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Agroforestry as a Land Conflict Management Strategy in Western Uganda

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Abstract: Land is increasingly becoming a source of conflicts in Sub-Saharan Africa. This study focused on investigating local people's perception on the causes of land conflicts and effectiveness of land conflict management strategies currently being implemented in Kasese district western Uganda. We further explored local people's perception on the potential of Agroforestry in preventing land conflicts. Pre-tested questionnaires were administered to 80 randomly selected respondents. Key informants in local communities and district administration were also interviewed. Descriptive statistics and χ^2-tests were used to compare perceptions of the respondents. Land scarcity was the most mentioned cause of land conflicts followed by population increase, grazing of cattle in crop fields and poor land use, respectively. Perception on causes of land conflicts did not vary with socio-demographic and economic characteristics of the respondents apart from nature of occupation. Protection by police was the most effective measure currently being implemented to mitigate land conflicts. Most respondents had faith in agroforestry preventing land conflicts however, their perceptions varied with sex, origin, marital status, ownership of land and occupation. Land conflict in Kasese district is a result of land scarcity and the current mitigation measures are effective although, not feasible in the long run. Agroforestry has a great potential in reducing land conflicts arising from poor boundary, scarcity of grazing land and land degradation which are among the main causes of land conflict in the area.

Key words: Kasese, scarcity of land, local people's perception, land conflict, grazing, Uganda

INTRODUCTION

Land occupies a central place in the cultural, political, social organization and economics of many nations hence making it a fundamental resource for livelihood (FAO, 2002). Besides the economic benefits; cultural and social values of land are enormous to especially local people and communities where descendants of the original inhabitants have greater historic relationships to their land. It is from these strong cultural and social values that popular expressions like the mother land and the father land are derived. According to the World Bank (2002) resources on land directly contribute to the livelihoods of 90% of the 1.2 billion people living in extreme poverty. Land has such a critical place in human society and because of this, the access to and management of land defines relationships between individuals and communities; individuals and the state and the state and communities as well as between human society and nature.

Land is increasingly becoming a source of conflicts in Sub-Saharan Africa where land access had traditionally been characterized as relatively egalitarian. Apart from social problems; land conflicts can negatively affect the productivity of a population and may be a disincentive to investment (Deininger and Castagnini, 2006). In some situations where no mitigation measures have not been put in place local land conflicts can erupt into large-scale civil strife and political movements (Andre and Platteau, 1998).

According to the FHRI (2008), 70% of the Ugandan population is agrarian and depends on land as their primary means of livelihood, 80% of employment is generated from land use, land constitutes 60% of the total assets owned by a typical household; comprises more than 43% of gross domestic product and 85% of export earnings. This therefore, implies that the value of land in Uganda is extremely high (Refugee Law Project, 2006).

In their studies, Deininger and Castagnini (2006) found that there is need for greater attention to land

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conflicts in Uganda because the current interventions have not been successful considering the country wide increase in land conflicts (Rugadya, 2009). In this study, The researchers examined land conflict management in Kasese district, western Uganda. Researchers specifically investigated local people's perception on the causes of land conflicts and effectiveness of land conflict management strategies currently being implemented in Kasese district.

The researchers further explored local people's perception on the potential of Agroforestry in mitigating land conflicts. Researchers envisage that the findings from this study will be useful in developing land conflict management strategies in other parts of the world.

MATERIALS AND METHODS

Description of study area: Kasese district is located in western Uganda. It lies between latitude 0°12' South 0°26 North and longitudes 29°42' East and 30°18 East along the equator. The district has an approximate total area of 31, 205 km^2 that is covered by wetlands, water and a savannah type of vegetation. Kasese receives an average rainfall ranging between 900-1600 mm annually and experiences two rain seasons that come between March to May and mid August-November. Temperatures normally range between 23.9 and 30.0°C. The district is characterised by grassland type of vegetation dominant in queen Elizabeth national park with *Themeda triandra* as the most wide spread grass species. The wooded savannah characterised by a greater tree canopy cover with predominant species like, *Acacia siberiana*, *Acacia gerradii* and *Ficus* sp. (Okorio and Kasolo, 1996). The swamps occur in small patches along the shoreline of the lakes.

The district has an approximate total population of 595,900 people with a growth rate of 3.6% per annum and population density of 183 people km^{-2} (UBOS, 2002). There are currently two major ethnic groups i.e., Bakonjo and Basongora. The bakonjo are predominantly cultivators while the Basongora are pastoralists. Livestock reared include cattle, goats, sheep and pigs. The main cash crops in the district are cotton, coffee and vanilla. Among the food crops produced in the area are finger millet, cassava, maize, ground nuts, sorghum, potatoes and bananas. The district also practices horticulture farming that includes fruits like passion fruits and vegetables. Fishing is also practiced from Lake George and Edward.

Research design: The study was carried out in Munkunyu Sub County which was purposively selected. According to recent reports, Mukunyu is the most highly affected by land conflicts (Klaus and Raffaella, 2004) and therefore was suitable for the study. Within this sub county, two parishes were systematically selected based on the major economic activities carried out by local communities. A total of 40 respondents from each parish were randomly selected from the parish list of households.

Data collection: Qualitative data on people's perceptions on causes of land conflicts, conflict mitigation interventions in the area and Agroforestry systems was collected through interviews, group discussions and open-ended questionnaires. Key informants from the local communities and district administration officials especially Departments of land, wildlife and Agriculture were interviewed to triangulate the data collected from households. Information about history of land conflicts was extracted from textbooks, journals and magazines. A total of 80 respondents were interviewed.

Data analysis: Data collected was assessed for consistency, coded and entered into Statistical Package for Social Scientists (SPSS Version 10). Chi-square (χ^2) test was run to determine the association between people's perception on causes of land conflicts and their demographic and socio-economic characteristics.

For χ^2-calculated ($p<0.05$)>χ^2-tabulated ($p<0.05$), the hypothesis was rejected. Frequency tables were developed to show the existing land conflict management strategies and their effectiveness. Chi-square test was further used to determine the association between socio-demographic an economic characteristics of the respondents and their perception on the effectiveness of Agroforestry.

RESULTS AND DISCUSSION

Causes of land conflicts: Land scarcity was the most mentioned (81%) cause of land conflicts followed by population increase (65%), grazing of cattle in crop fields (54%) and poor land use (53%), respectively. Other causes included unclear land tenure (49%), tribalism (40%), Nomadism (35%), lack of unity among the major three tribes (23%) and land degradation. Table 1 and 2 show the relationship between demographic and socio- economic characteristics of respondents and their perceptions on causes of land conflicts.

The study showed that 83% (women) and 80% (men) considered land scarcity as the main cause of land conflicts. The χ^2-test indicated that men and women varied significantly in terms of their perception on crop raiding by elephants and lack of unity as causes of

Table 1: Perceptions on causes of land conflicts based on sex and land ownership (N = 80)

	Sex			Land ownership		
Causes	Male (%)	Female (%)	χ^2-calculated	Own land (%)	Don't own land (%)	χ^2-calculated
Crop raiding by elephants	33	28	5.122*	22	25	0.015
Cattle grazing in field crops	59	49	0.836	51	100	3.623
Land scarcity	80	83	0.155	82	75	0.108
Lack of unity	13	32	4.089*	24	-	1.222
Politic differences	41	24	2.521	33	25	0.108
Tribalism	36	44	0.534	40	50	0.175
Unclear tenure	49	49	0.000	47	75	1.161
Population increase	62	68	0.401	66	50	0.416
Poor land use	49	56	0.436	51	75	0.855
Land degradation	28	37	0.640	34	50	2.027
Nomadism	33	37	0.093	34	50	0.416

* = 10% (p = 0.1), ** = 5% (p = 0.05) *** = 1% (p = 0.01) significance level, respectively; χ^2 tabulated (p<0.05) at 1df is 3.841

Table 2: Perceptions on causes of land conflicts based on occupation (N = 80)

	Current occupation					
Cause	Cultivators (%)	χ^2-cal	Pastoralists (%)	χ^2-cal	Civil servant (%)	χ^2-cal
Crop raiding by elephants	30	4.040*	5	5.669*	25	0.008
Cattle grazing in field crops	68	11.934*	29	8.864*	50	7.141*
Land scarcity	72	2.142	91	1.591	88	0.228
Lack of unity	19	1.166	33	1.916	50	3.855*
Political differences	28	1.773	43	1.392	50	1.241
Ethnicity	33	3.671	57	3.487	63	1.875
Unclear tenure	41	3.504	68	3.659	63	0.673
Population increase	67	0.242	62	0.120	63	0.024
Poor land use	58	2.314	38	2.369	75	1.805
Land degradation	37	1.704	24	0.980	38	0.101
Normadism	40	1.443	19	3.646	75	5.776

* = 10% (p = 0.1), ** = 5% (p = 0.05) *** = 1% (p = 0.01) significance level, respectively; χ^2 tabulated (p<0.05) at 1df is 3.841

land conflict. The respondents were further categorized into two groups those who own land and those with out any land. The study showed that both land owners (51% of respondents) and non owners (49% of respondents) think that cattle's grazing in field crops is still the greatest cause of land conflicts. A chi-square (χ^2) analysis showed that owning land did not significantly influence the respondents' perceptions on the causes of land conflicts. The study further showed that majority of pastoralists (30% of respondents) and civil servants (25% of respondents) find cattle grazing in crop fields the least cause of land conflicts compared to crop cultivators (68% of respondents).

The χ^2-test showed that nature of occupation significantly influenced respondents' opinion on crop raiding by elephants and cattle grazing as causes of land conflicts apart from civil servants whose perception on crop raiding was not significantly influenced by their occupation. The other causes mentioned were not significantly influenced by occupation of respondents.

Land conflict mitigation measures currently used in Kasese district: The study revealed that various measures had been used by different governmental and non- governmental institutions to mitigate land conflicts as shown in Table 3.

Table 3: Land conflict mitigation measures

Intervention	Institution	Percentage
Protection by police	Uganda police	26
Deny access to land under dispute	Local government	16
Land redistribution	Local government	24
Sensitization	Traditional cultural groups, church, NGOs like (CARE)	12
Temporary boundary	Local government	22

Police protection was the most mentioned (26%) followed by resettlement (24%) of landless people by government and using temporary boundaries (22%) to control conflicts in the area. Other mitigation measures used were denial of access to land under dispute (16%) and sensitization of people on how to live in harmony by NGOs like CARE Uganda (an International NGO involved in long-term development projects like agriculture, primary health care, population and small enterprise development) and the church (12%).

Effectiveness of land conflict mitigation measures: Majority (70%) of the respondents agreed that the conflict mitigation measures currently being implemented were effective in managing land conflicts while some (30% of respondents) said that there was need for other better conflict mitigation measures.

The land conflict mitigation measures were categorized into four; very effective, effective, poor and none basing on percentage ranks from the findings. Police

Table 4: Chi square tests on local people's perceptions on the contribution of Agroforestry in mitigating land conflicts

Factors	Percentage	χ^2-cal	χ^2-tab
Sex			
Female	31	4.017*	3.841
Male	21		
Age (Years)			
<35	22	6.884	9.488
>35	30		
Background			
Indigenous	22	4.293*	3.841
Immigrant	38		
Marital status			
Married	43	8.054*	7.815
Not married	7		
Widowed	6		
Divorced	4		
Educational background			
Primary	20	2.945	7.815
Secondary	12		
Tertiary	5		
No formal education	23		
Land ownership			
Own land	95	3.904*	3.841
Do not own land	5		
Family size			
1-5	31	0.578	5.991
6-10	21		
>11	8		
Current occupation			
Crop cultivator	42	4.1836*	3.841
Cattle keeping	18	4.343*	
Civil servant	5	4.141*	

Symbols * = 10% (p = 0.1), ** = 5% (p = 0.05) *** = 1% (p = 0.01) significance level, respectively; χ^2 tabulated ($p<0.05$) at 1df is 3.841

protection was ranked the most effective (68% of respondents), land redistribution was second effective (46% of respondents) and use of temporary boundaries was ranked poor (14% of respondents).

Local people's perceptions on the contribution of Agroforestry in mitigating land conflicts: The study revealed that 75% of the respondents were of the view that agroforestry practices should be used to mitigate land conflicts while 25% of respondents did not consider agroforestry as an important land conflict mitigation measure. Table 4 shows the output of χ^2-test to show the association between various socio-demographic and economic attributes of the respondents and their perception on the efficacy of agroforestry in mitigating land conflicts.

Gender: There were 31% females in support of agroforestry compared to 21% men and the chi-square analysis indicated that sex of the respondent significantly influenced their perception on agroforestry as a mitigation measure for land conflicts.

Age: For chi-square analysis two age groups were formed, the young (below 35 years) and old (above 35 years). The results of the chi-square analysis showed that age did not significantly influence the perceptions towards agroforestry as a land conflict management strategy.

Respondents' background: Respondents were categorized into two groups as indigenous and immigrants. The findings indicated that 32% immigrants and 22% indigenous individuals were in support of agroforestry as a land conflict management strategy. Respondents' background significantly influenced perception on agroforestry as a mitigation measure for land conflicts.

Marital status: Marital status significantly influenced respondents' perception on agroforestry as a mitigation measure for land conflicts. Most married respondents (43%) thought that Agroforestry would be effective in mitigating land conflicts.

Level of education: The study indicated that both literate and illiterate respondents were in support of agroforestry. The only difference was in the degree of support i.e., 20, 12, 5 and 23% who attended primary, secondary, tertiary education and none at all, respectively. The chi-square analysis indicated that there was no association between the level of education and perception on contribution of agroforestry to land conflict mitigation.

Land ownership status: The χ^2-test indicated a significant relationship between land ownership and perception on contribution of agroforestry practices to land conflict mitigation. About 95% of respondents who owned land compared to 5% of the respondents who did not were in support of agroforestry, respectively.

Family size and perception on contribution of agroforestry: The findings showed that both small sized families (1-5 and 6-10 persons) and those families with >11 persons shared the same views on agroforestry.

The chi-square (χ^2) analysis indicated no significant relationship between size of household and perceptions on contribution of agroforestry to land conflict mitigation.

Current occupation: The study showed that all the three categories (pastoralists, cultivators and civil servants) shared the same perception but there was a variation in the degree of support. More support for agroforestry practices was observed among crop cultivators (42%) compared to pastoralists (18%) and civil servants (5%). The χ^2-test indicated that occupation of respondent significantly influenced their perception on agroforestry as a mitigation measure for land conflicts.

Causes of land conflicts: The study revealed that land scarcity was the main cause of land conflicts. The local people attributed land scarcity to the fact that most of the land in the district is occupied by government institutions. This corroborates Rugadya (2009) who found that government holds 65% of the land in Kasese district leaving only 35% for settlement. The 65% under government covers national parks, game reserves and government farms. Considering that only 35% is left to the inhabitants land conflict is bound to occur due to scarcity of the major source of livelihood.

Increasing population especially in the plains, grazing of cattle in crop fields, unclear tenure system, political differences and poor land use practices ranked highly as the other causes of land conflicts. Increase in human population can lead to appreciation of land because more people will need it for their livelihood. According to UBOS (2002) over 80% of the people in Kasese directly or indirectly depend on agriculture. This implies that as the population increases the demand for land will be on the rise among the cultivators and pastoralists hence resulting into conflicts where the demand is more than supply.

Kasese district has ethnic groups involved in Nomadism and cultivation and in situations where the land is already scarce herder-cultivator conflicts are bound to be common especially during drought. Due to scarcity of forage pastoralists end up leaving their livestock to feed free range which may result into crop damage.

Unclear tenure system was mentioned as another cause of land conflict probably because most of the land is owned under the customary land tenure system. Much as customary land tenure system is recognised in the laws of Uganda it falls outside the realm of statutory law and therefore prone to being abused by members of the community that wield political, cultural and economic power. The regulations are fluid and not documented in any legal books and this may be a recipe for land conflicts.

Political differences was the other cause of land conflicts. In young democracies like in Uganda differences in political ideology within the community can be misused. It is not uncommon to find the minority especially children and women not getting fair hearing in land conflict arbitration especially at a local level (Rugadya, 2009). Institutional land conflict arbitration mechanisms are bogged down by politics. Members of the community who feel their rights are being violated as far as land ownership is concerned will rise up and fight for them.

Poor land use practices was also another cause of land conflict mentioned. These included overgrazing, poor tillage methods, deforestation and over cultivation. This is in agreement with Rugadya (2009) who found that unsustainable agricultural practices were partly the cause of land conflicts in Uganda. These reduce the productivity of land hence causing scarcity of productive land that may escalate into conflicts.

Perceptions on the causes of land conflicts: The study showed that gender and local people's current occupation influenced their perceptions on certain causes of land conflicts. The civil servants, pastoralists and cultivators attributed land conflicts to grazing of cattle in fields of crops.

Most cultivators considered it to be the major cause of land conflicts compared to civil servants and pastoralists respectively. This is in line with findings by Adesina *et al.* (2000) which stipulate that excessive lack of adequate grazing land usually leads to competition for grazing land with other land users and grazing of cattle in crop fields leading to land conflicts. The study shows that most pastoralists do not appreciate that when their cattle graze in crop fields this may result into land conflicts.

Men and women varied in terms of considering lack of unity as a cause of land conflicts. Women rated lack of unity highly compared to men. This is probably because women in rural areas in Uganda rely so much on social networks and therefore will tend to think that people who are not united are bound to conflict easily especially on a resource like land.

The other mentioned causes of land conflicts did not vary with socio-demographic and economic characteristics of the respondents. This implies that generally the respondents had similar views on causes of land conflicts irrespective of their socio-demographic and economic characteristics.

Effectiveness of land conflict mitigation measures: Generally most of the respondents had faith in the land conflict mitigation measures currently being implemented. Police protection was ranked highly as the most effective compared to denying access to disputed land and use of temporary boundaries respectively. Police protection was ranked highest probably because at the time of data collection the conflict had reached a level where no civil intervention would solve the problem hence people felt safer under police protection. Temporary boundaries were ranked least probably because they were not respected due to scarcity of land.

Local people's perceptions on the contribution of Agroforestry in mitigating land conflicts: About 75% of the respondents supported the use of agroforestry in land conflict management. The study also showed that land related disputes were less common among the crop cultivators with clear boundaries and cattle keepers who had planted fodder to supplement communal grazing. This concurs with the findings of Nyirenda *et al.* (2001) who stipulated that fodder trees and shrubs integrated in small holder farms as fodder banks can successfully reduce human-livestock conflicts. The respondents could have considered agroforestry as a suitable land conflict remedy because apart from providing fodder for livestock, certain tree species can improve soil fertility through fixing nitrogen into the soil. This would improve agricultural productivity of every unit of land hence reducing conflict that would result from scarcity of land. The use of some agroforestry trees and shrubs which are an important source of fodder, shade, fruits and can also be used as boundary plants which are important in land conflict management.

More so, agroforestry improves the quality of life of agricultural producers and the general public, help to diversify revenues and contribute to economic revitalization of these affected communities, while ensuring sustainable management of natural resources.

Local people's perceptions to agroforestry in mitigation of land conflicts: The study showed that gender influenced local people's perception on contribution of agroforestry in mitigating land conflicts. More women were in support of agroforestry than men because women need a solution to this land problem since they are the main producers at household level. The women are also aware of the insecurity relating to land access and post- conflict situations which usually affect women more than men. This is in line with Adesina *et al.* (2000) who stipulated that conflict over land, particularly involving land access and rights, disproportionately and negatively impacts women in post conflict situations and therefore they tend to seek more long term solutions to land conflicts. Apart from minimizing land conflicts agroforestry has associated benefits like providing fuel-wood that is important for women than men. This could have also been a reason for women considering agroforestry more important than men.

Background of respondents, marital status, ownership of land and occupation were found to be significantly influencing respondents' perception on effectiveness of agroforestry as a land conflict mitigation measure. Members of a community considered indigenous tend to have more interest in engaging in tree growing activities than immigrants who still have to establish themselves in the new homes. Married respondents tend to be more sedentary than singles hence will be more willing to engage in agroforestry activities which require a lot of time. Agroforestry requires more land than growing only crops and therefore people who do not own land are bound to have reservations on its applicability.

CONCLUSION

This study revealed that land conflicts were mainly caused by acute land scarcity. Further more, current land conflict mitigation measures were found to be effective although better measures should be put in place because the most effective (police protection) may not be feasible in the long term. The study revealed promotion of agroforestry in the area would help in reducing land conflicts arising from poor boundary, scarcity of grazing land and land degradation which are among the main causes of conflict in the area.

Agroforestry practices that were highly considered by most of the local people were fodder banks and boundary planting, trees in rangelands and home gardens which are very appropriate for managing land conflicts.

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