

Empirical Analysis of Resource-Use Conflicts Between Smallholder Farmers and Pastoralists in Semi-Arid Areas: A Case of Mkata Plains, Eastern Tanzania

L. J. A. Kisoza

Institute of Continuing Education
The Open University of Tanzania
E-mail; james.kisoza@out.ac.tz

Abstract: *An empirical study was carried out in Mkata plains, eastern Tanzania in order to establish factors determining resource-use conflicts between smallholder farmers and pastoralists. PRA approaches and questionnaire survey were employed to collect data from two pastoral and two agro – pastoral villages. The main conflict types and their intensities include inter-ethnic conflicts > village vs village, > village vs state agencies > intra-ethnic group conflicts. The perceived causes of conflicts were crop damages by livestock, pastoralists disregarding village boundaries, overcharging compensation for crop damage by farmers, confiscating of livestock by farmers, ineptness of government officials to intervene to prevent conflicts. Key factors significantly enhancing resource-use conflicts were increasing herd size, market integration, and increase in household wealthy differentiation. A key factor likely to significantly minimize the conflicts was strong local leadership. The mechanism employed to resolve resource use-conflicts was formation of “conflict resolution committee” at village level. But, only agro-pastoral villages have formed full functional committees. It is recommended to build capacity of government officials to analyze and resolve resource-use conflicts; and to enhance capacity of local structures for conflict resolution.*

Key words: Semi-arid areas, Mkata plains, pastoralism, resource-use conflicts, conflict resolution.

INTRODUCTION

Conceptualising Resource-Use Conflicts

There are many perspectives and definitions of the term conflict. Robbins (1994) defines conflict as a process that begins when one party perceives that another party has negatively affected something that the first party cares about. Wallenstein (1988), Mason and Mullaer (2007) define conflict as a social interaction in which a minimum of two parties strive at the same moment to acquire the same resources. In case of natural resource relations and because resources are limited and scarce, and peoples' needs often exceed availability, this leads to blocking behaviour, with both parties trying to get more of the resources than the others (Idrissou *et al.*, 2013). When one party is perceived to block the access to the resources of another, a conflict will probably ensue. For this reason resource-use conflicts over land, water, wildlife and forestry are ubiquitous (Ortiz, 1999; Hares, 2009; Idrissou *et al.*, 2011; Rurai, 2012). Frequently replayed resource-use conflicts in Sub-Saharan Africa, involves farmers and pastoralists competing for patchy multiple-use resources especially in arid and semi-arid areas.

Kumar (1998); Rurai (2012); Idrissou *et al.* (2013) argue that resource-use conflicts occur when different categories of resource users have competing demands for shrinking resources, and may attach different values to the resource base. Thus, resource-use conflicts occur in settings that involve an array of culture, economic, and political arrangements that may influence outcomes of the conflict process. Therefore, resource-use conflicts tend to vary in dimension, level and intensity, and may take place at different levels, from within the household to local, regional and societal scale (Anyling and Kelly, 1997; Oviedo, 1999).

Background to Mkata Plains

Mkata plains in Kilosa district, eastern Tanzania, were at one time a centre of colonial plantation economy. This historical legacy continues to influence land-use patterns and resource relationship in the area. The area is characterised by multi-ethnic population, whereby the majority are descendants of immigrant plantation workers or pastoral tribes from northern Tanzania (Koponen, 1994; Beidelman, 1960). Main land-use practices in the area include: subsistence farming, transhumant pastoralism, commercial farms, commercial ranching and wildlife conservation. Thus extensive forms of land-use are the dominant production systems. However, the overlap of different land-use systems, resource-regimes and competitions; compounded by rapid population increase have increased pressure on land resources and strained relationship between different user groups (Kisoza *et al.*, 2004) (Figure 1).

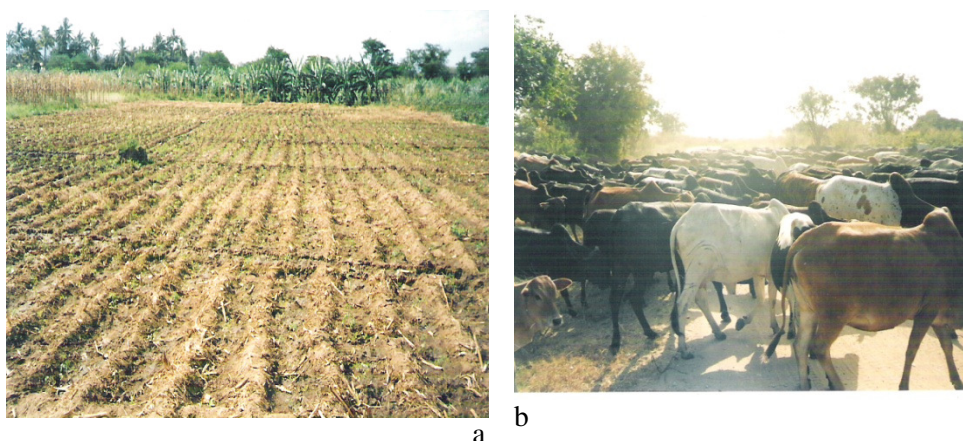


Figure 1 (a): Irrigated dry season crops along Msowero river bank

(b): A pastoral herd at Msowero village

Thus Mkata plains were known as foci of resource-use conflicts since early 1930s (Koponen, 1994, Liliffe, 1969). This is particularly prevalent between pastoralists and farmers (Beidelman, 1960). The mounting conflicts during late 1960s prompted the Kilosa District Local Government to set aside 8 villages for pastoralists in Mkata plains (KDC, 2000). However, this initiative had never resolved farmer-pastoralist conflicts in the area. This paper quantitatively analyses the determinants of resource-use conflicts in Mkata plains.

METHODOLOGY

Description of the Study Area

Mkata plains occupy part of Kilosa and Mvomero districts in Morogoro region, Eastern Tanzania. The plains are bounded between 5° 4' to 7° 15' S and 37° 00' and 37° 55' E, covering approximately 7,000 km² (Figure 2). The area experiences arid and semi-arid climatic regimes with annual rainfall ranging from 600 to 730 mm.

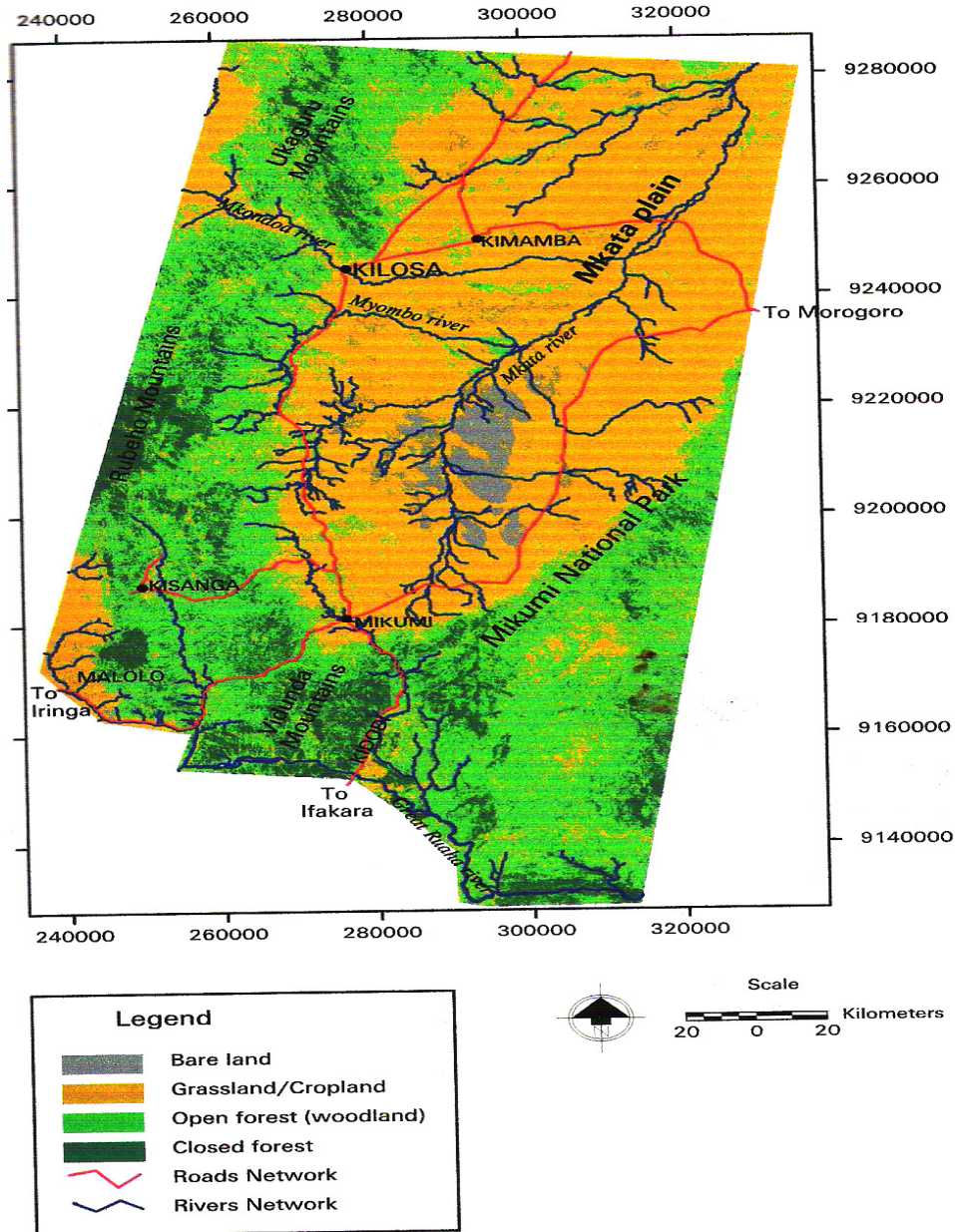


Figure 2: Remote sensing imagery map of Mkata plains

(Adopted from Nduwamungu, 2001)

Two agro-pastoral villages (Mbwade, Msowero) and two pastoral villages (Twatwatwa and Mabwegere) were purposively selected for this study. The justification for selecting these villages was high prevalence of resource-use conflicts in the agro-pastoral villages that are shared by both farmers and pastoralists whereby, the pastoral villages were involved in resource–use conflicts with neighbouring farmers villages.

Data Collection

Data collection methods used included rapid rural appraisal (PRA) approaches, focus group discussion (FGD) and questionnaire survey. Tools used in PRA include problem ranking, wealth ranking, transect walks, and village resource mapping. A pre-tested structured questionnaire was used for household interviews. Informal interviews with key informants were carried out to clarify issues arising from other data collection methods.

Sampling Procedure

The target population was all residents in the four study villages. The unit of analysis was a household. A simple random sampling was employed in selecting units of enquiry. The sampling intensity ranged between 5 to 10 % and aimed at sampling a minimum of 30 households from each study village.

Data Analysis

A logistic model was developed in order to predict the likelihood of resource-use conflicts. The model specifications are as follows:

The dependent variable – *occurrence of resource-use conflicts* – was conceived as a dichotomous dummy variable with the responses: “yes” for high conflict magnitude with value 1, or “no” for none to low conflict magnitudes with value “0”. The conflict magnitude in each study village was rated on - *conflict scale* - with scores: violent clashes (6), animosity (5), disagreements (4), arguments (3), tensions (2) no conflict (1). Score 4 was used as a cut-off point for high magnitude of resource-use conflicts.

The logistic model predicts the likelihood of occurrence of the event (Menard, 1995), which is predicted by odds ($Y = 1$). That is the ratio of the probability that $Y = 1$ to the probability that $Y \neq 1$.

This was given by equation:

$$Odd Y = P(Y = 1)/(1 - P(Y = 1)) \dots \dots \dots (1)$$

The logit (Y) is given by the natural log of Odds ; that is

$$\ln \frac{p(Y_i = 1)}{1 - p(Y_i = 1)} = \log Odds = \text{logit}(Y) \dots \dots \dots (2)$$

Where:

$Y_i = i^{\text{th}}$ observed value of resource-use conflict

The logistic regression model specification was of the form:

$$\frac{\ln p(Y_i = 1)}{1 - p(Y_i = 1)} = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k \dots\dots\dots(3)$$

Where;

Y_i = Dependent variable, (resource-use conflict)

X_i = Explanatory variables (X₁ = Perceived environmental degradation); X₂ = Crop- livestock integration); X₃= State policies, X₄ = socio-economic factors; X₅= market integration (proxied as distance to market in km);

The statistic significance of relationship between independent variable and the predictors was tested by the Model – Chi square at a significance level of p (< 0.05).

RESULTS AND DISCUSSION

Table 1 presents occurrence of resource-use conflicts in the study villages. Resource-use conflicts were prevalent in all the study villages, which were acknowledged by 72.3% of respondents. However, only 56.5% of respondents at Msowero village acknowledged presence of resource-use conflicts. This could be attributable to the fact that the village government had recently formed a conflict resolution committee to mediate farmers and pastoralists resource-use conflicts. Furthermore, in agro-pastoral villages the pastoralists are integrated in the village’s government administration, and they become more accountable to formal structures of governance, which are dominated by farmers.

Table 1: Responses distribution on occurrence of resource-use conflicts by study villages in Mkata plains

Presence of resource – use conflicts	Frequency of respondents				
	Twatwatwa (n= 37)	Mabwegere (n= 30)	Msowero (n= 170)	Mbwade (n = 30)	Total (N = 267)
Yes	37 (100.0)*	30 (100.0)	96(56.5)	30 (100.0)	193 (72.3)
No	0.0	0.0	74(43.5)	0.0	74(27.7)

*Numbers in brackets are percentages

All respondents in pastoral villages - Twatwatwa and Mabwegere - reported existence of resource-use conflicts with farmers. This is mostly probably due to boundary disputes that arose following titling of pastoralists’ villages, which was challenged by farmers.

Table 2 show focused groups’ discussion results on types and magnitude of resource-use conflicts existing in the study villages.

The results indicate four main types of resource-use conflicts occurring in the study area which include: inter-ethnic conflicts, village *versus* village conflicts, village *versus* state agency conflicts and intra-ethnic conflicts. The inter-ethnic resource-use conflicts were ranked highest, followed by village to village conflicts, then village versus state agency and lastly the intra-ethnic conflicts.

Table 2: Types and magnitudes of resource-use conflicts by study villages in Mkata plains

Conflict types	Score and ranking of conflict intensity					Rank
	Twatwatwa	Mabwegere	Msowero	Mbwade	Score	
Inter-ethnic conflicts	√√√	√√√√	NA	√	8	1
Village vs Village conflicts			NA	NA	7	
Village vs state agents conflicts	√√√	√√√√				2
			NA	NA	5	
Intra-ethnic group conflict	√√√	√√				3
		√	NA	NA	1	4

Key: - Scores, √√√√ - very high, √√√- high, √√- moderate, √- low
-NA = Not applicable

High inter-ethnic conflicts were reported from the pastoral villages. This is because residents in pastoral villages are mainly Maasai pastoralists who were collectively blamed for incidences of crop damage by cattle in neighbouring farmers' villages, leading to conflicts between farmers and herders. Mbwiro (2002) and Brehony *et al.* (2001) reported similar farmer-pastoralists conflicts in other areas in the country.

Intra-ethnic group resource-use conflict was reported at Twatwatwa village, where the local elites, who are also large herd owners, were proposing to partition the village communal grazing land. This was being challenged by the young generation who were worried to lose if village grazing land was to be partitioned. The main motive behind a proposal to partition the village common grazing land was to enable some of the wealthier households to attain land as an immovable asset that could be used as collateral for bank loans. Kajembe and Mwinihoke (2001), Ostrom *et al.*, (2002) and Galaty, (1994) reported similar inter-generational resource-use conflicts.

Perceived Causes of Resource-Use Conflicts in the Study Area

The respondents perceived causes of resource-use conflicts involving Maasai pastoralists and farmers are presented in Table 3. The majority of respondents (70.4%) identified crop damage by livestock as main cause of resource-use conflicts. Crop damage occurs when livestock trespass into crop fields in villages occupied by farmers. Another important cause of conflicts mentioned by 67.0% respondents was reluctance of government officials to timely intervene to diffuse tensions between farmers and herders. Ineptness of government officials could be attributed to lack of conflict resolution skills among government officials, but could also be associated with corrupt practices. Allegations of pastoralists corrupting government officials were mentioned by 44.9% of respondents. The study revealed that both farmers and herders hold different views on causes of conflicts and their escalations.

Table 3: Perceived causes of resource-use conflicts in study villages

Cause for resource-use conflict	Number of respondents (n= 267)		
	Number	%	Rank
Crop damage by livestock	18	70.4	1
Government officials reluctance to take action on time to diffuse the tensions	179	67.0	2
Excessively large herds of cattle	160	59.9	3
Pastoralist corrupting government officials	120	44.9	4
Farmers forcibly confiscating cattle	108	40.4	5
Warring behaviour of herding warriors	92	34.5	6
Herders violating boundaries	90	33.7	7
Farmers disregarding village boundaries	49	24.7	9
Hatred between pastoralists and farmers	64	23.9	10
Heavy penalties demanded by farmers for crop damage	51	19.1	11
Government officials favouring farmers	70	26.2	8

- The percentage total up to more than 100 because of multiple responses

The pastoralists claimed that a tendency of farmers to confiscate cattle suspected to cause crop damage flare up resource-use conflicts. A fairly high number (40.4%) of respondents reported confiscation of cattle by farmers as the main source of conflict. Confiscation of cattle was reported to trigger off violent clashes between farmers and herders in December, 2000 (Figure 3).

Furthermore, pastoralists claim that farmers tend to over charge compensation in event of crop damage inflicted by livestock. While 26.2% respondents mentioned that government officials tend to favour farmers in delivering adjudication on farmer-herder conflicts.

Determinants of Resource-Use Conflicts in Mkata Plains

Table 4 shows key factors contributing to resource-use conflict in the study area in Mkata plains. Contribution of different variables to likelihood of resource-use conflict was analysed using a logistic model. The model parameters predicted correctly at 92.2% and significantly at $p < 0.05$. The -2 Log Likelihood = 26.405 indicating a high fit between the model and data. Whereas the Nagelkerke R square = 0.846 suggesting that the variables in the model accounts to about 84.6 % of the observed variation in the variables under study.

The results show that the increasing herd size of individual pastoralists contributed significantly ($P < 0.05$) on the likelihood of conflicts with farmers by a factor of 7.197. A plausible explanation for this is that when a household increases the number of livestock, demand for grazing land also increases. In turn, this necessitates high herd mobility which increases the likelihood to trespass into farmers villages and causing crop damage which leads to conflict with farmers. On the other hand, the increase in the herd size is associated with a decrease in herding efficiency, where herders fail to control the animals sufficiently.



Figure 3: Part of farmers’ village burnt down during farmers-herders’ clashes at Rudewa- Mbuyuni village in Mkata plains

Increase in market integration significantly ($P < 0.05$) increased the likelihood of resource–use conflicts by a factor of 2.607. This can be explained by the observation that in responding to settled life and increasing land value, the pastoralists in Mkata plains had mobilised to obtain formal lease holds to their village land as a measure of attaining tenure security. However, this measure has led into protracted boundary disputes with neighbouring farmers villages, who have customary claims to disputed areas. Furthermore, recent economic liberalisation policies implemented in the area have made possible for rich local Maasai to buy previously state owned sisal estates and ranches.

Table 4: Determinant factors of resources-use conflicts in Mkata plains

Variables in equation	β	S.E.	Wald	df	Sig.	Exp(β)
Herd size	4.276	1.201	12.673	1	.000*	7.197
Market integration	.958	.541	3.133	1	.017*	2.607
State intervention	1.465	1.187	1.522	1	.217	4.326
Wealth differentiation	.812	.532	2.330	1	.127	2.253
Local leadership strength	-1.401	.762	3.379	1	.046*	.246
Education level	-1.215	.619	3.852	1	.050	.297
Migration	-1.734	1.261	1.891	1	.169	.176
Constant	14.469	4.153	12.140	1	.000	.000

Model summary

- Overall percentage = 92.20%
 - Model Chi – Square = 61.098
 - 2 log likelihood = 26.405
 - Nagelkerke R squared = 0.846
- * = Significant at $p < 0.05$ level

This has triggered resentments from farmers who were previous workers of these farms currently squatting there, and facing increasing land shortage and threat of ultimate eviction from those premises. Furthermore, covert resentments were expressed by fellow pastoralists who used to graze on the recently privatized farms.

Again an increasing market for horticultural crops has led to a closure of wetland areas located in farmers' villages, which were previously utilized as open access dry season grazing areas by the pastoralists. This has in turn led to increased competition for shrinking wetland areas and escalation in resource-use conflicts. Furthermore, pastoralists in Mkata plains previously had free access to crop residues in farms after harvest. However, increasing commoditization in the area has led to commercialization of crop residues. Pastoralists are required to pay for grazing rights in order to graze on crop residues. However, there is no elaborated institutional mechanism to control pastoralists' access to crop residues in farms. A number of cheating cases in accessing crop residuals were reported by both farmers and pastoralist

Intervention by state government is positively related to resource-use conflicts, with a positive regression coefficient ($\beta = 1.465$) and a Wald ratio of 1.522. A plausible explanation for this is that government policies aimed at solving certain problems may generate other unintended negative externalities. A case in point in Mkata plains is that formal titling of pastoral villages, which was intended to providing security of tenure to pastoral villages, had engendered protracted boundary disputes with neighbouring farmers' villages and Mkata state ranch. Bush and Opp (2000) argue that most interventions by state governments which lead to change in access to resources may lead to escalations in resource-use conflicts because in most cases the interventions are not community focused.

Increase in household wealth differentiation although is not significant (at $p < 0.05$) has a strong relationship to resource-use conflicts with a positive regression coefficient ($\beta = 0.8129$) and a Wald ratio of 2.33. This implies that increasing

household wealth differentiation was likely to increase resource-use conflicts in Mkata plains. Wealthier pastoralists at Twatwatwa village are also attempting to partition the village communal grazing, in an anticipation of obtaining a large share of land if this proposal gets community blessing. This measure has led to intra-ethnic discontents and was opposed by younger generation who fear to lose out to large herd owners if partitioning was carried out.

Results show that strong local leadership could significantly ($P < 0.05$) minimise resource-use conflicts by a factor of 0.246. Attributes of strong local leadership include making binding decisions at a local level and minimum recourse to higher authorities. It has long been realized that local resource users have the ability to make decisions on how to govern local resources and mitigate resource-use conflicts (McKean and Ostrom, 1995). In this study it was observed that effective conflict resolution committees were formed in agro-pastoral villages - Msowero and Mbwade – this was partly attributed to strong leadership.

Increase in education level was strongly related to reduction in resource-use conflicts with a regression coefficient of $\beta = - 1.215$, and a Wald ratio of 3.852. This could be attributable to a fact that by attending school, pastoral children get an opportunity to share culture with children from farmers' ethnic groups and change the value systems. Thus minimising chances of developing identity conflicts (Aarts, 2011). Maiese (2003) and Idrissou *et al.* (2011) observe that conflicts over identity arises wherever group members feel that their sense of self esteem have been denied legitimacy and respect. The authors further assert that identity conflicts tend to be aggressive and tend to persist. This observation is particularly pertinent to East African pastoral groups including Maasai who have institutionalized violence behaviour and armed warrior age-grades.

Migration had a negative relationship to resource-use conflicts in Mkata plains, with a regression coefficient of $\beta = - 1.734$ and a Wald ration of 1.891. This suggests that increasing migration is likely to reduce resource -use conflicts locally. This is based on the observation than large herd owners engage in long range out migration from the area. This practise tends to ease pressure on shrinking resources, as such minimising intra ethnic conflicts within pastoral communities. According to Herlocker (1999) the pastoralists have for generations practised herd mobility and herd splitting as a measure against environmental risks as well as resource-use conflicts. The regression model results of the study area show high significance level of some factors and high correlation coefficient levels for all factors; this suggests that the empirical data supports hypothesized variables in the model.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Resource-use conflicts in Mkata plains involve farmers and immigrant pastoralists who compete over shrinking land resources. The conflict tends to be polarized to ethnic divide pitting Maasai pastoralist against farmers' ethnic groups. Both farmers and pastoralist hold different views on causes of conflicts including crop damage by livestock, pastoralists disregarding village boundaries, farmers overcharging compensation for crop damage, confiscating of livestock by farmers. Both farmers

and pastoralists expressed the failures of government agencies to timely intervene to prevent escalation of conflicts. The ineptness of government agencies implied corruption and or ignorance of governmental officials in resolving conflicts. The factors that significantly lead to escalation of resource-use conflicts were increase in household herd size and increased market integration. While a strong local leadership could significantly minimize resource-use conflicts.

The causes of resource-use conflicts identified by respondents in this study have differential impacts on outcomes of conflict process. As such any measures taken to resolve these conflicts must also address the underlying causes to these conflicts. Whereby some causes have a causal effect relationship with conflict outcomes, these are referred to as proximate causes or determinant factors, while other factors have indirect effects.

RECOMMENDATIONS

In order to resolve and transform resource-use conflicts in the study area it is recommended to:

- build the capacity of government officials to analyse resource-use conflicts and train on alternative conflict resolution skills
- enhance the capacity of local level structures to resolving resource use conflicts
- institutionalise conflict resolution processes in the District Council and village levels; and promote good governance principles in the study area that emphasizes on transparency, accountability and fairness amongst the government officials responsible with resource–use conflicts.

References

- Aarts, N., M. Lieshout and C. van Woekum (2011). Competing claims in public space: The construction of frames in different relational contexts. In: *Framing matters, perspectives on negotiation research and practice in communication* (eds. Donohue, W.A., R.G. Rogan and S. Kaufman). New York: Peter Lang.
- Anyling, R, and K. Kelly (1997). Dealing with conflict: natural resources and dispute resolution. *Commonwealth Forestry Review* 76(3):182-185.
- Beidelman, T. O. (1960). The Baraguyu. *Tanzania Notes and Records* 35:245 -278.
- Brehony, E., A. Sakafu and B. Ole Nangoro (2000). Study of conflicts between farmers and pastoralists in Kilombero District. Kilombero District Council, Report. 16 pp.
- Bush, K. D. and R. J. Opp (2000). Peace and conflict impact assessment. In *Cultivating peace: Conflict and collaboration in natural resource management* (Edit Buckles, D). World bank pp 185-202.
- FAO (2000). *Conflict in natural resource management*. Viale Terme di Caracalla Rome, Italy. 40 pp.
- Galaty, J.G. (1994). Rangeland tenure and pastoralism in Africa. In: *African pastoralist systems. An integrated approach*(Edited by Fratkin E, K.A. Galvin and E.A. Roth.). Lynne Rienner Publishers, Inc. Boulder and London: pp 185-204

- Hares, M. (2009). Forest conflict in Thailand: Northern minorities in focus. *Environmental management* 43(3): 381-395.
- Herlocker, D. (1999). *Rangeland resources in East Africa: Their ecology and development*. GTZ, Nairobi. 213 pp.
- Hirsch, P. Phanvilay, K. and Tubtim, K. (1999). Community based Natural Resource Management and Conflict over watershed Resources. In: *Cultivating peace conflict and collaboration in natural resources management*. (Edited by D. Buckles). IDRC, Ottawa. pp 45-59.
- Idrissou, A. L., A. van Passen, N. Aarts, N. Vodouhè, and C. Leeuwis (2013). Trust and hidden conflict in participatory natural resources management: The case of the Pendjari national park (PNP) in Benin. *Forest Policy and Economics*. 27: .65-74.
- Idrissou, A.L., A. van Passen, N. Aarts, and C. Leeuwis, (2011). The discursive construction of conflict in participatory forest management: The case of the Agoua forest restoration in Benin. *Conservation Society* 9(2): 119-131
- Iiliffe, J. (1969). *Tanganyika under Germany rule (1905 – 1912)*. Cambridge University Press. Cambridge. pp 53 – 70.
- Kajembe, G.C. and Mwihomeke, S.T. (2001). *The Role of local knowledge and practices in management of natural resources of miombo woodlands*. Consultancy Report. Participatory Management of Natural Resources. MNRT. Dar es Salaam. 74 pp.
- Kisoza, L.J.A., Kajembe G.C. and G.C. Monela. (2004). Natural Resource Use Conflicts in Kilosa District, Morogoro Region, Tanzania. In: *Proceedings of the IFRI East African Regional Conference; Institutions, Incentives and Conflicts in Forest Management: A Perspective*. (Edited by Shemweta, D.T.K., Luoga, E.J., G.C. Kajembe and S.S. Madoffe). 12th –13th January 2004. Moshi, Tanzania. pp 108 – 123.
- Koponen, J. (1994). *Development for exploitation. German colonial policies in mainland Tanzania, 1884 – 1994*. Lit Verlag. Helsinki. pp 34 – 60.
- Kumar, P. (1998). Theories to analyse conflict situations. Institute for development and communication, Cardigarh, Common Wealth secretariat, In *CWS. Conflict resolution strategies and skills*. 78 pp.
- Maiese, M. (2003). Identity conflicts: *In Beyond conflict intractability*. (<http://www/beyond intractability.org/essay/underlying causes>). Visited 30 July, 2005.
- Mason, S. and A. Muller (2007). Transforming Environmental and Natural Resource Use Conflicts'. In: Mario Cogoy and Karl W. Steininger (eds), *The Economics of Global Environmental Change*, Edward Elgar: Cheltenham, UK and Northampton, MA, USA, pp: 225-272”
- Mbwiro, A. J. T. (2002). The role of local institutions in regulating resource use and conflict management. The case of Usangu plains, Mbalali district, Tanzania. Unpublished Msc Thesis Sokoine University of Agriculture 134 pp.
- McKean, M. A. and E. Ostrom (1995). Common property regimes in the forest: Just a relic from the past?. *Unasylva* 46 (180) (January): 3-15 pp.
- Menard, S. (1995). *Applied logistic regression analysis*. Sage University paper series 106. London, New Delhi. 95 pp.

- Ortiz, P. (1999). *Apuntes teorico process; practical el disenono de una propuesta metologica de manejo de conflictos socioambtales a traves de la foresteria experiencias y desffos en America Latina*. Ediciones ABYA-YALA; FAO FTFPP; COMUNIDEC, Quito, Ecuador. pp 1- 9.
- Ostrom, E.T. Dietz, N. Dolsak, P. C. Stern, S, Stonic and E. U. Weber (edts) (2002). *The drama of the commons*. National Academy Press, Washington DC. 521 pp.
- Oviedo, P. (1999). The Galapagos Islands: Conflict Management in Conservation and Sustainable Resource Management. In: *Cultivating Peace: Conflict And Collaboration in Resource Management*. (Edited by Buckles, D.). World Bank, IDRC. Ottawa Canada. pp. 163-182.
- Robbin, P. (1994). *Managing organisational conflict: A non-traditional approach*. Common wealth secretariat. Prince Hall. pp. 93 – 97.
- Rurai, M. (2012). Framing of resource-use conflicts in Loliondo Game Controlled Area: Wildlife Tourism, Conservation and Pastoralism interface. Msc. Thesis Wageningen University. Holland 92 pp.
- Wallenstein, P. (1988). Understanding conflict resolution: a frame work. In *Peace research achievements and challenges*.(Edited by Wallenstein. P.). Westview Press. London. pp 120 – 124.
- Weeks, D. (1992). *The eight essential steps to conflict resolution*. Jeremy P. Tarcher Inc. UK. pp 42-56.