakeholders. In the 3rd stage, the unending interests of the local people are identified and regulated with legal tools to sustain the quest for livelihoods anxieties. This profiles their management activities in the 4th stage resolute in communities' stakes and challenges, Indigenous Knowledge Perception (IKP), level of education and innovation diffusion in the population. This results to the

5th stage where management approaches are determined based on management activities adopted by the population. In the 6th stage, management outcomes (positive and negative) can be determined depending on the spatial mutations in the ecological zones and the livelihood dependency activities of the population. The 7th and last stage calls for the necessity for reformulating new policy dimensions on land resource planning. Positive and negative management impacts vary spatially depending on ecological zones and livelihood dependencies, reinforcing the need for adaptive policy frameworks [3, 4, 7, 17].

Three different historical trend analyses of LBRM approaches area used; administrative approach (top-bottom); community based approach (bottom-top) and the participatory approach (Table 4).

Table 4. Spatial degree of practice of land management approaches in Bui Division.

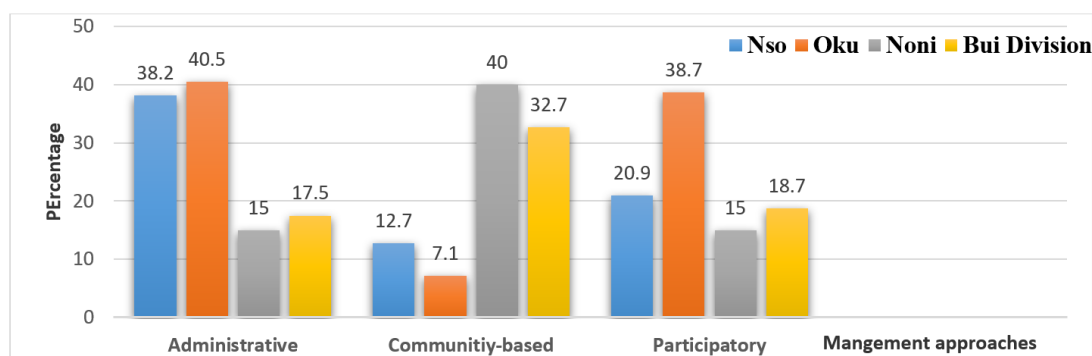
Approaches Years	Administrative			Bottom-top			Participatory		
	HP	MP	LP	HP	MP	LP	HP	MP	LP
1970-1990	✓					✓			✓
1991-2009			✓	✓				✓	
2010-2022		✓			✓		✓		

Source: Field Survey (2022)

HP=Highly Practiced; MP=Moderate Practiced; LP=Lowly Practiced

These approaches are founded in the standards of the UNO [7, 10, 23] citing the top-bottom, bottom-top, integrated, adaptive and community-based methodologies as major approaches in the sustainable management of resources. These

are a function of the degree and intensity of stakeholder involvements and spatial degree of applicability across the tribal communities (Figure 4).



Source: Field Survey (2020-2022)

Figure 4. Inter-community approaches of land-based resources management in Bui Division.

Management from 1971-1990 was the administrative approach. In 1987, Kilum-Ijim montane forest was transformed from an indigenous resource to a forest reserve owned and managed by the state. Mainly traditional indigenous institutions and the state administrators had the legal backing in the management process. This administrative methodology was in the hands of the traditional authorities (*Kwifon*, *Nfuh*, *Manjong* and *Fembien*). These were the custodians of the tradition and state representatives as per the constitution and the laws of the state. It is for this reason that state authorities played central roles as they are considered par excellence as '*chefterre*' meaning 'head of land'. The approach corresponds to the top-bottom approach seen in the study of [12]. The state authorities on their part conceived Administrative Orders as a management tool regulating the activities of exploiters of LBRs. This was the case of the Prefectoral Order No. E26/38/RPB/RS/95 of 35th November 1995 intended at implementing the 1994 forestry law and regulating activities in the Kilum-Ijim Mountain Forest as cited in the study of [18].

Considering the significance of land to the population, the

management approach tilted more to community-based approach [24] between 1991 and 2009. The number of stakeholders increased with the coming in of the local community people as the major stakeholders'. Relaxation of restrictions on the management of LBRs with Law No 94/01 of January 1994 creating '*community forest lands*'. More strides were made in 1996 with the Environmental Law N° 96/12 of 5th August 1996 outlining the specificities of the management of different environment resources by the local population and the state. The 2004 Urban Planning and Development Law N°. 2004/003 of 21/4/2004 opened the arena for more involvement of the population in the process of urban development through sustainable housing development and management of 'Green Spaces' [11]. The multiple amendments of the 1974 Ordinance increased the tenure security to owners of private lands. Corporate social responsibility was also introduced in the management of LBRs. There was an increase in the sharing of benefits and livelihood opportunities. Transparency was involved in the decision making process of management. The coming in of multiple actors introduced new management activities,

interests and tools. This is in line with the results of [4] explaining the involvement of multiple stakeholders in LRM activities intensifies in protection and conservation land. This deviates from the findings of [14, 18] posited that more community involvements in LRM without the state mechanisms to check unsustainable practices can bring alarming rates of degradation of LBRs, rapid population growth and resource use conflicts [7, 23].

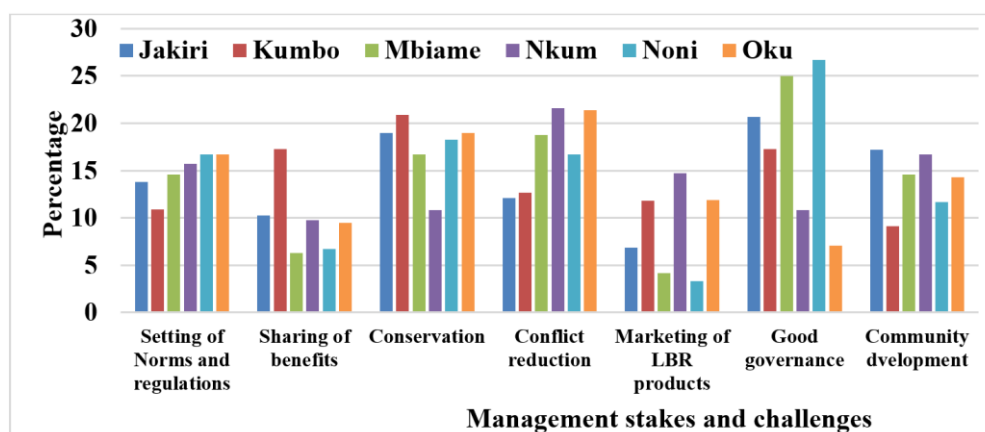
This led to the participatory approach (2010–2022) reflecting multi-stakeholder, multi-sectorial and multi-institutional involvements. The focus of this approach was to find common ground strategies for sustainable resource management and rural poverty alleviation, with more community engagement in decision-making [25]. Management and exploitation of resources in this approach have piloted a lot of changes in land use cover, brought by the increasing population and the quest for diversified livelihoods. This is consistent with the findings of [4, 17], stating that the participatory approach at the grassroots level

in resource management is the main sustainable strategy to increase indigenous participation in resource management and to reduce the increasing levels of poverty in rural communities where the livelihoods of the local populations are directly linked to land resources. The increasing innovations and spatial diffusion have necessitated the participatory approach as resonated in the results of [15].

3.2. Drivers of Land-based Resource Management in Bui Division

3.2.1. Multiple Socio-ecological Management Stakes and Challenges

There are multiple socio-ecological stakes and challenges influencing the management of LBRs linked to the spatial geographical considerations and specificities of LBRs (Figure 5).



Source: Field Survey (2022)

Figure 5. Land-based resource management stakes in Bui Division.

Conservation and conflict as major stakes are linked to increasing environmental stressors and the quest for sustainability. On a spatial basis, Kumbo, Mbiame and Oku have most of the management stakes and challenges [5]. The population diversity in Kumbo as the major urban settlement and multiple montane forest with endemic resources with topographic imperatives are common in the mountainous highlands of Oku. Despite all these potentials, the ill-adapted nature to innovations and diffusion practices in the management of LBRs is still major planning as pointed out by [23]. The sharing of land management benefits and good governance as management stakes are founded in the dimensions of corporate social responsibility.

3.2.2. Indigenous Knowledge Perceptions on Land-based Resource Management in Bui Division

The IKP illustrates a wide range of community-based capacity enhancement initiatives and local adapting programs such as literacy, introducing local knowledge approaches and harnessing women capacities in the management process of LBRs. The application of IKP has been a major driver in the management of LBRs in the different tribal communities. The indigenous stakeholders' practices are usually passed down to the next generations through ancestral traditional practices. These practices are rooted in measures put in place by the traditional authorities to ensure the protection of LBRs and regulation of management activities as per the ancestral laws (Table 5).

Table 5. Calendar of some traditional practices on land management in Bui Division.

IKP	Periodic variations	Implication on management
Visit to the abodes of gods by the village and quarter notables	Beginning of the farming season which is unique across the ecological zones	To appease the gods and solicit blessings from the farm lands
Respect of the eve of the Kwifon and Fon's visit to the shrines	Every November at Kovifem, Lumetu, Dom forest and the Coronation of the new Fon to <i>Mawes</i> (Lake Oku)	To offer sacrifices and appease the gods of the land and to bless their lands for more productivity
Appeasement of the gods of ice and wind	Every year in the month of April to May as major families purify their ancestral lands	To appease the gods of rain, wind and ice/reduce the impact extreme weather on crops
General purification of the land	Every year in the month of March after planting is made	To appease the gods and to appeal for more crop-ping yields

Source: Nso Fon's Palace (2021); Oku Fon's Palace (2020-2022)

Indigenous knowledge perception is a major socio-ecological driver in the context of the political ecology. Variations depict periodicity through traditional rites being carried out on LBR abodes to appease the 'gods' and to solicit blessings on land exploitation practices. The proper respect of these traditional rites increases the output of potentials in the management of

LBRs (Table 6). As pointed out by [4, 19] indigenous people believe in socio-cultural practices traditional ceremonies and ritual practices to the gods to purify the land and the resources therein as the foundations of traditional frameworks for land exploitation.

Table 6. Indigenous knowledge processes for land resource management in Bui Division.

IKPs	Stakeholder practices	Implications on management
Taboo	Prohibition of access into certain hunting grounds and periods and prohibition from stealing in farms and forests	Protection and sustainable management of forest land (reduced poaching). Respect of traditional believes and ethical methodologies in management
Traditional beliefs	Rain-making, going to shrines to take crops, ritual ceremonies, incantations	Providing adequate soil moisture for CL, FL and GL growth and productivity and regulating extreme weather conditions from destroying crops, buildings and livestock.
Norms	Women prohibited from entering shrines, initiation before having access to places and practices, women have no direct land ownership access	Limited overexploitation practices, protection and conservation of resources.
Customs	Respect for traditional non-working days ('country Sundays') and public holidays during death celebrations and cleansing of the land	Reduction of geo-hazards (landslides, winds and hailstones); ethical management norms, LBR conservation and sustainable land use practices

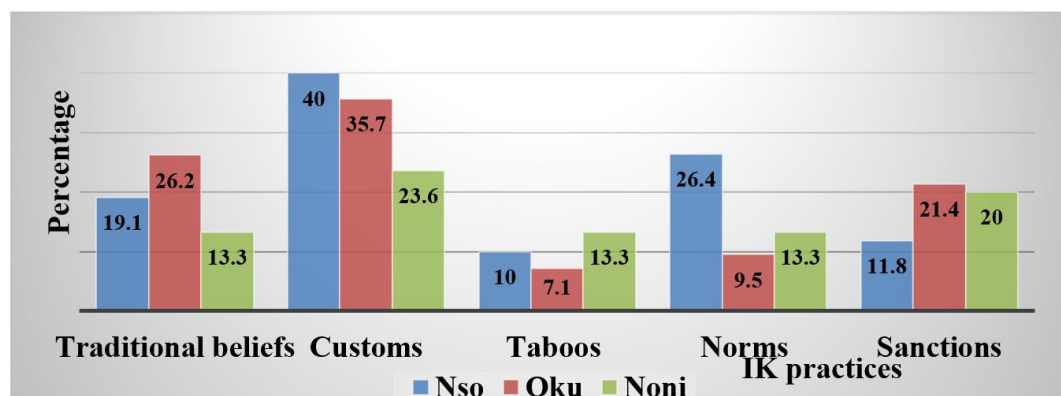
Source: Field Survey (2021); Nso Palace (2021)

CL: Cropland, FL: Forest Land and GL: Grazing Land

These IKPs vary across Bui Division in the different tribes based on the tribal indigenous communities' perceptions on the significance and management of LBRs dynamics over time (Figure 6).

The customs are more practiced in Nso than in Noni and Oku as a result of the level of civilization and literacy of the Nso population that goes with strict respect of the traditions in

and out of the ancestral lands. On the contrary, the people of Oku and Noni are more exposed and adaptable to innovations in the management of LBRs that compromise their traditions. This explains why norms are more in Nso that develop modern sustainable management values justified by the respect for legal and institutional frameworks [20].



Source: Field Survey (2022)

Figure 6. Degree of application of IKPs in the tribal communities in Bui Division.

3.2.3. Perceived Significance of Land as a Resource to the Population

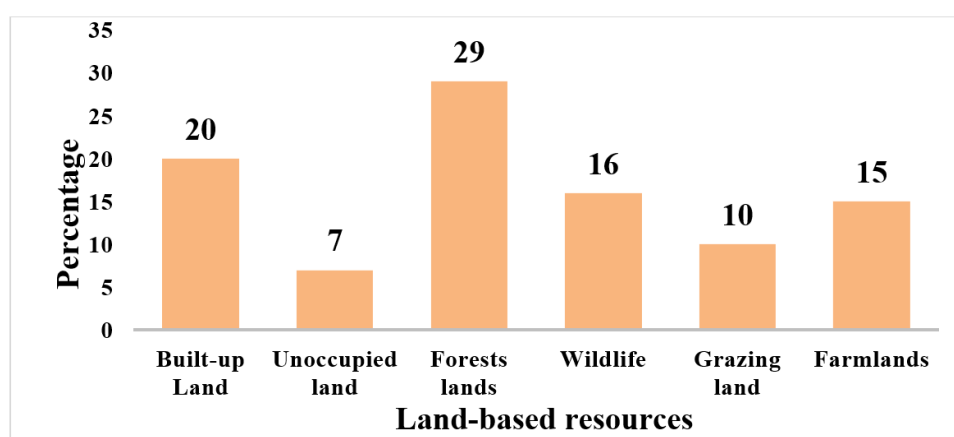
Land is a multi-functional resource in the tribal communi-

ties of the highland area. It is both a physical and cultural resource, variable depending on the utility to the population. Land as a resource depends on the socio-cultural significance to the different tribes satisfying their ever heightening anxieties (Table 7).

Table 7. Socio-cultural status of land in Bui Division.

Status of Land	Frequency	Percentage
Wealth and power	119	23.0
Identity	278	55.0
Income	49	9.0
Property	58	11.0
Total	504	100.0

Source: Field Survey (2022)



Source: Field Survey (2022)

Figure 7. Variations in LBRs with socio-cultural significance in Bui Division.

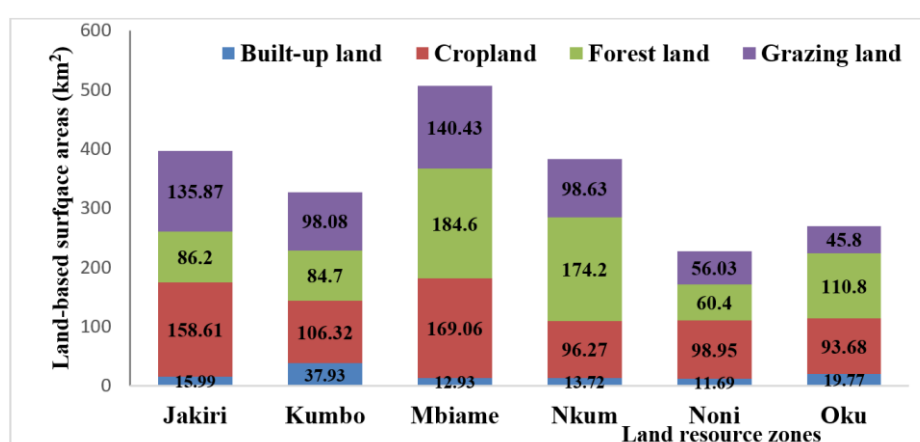
The socio-cultural status is highly reflected on the status of land as a source of identity to the indigenous people. This is evidenced with many villages named after some significant land features. The sense of belonging to a particular tribe is therefore determined by the extent of the land they own. These are also the bases for the existence of the three indigenous tribal communities. Land as a source of income is based on the fact that the indigenous people still view their land as a source of wealth, power and identity rather than income as remarked by [2, 26]. The population also depends on the land potentials including crops, livestock, forest resources for their livelihoods. It is against this background that the population considers land as a resource entirely and the productivity (functionality) of land as another resource as reported by [7]. The productivity services of land in Bui vary with the different

LBRs (Figure 7).

Forest land is socio-culturally more significant to the population explained by the fact every community's identity are determined by their cultures [21, 25]. Forests are abodes of the gods of Nso, Oku and Noni are fortress in. This explains why all the palaces, major shrines (Kovifem, Lumetu and Dom) [19].

3.2.4. Spatial Inequalities of Land Resources Distribution in Bui Division

This management driver stems from the premise that land in is a major socio-ecological driver in of the political ecology. Land is relatively fixed with variations in spatial-sectorial sizes in Bui Division (Figure 8).



Source: [19]; Landsat Image Processing (2021); Field Survey (2022)

Figure 8. Spatio-sectorial variations in LBRs surface areas in Bui Division.

The relativity in land surface areas proves that land as a resource is fixed in nature but depicts inequalities in the distribution of the resource therein across the spatial units. This is justified by the fact that land in itself is a resource and at the same time is citadel of other LBRs as argued by [5]. The spatio-sectorial resources characterization are the justifications for the management of the Built-up Land, Cropland, Forestland, and Grazing land. Despite these, [23] explained that the spatial extent of LBRM is justified by the geographical interrelationships in the political ecology and human environment interactions. There is a dynamic and complex relationship that is dependent on both land cover and intensity of land use practices. Matching natural resource use with human demands is spatially complex, with many interdependencies and environmental feedbacks. This is complicated further when land as an environmental resource is considered based on the fact that it has unique geographical specificities as resonated in by [10].

3.2.5. Highly Conservative Land Management Practices

The natural systems and the societal stakeholders constitute a major socio-ecological determinant of conservative practices of the indigenes in land management approaches. These practices include weekly traditional holidays during which land management activities are suspended especially when death occurs in the community [25]. The duration of suspension of land management practices in general and farming in particular vary with the traditional personality who dies as well as the type of cultural events in the different tribes (Table 8).

Table 8. Traditional land exploitation holidays in Bui Division.

Duration of suspension of farming activities from death		
S/N	Nature of death	Duration of suspension (days/weeks)

Duration of suspension of farming activities from death

1	Fon/Yeafon/Nontok	8 weeks
2	Shufai/Fuvem	7 days
3	Fai/Shey/Tantoh/Chinda	7 days
4	No titled Family members	3-4 days
5	Child	3 days
Weekly traditional holidays		
Villages	Weekly traditional holidays	Seasonal traditional holidays
Nso	Kilovey, Ngoilum, Reevey shishua Wailun, Buukaa Cultural week	Ngonso (cultural week),
Nkar	Wailun, Nseeri	Cultural week
Mbiame	Wailun, Ntangrin, Kilovey	Cultural week
Oku	Nsamnen, Ngokse	Emtiyy, Ndong Dance Bvubun
Noni	Bvubun, Buukaa	Cultural week

Source: Field Survey (2022); [20]

All the tribes and villages of Bui Division have at least two weekly traditional holidays (*Country Sundays*), during which farming activities are suspended. In addition to the public farming holidays, there are specific days in the clans and quarters for the cleansing the land and displaying spiritual supremacy of some traditional leaders. During these events, farming and forest exploitation activities as well as the building of houses and other outdoor activities are suspended. These have gone a long way to trigger land management efforts aimed at improving land productivity. These are founded on the premise that these traditional holidays play a negative role during critical phases of food crop production such as sowing, weeding, the application of fertilizers and harvesting as pointed out by [20]. Taking an average of three traditional holidays in a week when agricultural activities are suspended and Sundays when Christians do not go to the farm, these give a total of about 152 days out of 365 days in a year that farmers do not go to the farm [21]. These, together with unforeseen circumstances including ill-health, bereavements and other celebrations increase the vulnerability of agrarian land management systems, hence, the necessity to bring to focus land management dynamics.

4. Conclusion

The management approaches of LBRs is marked by the dynamics of multi-sectoral and multi-stakeholder interactions based on activities, interests, tools, approaches and socio-ecological drivers that significantly vary. The study reveals the increasing dominance of participatory approaches accounting

for approximately 60% of management practices. This reflects a transition towards inclusive governance driven by livelihood needs, cultural values and environmental pressures. These approaches have fostered notable spatio-temporal transformations in land management, influencing over 78% of inter-community livelihood activities. The management approaches have a significant nexus between inter-community stakeholders, sectoral interests and activities. This is established on the eddy visions of reducing the problem of under representation of indigenous stakeholders; unsustainable management practices marring LRM approaches; impoverished and marginalized indigenous communities as well as vulnerability of mountainous communities and resource management shocks. The findings underscore that effective LBRM hinges on harmonizing indigenous knowledge, institutional frameworks and stakeholder collaboration practices. Participatory governance emerges as a viable pathway for mitigating conflicts, reversing the “*tragedy of the commons*” and enhancing socio-ecological resilience in the highlands of Bui Division. Ultimately, sustainable land management must recognize land not only as an economic asset but also as a cultural and spiritual foundation that is essential to the community identities and long-term development agendas. This study posits that if LBRs are holistically managed in the participatory approach, commonplace signatures can reverse the current tragedy on resources to profit disadvantaged communities. This is increasingly evident in the global economy where the general welfare of all and sundry is primordial and ought to be valued and sustained.

Abbreviations

LBRs	Land-Based Resources
LRM	Land Resource Management
SLM	Sustainable Land Management
LBRM	Land-Based Resource Management
MINDCAF	Ministry of State Property, Surveys and Lands Tenure
IKP	Indigenous Knowledge Perception

Author Contributions

Bailack Kevin Mbu is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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