Land use conflicts and planning implications: Insights from Kumbo, Cameroon

Abstract

As actors compete over land for varied reasons, conflicts linked to the multiplication of incompatible land uses have witnessed an increase. This validates the need for renewed evidence on the trigger mechanisms and manifestations of land use conflicts. To close this knowledge gap, this paper examines land use conflict dynamics and their planning implications in Kumbo – Cameroon. Through a survey of 394 respondents, complemented by interviews, we explore the manifestations of land use conflicts, and examine planning options to stem such conflicts. We further buttress our study through spatial analysis using Arc GIS 10.8. The logit results reported that informal economic activities tend to increase the likelihood of land use conflicts in Kumbo. Furthermore, the analysis showed an intricate direct relationship between poor planning and implementation of policies, and increasing land use conflicts in Kumbo. In the wake of an expected increase in land use conflicts, this paper suggests pragmatic solutions aimed at relocating and realigning compatible land uses in this community.

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Keywords: Land use; conflict; planning; Kumbo; Cameroon.

1. Introduction

One of the fundamental factors which determine the quality of an environment is how the land is utilized (Balgah & Maluh 2017). Land use information is an essential tool for nearly all development efforts (Kimengsi 2015). Data on land use is very important for development purposes especially in the African context, where a significant fraction of the population depends on agriculture (Adeniyi 1979; Kimengsi *et al.* 2016). The multiplicity of interests and actions over land almost invariably ignites land use conflicts, if not prudently managed. Land use conflicts refer to a situation where there is competitive demand over land, for present and future use; this introduces negative impacts on other land uses (Castagnini & Deininger 2006). While the situation of land use conflicts applies in all contexts, it seems more prevalent in the developing world – where there are strong lapses in planning policies. Furthermore, the developed settings generally have successful land use reforms and land planning schemes that have been institutionalized. During the 20th Century, as reported by Akhtar (2012) and Garcia-Ruiz and Teodoro (1993), Africa recorded significant changes on its land utilization parameters; cultivated land decreased, meadows were replaced by grain fields, livestock pressure on land reduced, and transhumance practically disappeared (Akhtar 2012). In parts of Asia, particularly China, statistics show that more than 50,000 cases of land use conflict cases were reported in 224 cities between 2003 to 2008 (Magsi 2013). Some of these challenges arise due to the implementation of non-participatory land development programmes which tend to exclude the masses. These problems are also reported for Cameroon where defects in planning have festered the problem of incompatible land uses co-existing. In spite of this problem, population growth continually places significant demands on land for multiple and sometimes incompatible uses. Growing land use conflicts does not only make nonsense of planning efforts, but equally hinders livelihood opportunities for the population.

At independence, Cameroon embarked on the search for an appropriate land use conflict management approach to deal with the numerous and seemingly complex conflicts. This was

important to address rising conflicting claims over land and its resources (Sop et al. 2015). In 2004, Cameroon's Town Planning Law was revised to regulate town planning of the State. Town planning in Cameroon is guided by sector, land use and master plans respectively. The challenges are evident today because of increasing land use conflicts arising from the coexistence of incompatible land uses. For instance, in the case of Douala, it is not uncommon to find residential land use coexisting with industrial land use, although they are incompatible (Ngoran & Xue 2015). In the context of Cameroon, specifically in the North West Region, scientific studies on land use have been directed towards understanding the processes of urban development (Verburg 2015), including farmer-grazier conflicts (Kimengsi 2015). However, issues that relate to the role of different land uses (e.g. commercial land use triggered by the multiplication of informal economic activities) and planning defects in determining the propagation of land use conflicts in emerging communities of Cameroon seems to have eluded geographical literature. Therefore, while significant literature on land use conflicts exist, context-specific evidence as in the case of Kumbo is grossly lacking, to inform future land reforms in Cameroon. This paper, therefore, contributes to addressing this lacuna; by (i) analyzing the nature and manifestations of land use conflicts, and (ii) examining planning options to curb future conflicts.

2. Theoretical/conceptual overview

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What is presented below can not be considered as theoretical framework

In land use studies, there is indeed overwhelming evidence that geography plays a crucial role: Geography is the science of which land planning is the art (Nature 1949). Very few in-depth analysis of land use and land use conflict scenarios exist, thus validating the need for renewed evidence (van Schrojenstein *et al.* 2011). To better appreciate land use conflicts, it is imperative to provide a theoretical/conceptual overview of the subject. There exist a wide variety of approaches and concepts to the study of land use and land use conflicts, within the broad spectrum of a land use system. Land-use systems denote land use types and the interrelated determining factors which have strong functional relations with each other. Such functional relations include the diverse land-use influencing factors such as biophysical, economic, social, cultural, political, or institutional (Verburg *et al.* 2006). The interactions between different actor groups with an interest on employing land and its resources is construed as conflicts. Such interactions are characterized by conflictual perceptions and approaches to the use of land (Havel 1986). Put succinctly, when two actor groups who have an interest in developing the land perceive incompatibility in their goals, interests, beliefs, or actions, then a land use conflict situation arises. Such conflicts become violent when at least one of the conflict actors uses force to pursue their land development interests (Scheffran & Schilling 2012).

To Torre *et al.* (2014), conflicts about land use emanate from the dissatisfaction of one part of a population over the land development actions undertaken or planned by others such as their neighbors, private institutions or public authorities. Land use conflicts assume multiple dimensions. For instance, it could be localized in nature involving the territorial superimposition of interests which are contradictory, and rivalries between contiguous or neighboring areas. Equally, conflicts emanate from the materiality of the objects that cause them or the objects of concern. They may also arise due to differing land uses (Torre *et al.* 2014). In all these cases, the conflicts are strictly localized in nature, but could spill over to cover a greater territorial extent, as multiple actors come to the stage. These attributes make land use conflicts to have a good fit within the geographic institutional framework.

Studies to identify the drivers of land use conflicts increasingly gain relevance today (Young et al. 2005). Conflicts are triggered by a range of natural, socio-economic, cultural and political factors which demonstrate heterogeneity at different scales and timeframe. This makes it imperative for land use conflict resolution to acknowledge and address the complexities linked to land use change and land use conflicts. As land use conflicts occur in different forms with varying intensities, interventions to address this lethargy requires tailor-made approaches. For instance, approaches that focus on compensation, resettlement and livelihood issues, as well as those that address issues of poor governance are required in different proportions, depending on the conflict case (Sabir & Torre 2020). Despite attempts to address land use conflicts, some scholars contend that not all land use conflicts can be resolved – this gives conflicts the attribute of social safety valves (Havel 1986). Notwithstanding the dissatisfaction, land use conflicts represent useful pointers to the innovations in the manner in which humans employ the land and its resources (Torre *et al.* 2014). From a sustainability analytical lens, land use change and its linked conflicts trigger economic, environmental and societal impacts. This validates the need for Sustainability Impact Assessments (SIA), to assess the impact of policies on the sustainability of land uses. To effectively address land use conflicts, SIA which draws from the multifunctionality perspective of land is helpful to address the complexity of interactions between different land uses, and their spatio-temporal changes (Pérez-Soba *et al*. 2008).

Cameroon's legal system classifies lands as Private land, Public land, and National land. Private island is that which is owned by individuals, organizations, groups. Public land is held by the government for the benefit of the people. This is used to provide social amenities such as roads, parks, and waterways. National land is land which is unoccupied and owned by the communities under customary land laws, (GOC Land Law 74-1 1974; GOC Land Law 74-2 1974) (USAID Land Tenure and Property Rights, 2011). These land typologies exist within Kumbo community.

Comment [LD3]: Land ?

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3. Materials and Methods

3.1.1 Study area

The study was conducted in Kumbo community (Figure 1), located between latitude 10.390^0 E to 10.420^0 W and Longitude 6.110^0 N to 6.330^0 S. Kumbo community is found in the Kumbo Sub-Division of the Bui Division, some 110 km away from Bamenda, the capital of the North West Region. It is a mountainous town with 4 distinctive hilly settlements, Tobin, Mbveh, Shisong, and Squares (Table 1). About 30,396 people are residents of this area. The area is dominated by females (53%) while males account for 47% of the population (Kumbo Council Development Plan**, 2011**). Kumbo community is regarded as one of the towns witnessing significant rapid urbanization in the North West Region of Cameroon. In fact, it is ranked as the second most urbanized town in the region, after Bamenda. Besides the multiplication of urban functions, the community is also characterized by significant mutations –natural landscapes (including grazing and farming lands) are increasingly being converted into other land uses, especially residential land use. Furthermore, rapid population growth and the competing demands for space has triggered inter-village conflicts, thereby magnifying the problem. These issues, including the stiff political tension of the community makes it a useful setting to understand complexities linked to land use conflicts. The four settlements (Tobin, Mbveh, Shisong, and Squares) chosen represent the most dynamic segments of Kumbo, as signatures of land use change and conflicts thereof are discernable in these settlements. At the moment, planning within the Kumbo community is largely the prerogative of the Municipal authorities, especially as very little interventions from

the Ministry of Housing and Urban Development is witnessed. The current planning paradigm hardly budgets with holism and complexity. Furthermore, issues linked to future land use conflicts are yet to be fully established and planned for. This gap suggests the need for empirical evidence to inform scholarly and policy circles.

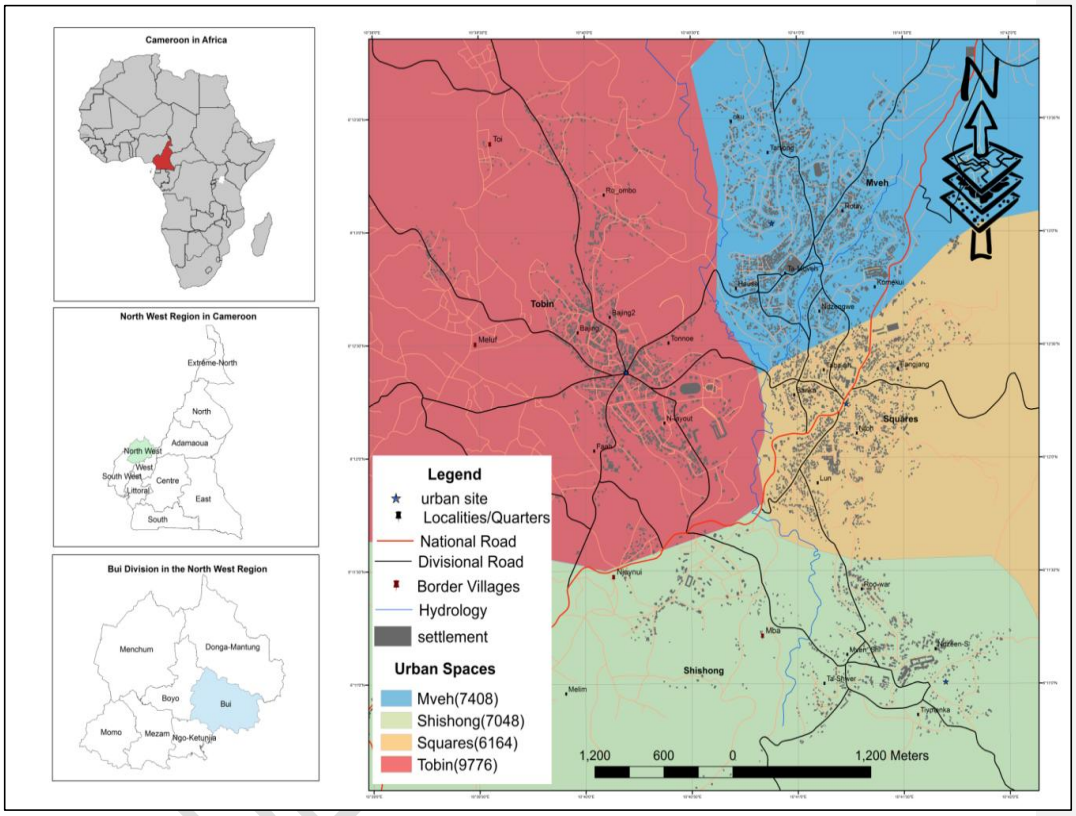

Figure 1: Layout of the Kumbo Urban Space, Cameroon

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Table 1: Urban Areas in Kumbo and their Neighborhoods

S/N	Urban Areas	Neighborhoods
1.	Kimbo/Squares	Banka, Fangjang, Lun, Ntoh, Taba-ah
2.	Mbveh	Hausa, Ndzengwef, tanjong,Rotav, Ta-Mbveh, Komekui, Oku
3.	Shisong	Tiymenkan, Mven-Shisong,Taa-Shwer, Ndzeen-Shwai, Roo-War 39
4.	Tobin	Ro-ombo, Faah, Tonnoe, Tonnoe-Shuka, Bajing I, Bajing II, New Layout, Tobin Round-about

Source: Extracted from PVC 01/2011 Baseline studies, Kumbo.

3.1.2 Study design and sampling procedure

This study adopted a descriptive and explanatory design. From a descriptive dimension, the study analyses the socio-economic characteristics of respondents and further describes the effects of prevailing land use conflicts on the planning. The explanatory design was employed in the collection and analysis of data using the logistic regression model. Here, the emphasis was to establish the extent to which several explanatory variables increase the likelihood of land use conflicts in Kumbo. A random sampling procedure was employed to generate data from the population. This was considered appropriate, as the settlements in question exhibited a significant degree of homogeneity. To assure that every household has the possibility of being selected, the target population was assigned numbers, after which raffle draws were repeatedly performed to select numbers corresponding to the respondents. This informed the data collection team on the respondents to randomly select.

3.1.3 Data collection

Data for this study was obtained through the design of several sets of research instruments (i.e., questionnaire, focused group discussions (FGDs) guide, and key informant interviews (KII) guide. The questionnaire that was used for the study captured 29 questions in 5 Sections. Section A captured information on respondent's demographic information; section B captured information on institutional and legal frameworks linked to planning; section C focused on land use conflict triggers and manifestations; section D captured information on land use conflicts and implications and section E was used to record information on the design and strategies to remedy existing land uses. Questionnaires were administered to the population; through random sampling, a total of 394 respondents were involved in the study. The questionnaires were administered to respondents first in a pretest (N=10) to some selected key informants and the final questionnaires was then administered in the target neighborhoods. The meaning of land use conflicts was explained to the respondents using pidgin English. This facilitated comprehension and aided in data collection. With respect to the KIIs, 19 open and closed ended questions were used. Issues related to land use policies, manifestations and some strategies to curb the prevailing land use conflicts were addressed in KII. The participants were selected using the

Comment [LD6]: What is the sample unit ? Household or individuals ? Not clear

random sampling technique. Participant observation and FGDs were done on 11th September 2018 in the Senior Divisional Office for Kumbo Sub Division involving participants. The FGD lasted for 45 minutes. Some questions addressed were questions on the causes of land use conflicts, the effects, how the issue has been managed and what can be done by various stakeholders to mediate the prevailing problem in the area. The researcher benefited from the land dispute hearings which were scheduled on this day.

Kumbo was fragmented into four strata - Mbveh, Shisong, Tobin, and Kimbo. In each stratum, a random sample was drawn from the population (Table 2). The purpose for this was to ensure that all the strata are proportionately represented and also to verify the differences in sub group characteristics. 10 stakeholders were selected for interviews. The following stakeholders were interviewed: Ministerial Delegates of; State Property and Land Tenure, Housing and Urban Development, Delegates of Environment and Nature Protection, Economy, Planning and Regional Development Decentralization and Local Development the Mayor and other State officials like the Senior Divisional Officer (SDO). Accordingly, the general respondent's characteristics including: age, gender, longevity, in the town, occupation, and urban settlements of respondents of were obtained. The data was collected between July and September 2018. The data were then coded and entered into excel and analyzed using SPSS 17.

Table 2: survey of respondents in the study sites

Urban settlements	**Quarters selected**	**Number of questionnaires administered in each area**	**Total number of questionnaires**	**Percentage%**
Kimbo/Squares	Fanjang, Ntoh, Lun	30, 35, 32	97	25
Mbveh	Ta-Mbveh, Ndzengwef, Hausa	30, 25, 28	83	21
Shisong	Mven-Shisong, Taa-shwer, Roo-War	30, 26, 28	84	21
Tobin	New Layout, Bajing 1, Tobin Round-about, Faah.	32, 35, 35, 28	130	33
Total 4	**13**	**394**	**394**	**100**

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2.1.3 Empirical Model

Quantitative data was analyzed using inferential statistics. The coded data was analyzed using the Statistical Package for Social Science Programme (SPSS 17). ArcGIS software was used to carry out spatial analysis, to depict the interface between spatial and non-spatial data and finally used to produce maps showing the changes that have occurred on land use activities in Kumbo since 2000. Logistic regression answers basically the same questions as discriminant analysis; the logic form of multi-way frequency analysis with a discrete dependent variable and multiple regression analysis with a dichotomous dependent variable was employed. The likelihood of a respondent to report that there would be a land use conflict can be described by a logit model; which is expressed as a nonlinear function of explanatory variables as follows:

$$Prob(y_i = 1/x_i = P_i = \gamma\left(x'_{ij}\beta_j\right) = \quad (1)$$

Where the endogenous variable y_i is land use conflicts and takes the value 1, if the respondent has experienced a conflict, and 0 for otherwise (no conflict); γ is the standard logistic cumulative distribution function and x_i is a set of covariates (Xesfingi & Vozikis, 2016).

What is actually observed is a dummy variable y_i commonly defined by:

$$y_i = f\ (x) = \{1,\ if y_i^* > 0,\ Otherwise \quad (2)$$

Maddala (1991), reported that if we observe y_i, we can estimate the β_s in (2) only up to a positive multiple hence its customary practice to assume that the variance is homoscedastic in order to fix the scale of y_i^*.

It can, therefore, be readily observed that the logit model takes the form;

$$(log\frac{\rho_i}{1-\rho_i} = \beta_0 + \sum_{j=1}^{k} x'_{ij}\beta_j,) \quad (3)$$

The left side of the equation is the log-odds ratio which is a linear function of the explanatory variables. Therefore, the logit of a probability is simply the log of odds of the response taking the value 1; which is the predicted conditional utility evaluated atx'_{ij}. Any real value can fit in the logit function, and the associated probability will always lie within the interval [0. 1]. The Cox &Snell R Square and Nagelkerke R Square value was equally employed to provide an indication of the amount of variation in the dependent variable explained by the Logit model.

3. Results

3.1 Respondents Demographic Information:

Table 3 reports on the socio-demographic characteristics of respondents, including age, gender, longevity, and occupation.

Table 3: Demographic Characteristics of the Respondents

Respondents Characteristics	Categories	Frequency	Percent%
Age	Below 35]	44	26
	35-54years	80	47
	Above 55years	45	27
	Total	169	100
Gender	Male	81	47.6
	Female	89	52.4
	Total	170	100
Longevity in Kumbo	≤ 5-15years	52	30.6

	16-25years	53	31.2
	Above 26 years	65	38.2
	Total	170	100
occupation	Farmer	25	14.8
	Businessman/woman	51	30.2
	Teacher	28	16.6
	Others	65	38.4
	Total	169	100
Urban settlement	Tobin	52	31.1
	Mbveh	26	15.6
	Kimbo/Squares	60	35.9
	Shishong	29	17.4
	Total	167	100

Source: Field survey, 2018

The ages of the respondents revealed that 47 % are between 35-54 years old, while 27 % were found in the age bracket above 55years. Just 26 % of the respondents were below this age group. With the majority falling in this active age group, it is plausible to infer that further land development is expected – this calls for planning interventions to stem conflicts. Likewise, substantial proportions of the gender of respondents were females (52.4%). This asserts the notion that the proportion of female to male is high in most settlements in Cameroon currently. Regarding the number of years respondents have lived in Kumbo, 38.2 of the respondents have lived in the area for more than 26 years, 31.2% for 16-25 years, and 30.6% for ≤ 5-15 years. From this, it is plausible to deduce that most respondents have a good sense of land use activities and planning of Kumbo since they have lived there for so long. 14.8% of the respondents were farmers, 30.2% were business men and women, 16.6% were teachers, and 38.4% were engaged in other professions. By implication, most dwellers in Kumbo are involved in diverse activities and very little in agriculture probably because of the benefits of other non-agrarian land uses.

3.2 Legal and institutional Framework

About 79.4% of the respondents confirmed that planning policies exist in the area to guide the planning and land use activities of Kumbo, as against 18.8% who did not affirm this. On the other hand, 79.4% of the respondents reported that they are aware of these policies. However, awareness does not imply adherence. Over 30.0% of the respondents noted that the authorities of the study sites issue permits, survey/demarcate lands, sensitize the population on land use activities and finally control land and plan the development of the town. Above, 42.2 % of the population suggested that the community does not comply with land use regulations in the study area while 57.8 % affirmed that the community does not comply with land use regulations.

3.3 *Land Use Conflicts Trigger and Manifestation*

About 20.83 % of the respondents identified agriculture as a prevailing land use activity in the area of study, 17.86% identified recreational activities, 5.95 % mentioned industrial, 27.96 % reported other land use activities that exist in the study area and 27.38% of respondents noted that residential land use activities are the most recurrent in Kumbo.

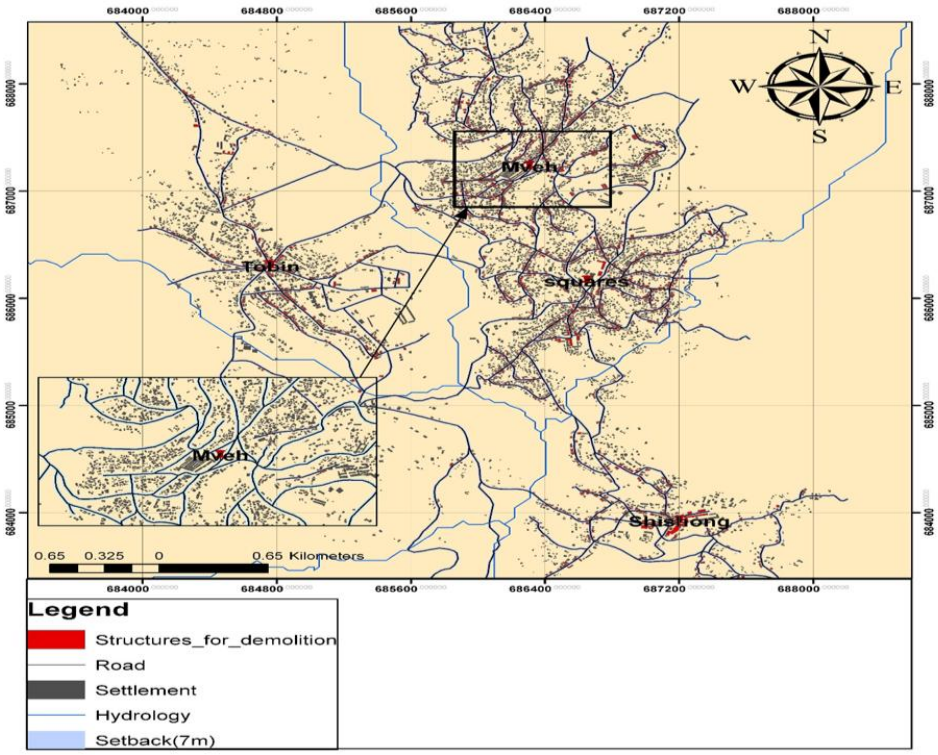

Figure 2: Incompatible Land Use in the Kumbo Urban Space (Source: Generated from Arc GIS, 2018)

Cases of residential land uses or recreational land uses sited close to micro processing enterprises depict land use conflicts. Additionally, land use conflicts are recurrent in the agricultural domain, as farmers and graziers continually compete for space from arable farming and cattle grazing respectively. This perhaps, is one of the very significant conflicts in the Kumbo community. Farmers, in their quest to expand on farming activities tend to encroach into areas which were initially designated as grazing sites. This practice reduces the available grazing space and triggers conflicts, as cattle encroaches into farmlands and destroys crops. Furthermore, the extension of settlement space deprives other actors of grazing and arable lands. (Figure 2).

About 41 % of the respondents reported that residential and commercial land use categories were those that often resulted to conflict in the area. Commercial land uses refer to land which is used mainly for commercial purposes such as markets and shops, including makeshift and periodic markets. This commercial space is increasingly competing for residential space in Kumbo community. Additionally, the co-existence of residential sites with commercial land uses imply rising competition for space. Commercial centres are generally characterized by noise pollution,

making it difficult for residents to enjoy quiet time in their homes. Also residence which do not respect building regulations are earmarked for demolition

3.4 Determinants of Land use conflicts in Kumbo

A logistic regression analysis was employed to analyze the determinants of land use conflicts in Kumbo. The independent variables employed included population increase, poor planning implementation, informal economic activities, existence of planning policies, and community compliance with land use regulations. The coefficient of population increase, is positive and significant p = 0.035. This shows that an increase in population increases the likelihood of a land use conflict in Kumbo. On the effect of poor planning implementation on land use conflicts in Kumbo, the results indicate a coefficient of 1.984 with a corresponding significance value of 0.000 suggesting that, when poor planning and implementation of policies occurs, land use conflicts are unavoidable in Kumbo. Moreover, the analysis of the effects of informal economic activities on the likelihood of land use conflicts in Kumbo reports a coefficient of 0.448 with a p-value of 0.07. This suggests that more informal economic activities tend to increase the likelihood of land use conflicts in Kumbo. The coefficients of the existence of planning policies, and community compliance with land use regulations, were insignificant implying that they do not significantly contribute to land use conflicts in Kumbo. The Cox & Snell R Square and the Nagelkerke R Square values provide an indication of the amount of variation in the dependent variable explained by the model (from a minimum value of 0 to a maximum of approximately 1). This value suggests that between 52.1 and 63.2 per cent of the variability is explained by this set of variables. Our model shows that it was good since 72% of all cases were assigned correctly (Table 4).

Table 4. Logit Results on the *determinants of land use conflicts in Kumbo*

							95.0% C.I. for EXP(B)	
Variable	B	S.E	Wald	df	Sig	Exp(B)		
Q1(1)	0.716	0.339	4.464	1	0.035	2.046	1.053	3.976
Q2(1)	1.984	0.325	37.311	1	0.000	7.274	3.848	13.748
Q3(1)	0.448	0.165	7.366	1	0.007	0.639	0.462	0.883
Q4(1)	-0.108	0.315	0.118	1	0.731	0.897	0.484	1.663
Q5(5)	0.006	0.014	0.193	1	0.66	0.994	0.968	1.021
Constant	-1.953	1.451	1.812	1	0.178	7.053		
	Cox & Snell R= 0.521							
	Nagelkerke R-2= 0.632							
	2log likelihood= 196.07							
	72% of all cases were assigned correctly							

Dependent Variable: Land Use Conflict, all variables are Binary categorical variables. EXP (B) presents the odds ratios for all specifications. Accordingly, if the odd ratios >1, then the odds in favour of a respondent being satisfied, i.e. Y_i = 1 increases, while it decreases if odd ratios <1. Columns (1) (2) & (3).

N= 394

Q1= population increase, Q2= poor planning and implementation of policies Q3 = Informal economic activities Q4= existence of planning policies Q5= community compliance with land use regulations.

From the results above, it is important to note that, land use conflicts in Kumbo do prevail, with long historical causes and manifestations. Though highly motivated by population increase, poor planning also triggers this process. About 32.2 % of the respondents mentioned that the impact of prevailing land use conflicts on planning of Kumbo is its role in triggering further conflicts on land use. The least respondent 7.1% suggested that the effect will be that the area will suffer from poor service delivery (Table 5). Others proposed that there will be high planning/development cost, poor health conditions, development of slums and haphazard housing structures in the area.

Table 5: Effects of prevailing land use conflicts on the planning

Effect	Frequency	Percentage%
High planning/development cost	30	17.6
Future conflicts	56	32.9
Risk of Demolition	17	10.0
Poor service delivery	12	7.1
Poor health conditions	25	14.7
Development of Slums	10	5.9
Haphazard housing structures	20	11.8
Total	170	100.0

Source: Field survey (2018)

4. Discussion

Many schools of thought acknowledge the inability of the governments to enforce land use regulations and that the non-respect of master plans and land use plans have been one of the factors responsible for land use conflicts and planning challenges in Africa (Enoguanbhor et al. 2021). Questions linked to the exploration of land use conflict manifestations and their actual and potential planning implications are yet to be fully explored. This concerns the Kumbo community in Cameroon. In this paper, we sought to (i) analyze the nature and manifestations of land use conflicts, and (ii) examine the planning options to curb future land use conflicts. More than 40 percent of the respondents reported that key land use conflicts arise due to the close proximity of residential and commercial land uses. In Kumbo, it is sometimes difficult to demarcate shopping sites/markets from houses. The proximal location of residential areas near commercial centres imply that pollution (especially commercial waste) and noise pollution is inevitable. Previous studies have reported that growing conflicts are linked more to the siting of residential areas close to industrial centres. Awakul and Ogunlana (2002) cited that the root of conflicts in developing countries can be linked to structural casual factors, which are always invisible. Conflicts are triggered more by population increase, as reported in the findings (Abossolo *et al.* 2015; *Sop et al.* 2015).

The analysis of determinants indicates that population increase, poor planning and implementation and informal economic activities are key forces that contribute to rising land use conflicts. Surprisingly, parameters such as the existence of planning policies, and community compliance with land use regulations, did not indicate any positive effect on land use conflicts. This therefore aligns with the views of Torre et al. (2014) who rather attribute land use conflicts to the dissatisfaction of one part of a population over the land development actions undertaken or planned by others. Equally, Havel (1986) attributes conflicts to conflictual perceptions and

approaches to the use of land. With the growing population of Kumbo, it is expected that the demand for space for several activities will increase. This ushers in competing claims, especially between residential and commercial land users. In a bid to provide a niche for survival, the informal sector witnesses a significant growth in such areas, thus extending commercial space. This is partly blamed on poor planning and implementation. One of the best solutions to avoid such conflicts at an early stage is to keep local populations informed (Ackermann 2003). Findings from the field of study agree with Ackerman. However, very little has been done as far as land use conflicts prevention is concerned. Some measures suggested according to findings include, the council control team, sensitization, zoning and other activities by the LCB. The role of GIS and revision of planning policy too were important tools noted by the respondents as a gate way to preventing future planning of the area.

5. Conclusion

We draw the following conclusions from this study. First, land use conflicts cannot be attributed to just population increase. This is because other indicators such as poor planning implementation and informal economic activities, all have significant values which suggest that they increase the likelihood of land use conflicts. For instance, the multiplication of informal sector activities has led to the expansion of commercial space thus triggering stiff competition with residential space. Therefore, while actors of residential space have traditionally been competing with agricultural space actors, they are also forced to contend with the multiplication of commercial space which ignites conflicts. Studies that uncover the evolution of conflicts linked to residential and commercial space needs to be further conducted, to ascertain the magnitude. In land use systems, land use types and their interrelated determining factors are taken into account (Verburg et al. 2006). Such conflicts, though not violent at the moment, may assume a violent dimension, considering the current dispensation of the Anglophone crisis which breeds much insecurity in the community. Secondly, poor planning and implementation of policies has triggered land use conflicts in Kumbo. As in many parts of Cameroon, town planning laws are hardly adhered to or effectively implemented. The prevailing land use conflicts affect future planning and development of the Kumbo community. In the face of such incompatibility, weaker actors suffer the most. As earlier noted, the localized nature of land use conflicts involves the territorial superimposition of interests which are contradictory, and rivalries between contiguous or neighboring areas. These could fuel materiality-based conflicts. The most important way out is effective implementation of planning laws and planning strategies that may control the issue. Exploring pathways to reconcile the existing land use conflicts represent an interesting aspect for future research. Equally, understanding youth perceptions and response mechanisms to the actual and potentials risks linked to land use conflicts should be prioritized in future research.

Data availability statement: Data for this study will be made available upon request.

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Comment [LD10]: There are several weaknesses in the references. See example bellow

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