FACTORS INFLUENCING LANDOWNERS' PARTICIPATION IN WILDLIFE CO-MANAGEMENT IN KENYA

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Abstract

Co-management of wildlife and other natural resources has increasingly become important because it seeks to create negotiated agreements between state and local communities (other stakeholder groups may also be included) and therefore offers a possibility to overcome conflicts over resource exploitation. On the international level, co-management has received increasing interest because it supports establishment of local authority and responsibility over natural resources management and thereby contributes towards successful achievement of goals of conservation and socio-economic development. It also fits well into the decentralisation and devolution processes that are now on going in many developing countries as a result of fiscal crises and ensuing reform policies. However, achieving successful co-management is confronted by many challenges, one of the most pressing being ensuring achievement of effective participation of the landowners or resource users in the management process. Effective participation is important because it creates a sense of responsibility, and increases management legitimacy and levels of compliance and hence lowers *ex post* management costs. However, it cannot be assumed that such and other benefits of participation will always be reaped in any co-management process. Thus, taking two wildlife conservancies in Kenya as an example, this paper analyses how participation should be structured in order to contribute to successful co-management arrangements and determines, through an econometric model, landowners' local conditions or factors influencing their participation.

The fieldwork for the results presented in this paper was conducted in the wildlife dispersal areas of Shimba Hills National Reserve and Amboseli National Park in Kenya. Based on a detailed questionnaire, data collection at the landowners' households level was conducted through interviews with two stratified random samples, comprising of members and non-members of the two wildlife conservancies. A total of 136 households were interviewed.

The paper shows the importance of incorporating landowners' participation in the early stages (information gaining and negotiations) of the co-management process in order for it to contribute positively to the overall success of management arrangements. The econometric analysis indicates under which conditions the landowners are likely to participate in each specific situation. It is shown that financial, human and social forms of capital are important in enhancing landowners' participation. Heterogeneity of landowners, which is as a result of different cultural, ethical, social and economic characteristics, is identified as a key factor that determines the level of landowners' participation. It is also shown that dependence on wildlife, in terms of derived benefits, is an important incentive to landowners' participation.

Key words: Wildlife Co-management, Landowners' Participation

1. Introduction

With high population growth, governments' shrinking budgets and subordination of natural resources to shorter term economic or political interests in developing countries, the states' centralized management strategies, which often involve "fortress parks and reserves", have not succeeded in curbing the rapid loss of biodiversity (Lutz & Caldecott, 1996; Baland & Platteau, 1996). As such, there has been over the last two decades a shift from this 'protectionist' concept towards the community-based model, which emphasises the transfer of natural resources rights and responsibilities to local institutions. However, this approach, which is often implemented in form of integrated conservation and development projects (ICDPs), has had some significant limitations and obstacles to implementation. Therefore some of the projects have not been successful (Kiss, 1999:14; Leach et al, 1999:225; Songorwa 1999:2062; Wainwright & Wehrmeyer, 1998:934; Tacconi, 2000:177).

The failure of both the state-based and community-based models of managing wildlife and other natural resources to successfully fulfil goals of conservation and meet the socio-economic needs of the local communities has thus been the impetus for the evolution of Collaborative Management (in short co-management). The co-management approach (also sometimes referred to as participatory management, joint management, shared management, multi-stakeholder management, round table management or management in partnership) seeks to create negotiated agreements between the protected areas managers and other interest groups, including local resources users (Borrini-Feyerabend et al, 2000; Birner & Wittmer, 2000). It is thus being regarded as a combination of the state-based and community-based models, which as well incorporates other interested stakeholders like private operators, non-governmental organisations (NGOs), etc.

Co-management is defined by Borrini-Feyerabend (1996:12) as a partnership by which various stakeholders agree on sharing among themselves the management functions, rights and responsibilities for a given territory, area, or set of natural resources which may or may not have protected area status (see also Birner et al, 1999:3). In the context of devolution, the co-management approach emerges when the state retains a substantial role in resource management, while the role of the local resource users or landowners is expanded. It is therefore different from the community-based approach, which is

characterised by more or less complete control of the natural resources by the local user groups (Meinzen-Dick & Knox, 2001:41).

Within the current discourse on decentralisation and devolution of natural resource management authority to local organisations, the co-management approach has increasingly gained support among the common-pool resource experts. It fits well into the devolution process because it seeks to complement the weaknesses or shortcomings of both the traditional natural resource management systems and the centralised strategies of the state. However, one major precondition to successful co-management is effective participation of the user groups in all the phases of the process (Hilhorst & Coulibaly, 1999:256). Since facilitating effective participation is generally time consuming, the co-management process is normally long and expensive and, therefore, may fail to meet its objectives or become unattractive to conservation and rural development practitioners (Borrini-Feyerabend et al, 2000). Moreover, as many empirical examples from various parts of the developing world indicate, effective participation cannot be presumed, since, in most cases, the local communities lack the necessary capacity and resource base to facilitate their involvement (Baland & Plateau, 1996; Tacconi, 2000; Meinzen-Dick & Knox 2001).

Addressing the problem of the structure and function of user participation, Hanna (1995:65-6) emphasises that involvement of landowners or resource users in the ex ante stage creates a stake in the outcome and reduces uncertainty about the process. Consequently, there is increased legitimacy and, thereby, the ex post costs of monitoring and enforcement could be reduced. With regard to the local conditions of the users, Hanna also asserts that benefits of participation may not be reaped in situations where the number of landowners is diverse and unrepresented. If some subgroups, for example, are not involved in the ex ante stages of the participatory process, they are likely to participate in the ex post stages through either various acts of non-compliance or orchestrated campaigns for their rights.

Against this background, the current paper and analyses how participation in a co-management process, depending on local conditions, should be structured and what kinds of factors would influence landowners' participation. Taking two community wildlife conservancies in Kenya as an example, this paper first looks into the question of whether all the diverse subgroups of landowners in the two areas were incorporated into the participatory process. The paper also studies the reasons that led to emergence of different structures of participation. Through regression analysis, the paper then determines the

various factors that influence landowners' participation in both ex ante and ex post phases.

This paper is organised as follows: Section 2 discusses the conceptual framework. It reviews the concept of participation in co-management of natural resources and rural development initiatives. It also outlines important concepts like collective action and household forms of capital assets, which have been hypothesised in the literature as important determinants of local people's participation. Section 3 outlines the methodology and gives an overview of the two community conservancies. Section 4 provides a descriptive analysis of the characteristics of the landowners and the structure of participation of various landowners' sub-groups in the co-management process. In Section 5, landowners' characteristics influencing their participation in ex ante and ex post phases are analysed through ordinary least squares and two-stage least squares models, respectively. Some concluding remarks are made in Section 6.

2. Conceptual Framework

2.1 The Concept of Participation

Participation in rural development initiatives as well as in conservation and development projects is considered as an ambiguous concept since it has diverse definitions and interpretations. Oakley (1991: 7-8) emphasise that it is important to differentiate participation as a means to facilitate and improve delivery systems of projects from participation as an end in itself. The latter is viewed essentially as a process which unfolds over time and whose purpose is to develop and strengthen the capabilities of rural communities in their direct intervention in development initiatives. The local communities are empowered to mobilise their own capacities, be social actors, rather than passive subjects, manage the resources, make decisions and control the activities that affect their lives (Cernea, 1985: 10). Thus, drawing from Oakley (1991: 2-3) and Borrini (1995: 2), effective participation in natural resources management can be viewed as a condition by which local knowledge, skills and resources are mobilised and fully employed.

2.2 Participation in Co-management of Natural Resources

The concept of participation has been applied in nature conservation in different ways, ranging from passive participation (e.g., compensation schemes), where local

communities are informed what is going to happen or already happened, to active participation, where local communities have extensive input into decision-making and control (IIED, 1994: 18; Barrow & Murphree, 1998: 7). Active participation involves devolution of conservation management tasks to local communities, granting them power-sharing in decision making or self-determination. The overriding benefit of active participation is to ensure an efficient use of natural resources and, therefore, contributes to sustainability of development and environment initiatives. In addition, it leads to local equity, self-reliance and building of community identity in rural development (Tacconi, 2000: 92-93).

Proponents of co-management view different participatory approaches in wildlife and other natural resource management as a continuum ranging from consultation (passive participation) to self-mobilisation and community control (active participation) (Borrini-Feyerabend, 1996). These classifications of participation are, however, not applied with normative connotations here, since the specific context to which each is applied will depend on its advantages and disadvantages, including influence from local political and social pressure and statutory conditions. They cannot therefore be regarded as a 'fixed state of affairs', but rather depend on the local conditions and can change overtime (Borrini-Feyerabend, 1996: 23)

2.2.1 Importance of - and Obstacles to- Participation in Co-management

Unlike the conventional scenario of project planning and implementation, where user groups are considered only at the later stages of the project cycle, co-management is considered as a negotiated resource governance structure that incorporates effective participation of targeted beneficiaries in all its stages (Borrini-Feyerabend et al, 2000:7). Whereas such a participatory process allows co-management stakeholders to express their actual objectives (ends) and to decide how these may be achieved better (means), the process may be confronted with serious obstacles including the requirement of an inordinate amount of time and resources. Further, user participation is dependent on other factors, which several authors have generally identified as conditions for success of decentralization and devolution of natural resource management. These conditions include an enabling administrative and legal framework, interests of authorities and user groups, internal cohesion (collective action) and social capital of the user groups, allocation of property rights, and equitable distribution of benefits (Hilhorst & Aanink, 1999; Meinzen-Dick & Knox, 2001; Birner & Wittmer 2000). The analysis by Ashley et

al. (2000: 1-5) of barriers of participation in East and Western Africa and Southern Asia provides a comprehensive insight into a number of critical factors that influence participation of local resource users in conservation and tourism projects. The authors argue that participation and benefits gained from such projects are largely dependent on land ownership and tenure, education and training (human capital), social capital and organisational strength (collective action), financial capital and access to capital (credit), gender, external support and favourable policies. Case studies of biodiversity conservation drawn from many parts of the world and reported by Tacconi (2000) also link participation to the delivery of positive economic and financial outcomes (benefits), ownership of resources, local people willingness and capacity to contribute household resources, influence of external stakeholders and education. Cohen and Uphoff (1977: 68-78) identify several key sets of characteristics of rural community households that are likely to determine participation in rural development projects. These include 1) age and gender, 2) household status (e.g. size, leadership, etc), 3) education, 4) social divisions (e.g. ethnicity, religion, caste and region of origin), 5) occupation, 6) income level and source, 7) length of residence and distance of resident from project, and 8) land ownership and tenure.

A number of the above factors are discussed in detail in the next section and hypotheses as to how they are linked to participation are formulated, too. However, hypotheses of all the variables used in the regression analysis are discussed together with the results in Section 5.

2.3 Collective Action

Agrawal and Ostrom (2001: 91) argue that collective action, and more specifically the question whether local user groups will generate self-organisation, is the starting point in evaluating the conditions under which devolution and participation have been successfully accomplished. However, as Baland & Platteau (1996: 341-345) and Meinzen-Dick & Knox (2001: 47) assert, collective action is not a universal institution, because in many cases it has been undermined or replaced by state management or eroded by internal divisions and market forces. Moreover, collection action is dependent on a number of variables that may not always be assumed to be there in any local community. The two major variables, which are also highly contested, are of the size of the user groups and their homogeneity.

Concerning the size[1], results from game theoretical analysis of repeated games conclude that cooperative strategies are more likely to emerge and be sustained in smaller than in larger groups (Baland and Platteau, 1996: 90). Baland & Platteau (1996: 363) and Ostrom (1999: 8-9) draw on several empirical cases and show that the size of a user group is negatively related to solving collective action problems. However, they also draw attention to the fact that there are trade-offs among the various impacts of group size on other variables. For example, problems of self-governing in issues like conflict resolution over a subtractable good, participation costs, etc., will be aggravated by a larger group size, while the probability of providing certain goods (e.g. a sanctioning system, labour input in joint activities, etc) will be affected positively.

With the argument that a small group tends to be more effective in self-organisation than a larger one (mainly because the former is more likely to be homogenous), the role of heterogeneity on collective action is often confused with that of group size. Within local communities involved in natural resources management, heterogeneity often arises as a result of differences in culture and social background (ethnic, race, religion, etc.), interests and endowments (Baland & Platteau (1996: 367-379). From the perspective of these three sources of differences among community members, Varughese & Ostrom's (2001: 749-751) analysis of the results of several empirical and theoretical examples sheds some light on the impact of heterogeneity on collective action. Although some of their reported empirical studies show that heterogeneity negatively affects the success of self-governing, there are also cases where it had had positive impact. Furthermore, there is some field evidence that local users may also design institutions in order to cope effectively with heterogeneities.

Thus, it is difficult to generally link heterogeneity to collective action and, hence, to participation. This is particularly so in situations where the sources of heterogeneity are not precisely spelt out (Baland & Platteau (1996: 367). However, since it is each of the three sources of heterogeneity that has an influence on collective action, it can be hypothesised that, depending on the specific field conditions, socio-cultural, interests and endowment (e.g. wealth) differences within community members have an influence on participation. For the cases studied in this paper, it is hypothesised that the diversity of community members or subgroups arising due to heterogeneity does not favour participation.

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[1] The role of size of local groups on collective action and participation is not analysed in this paper. However it has been discussed in this Section because it related to homogeneity.

2.4 Social Capital

Social capital is defined by Portes (1998) (quoted by Grootaert, 2001) as the ability of the actors to secure benefits by virtue of membership in social networks or other social structures. This includes the ability to call on friends or kin for help in times of need, support from trade or professional associations (e.g. wildlife associations or forums) and political claims on politicians to provide assistance. Social capital can be measured at the macro-level, where it includes institutions such as government, the rule of law, civil and political associations, etc., and meso- and micro-levels, where it refers to networks and norms that govern interactions among individuals, households and communities (Grootaert, 2001: 5). In analysing social capital, it is also important to distinguish between horizontal networks, where members relate to each other on an equal basis, and vertical associations, which are characterised by hierarchical relationships and unequal power distribution among members (see Birner & Wittmer, 2000a). These both perspectives of social capital are applied in this study. However, since the focus is on interactions among individuals and households within the community, the study is also limited to social capital at the micro- and meso-levels.

Social capital is linked to collective action in that heterogeneity of resource users is an important dimension of both variables (Grootaert, 2001: 16). Thus, just as collective action, social capital within a local community would enhance the sharing of information among the members, reduces the incidence of opportunistic behaviour and facilitates collective decision-making, and hence positively affects participation. For instance, Ashley et al (2000) showed that where Asian local communities had access to dynamic and flexible forms of social capital, the potential for participation in nature-based tourism activities was greater. In this study, it is hypothesised that a higher level of social capital has a positive influence on participation.

2.5 Human and Financial Capital Assets

In addition to social capital, other important types of household assets within the local communities, which are useful in facilitating participation, include human and financial forms of capital.

In rural communities, education and training are important variables of human capital. In rural development projects (including nature conservation and management initiatives), the two variables may be related to the technical and welfare objectives (Cohen & Uphoff,

1977). Carney (1998), as quoted by Cromwell (2001), asserts that human capital at the household level is determined by the quantity and quality of available labour, and, therefore, depends on household size, education, skills, and health of the household members. In nature conservation and tourism-based activities, acquisition of important skills through education and training would reduce communication problems, facilitate understanding of others or own expectations and, thus, enhances the likelihood of participation (Ashley et al, 2000).

Financial capital, which is critical in facilitating the participation of the poor, consists of stocks of money or other savings in liquid form, but also includes disposable assets such as livestock (Cromwell, 2001). It is hypothesised that higher levels of human and financial capital have a positive influence on participation in the cases considered in this paper.

3 Methodology and data

3.1 An overview of the two community wildlife sanctuaries

The field study was conducted in Kimana Community Wildlife Sanctuary (hereafter referred to as Kimana sanctuary) and Golini-Mwaluganje Community Wildlife Sanctuary (hereafter referred to as GM sanctuary). These two sanctuaries were selected because they are generally regarded by Kenyan conservationists as the most successful cases of community involvement in wildlife conservation and management in the dispersal areas of National Parks and Reserves managed by the Kenya Wildlife Service (KWS). The two community sanctuaries were created through the initiative of KWS and funded under the Conservation of Biodiverse Resource Areas (COBRA) program by USAID. Their establishment was also facilitated by a change in KWS policy towards community involvement, which was effected in 1991. In the established co-management arrangements, KWS remains the custodian of wildlife, trains the landowners and monitors their conservation activities. On the other hand, the landowners have the rights to derive cash and non-cash benefits from the presence of wildlife in their land, either through eco-tourism or conservation-based enterprises.

The Kimana sanctuary is an isolated swampy area (6,000 ha) located in the dispersal areas of the Amboseli National Park, while the GM sanctuary is a 10 km long corridor (3,600 ha) between two state managed protected areas (Shimba Hills National Reserve and

Mwaluganje Forest Reserve). Agro-ecologically, Kimana sanctuary is located in a lower midland livestock-millet zone with 150-200 mm of rainfall per year. It has, therefore, no potential for rainfed arable production. However, GM area has a medium potential for arable production since it is located in the lowland cashewnut-cassava zone with 900-1000 mm of rainfall per year (Jaetzold & Schmidt, 1983). Thus, while landowners in Kimana are mainly semi-nomadic pastoralists (though some in recent years are actively involved in irrigated horticulture), who have co-existed with wildlife for decades, those in GM are mainly subsistence farmers, who in the 1990s were forced by elephants to abandon their farms.

The current tourism attraction capacity in Kimana is supported by the diversity of wildlife (elephants, giraffes, lions, leopards, zebras, wildebeests, etc) and its proximity to Mt. Kilimanjaro. In GM, elephants, though at a high density (7 elephants per km², as per Sanctuary records), are the only group of wildlife that attract tourists in this sanctuary. However, an additional tourist attraction capacity is derived from its closeness to the Kenyan coastal beaches.

3.1.1 Management aspects of the sanctuaries

Legally, the Kimana sanctuary is a group ranch property, while GM Sanctuary is a shareholder company. The sanctuaries have a membership of 843 and 127 landowners, respectively. While land in Kimana is communally owned by group ranch members, that of GM is owned by individuals.

Besides the landowners, the membership of Kimana sanctuary includes the KWS, the Africa Safari Club (ASC) and the Amboseli/Tsavo Group Ranches Association as co-opted members. The membership of GM includes the KWS, the Forest Department, the Local County Council, the Local Town Council, the Travellers Group of Hotels (a private agency) and the Eden Wildlife Trust (an NGO) as permanent ex-officio members.

In Kimana, the sanctuary was managed up to until March 2000 by a local management committee (appointed by the Group ranch committee). It was since then leased to the Africa Safari Club (ASC). The GM sanctuary has all the time been managed by a management board, which consists of five elected shareholders representatives (ancestral landowners), the six permanent ex-officio members mentioned above and two nominated Cliff area owners.

3.2 Data sources

The empirical data of this study was collected from both member and non-member landowners of the community sanctuaries. To structure the collection of data, the process of establishing the sanctuaries was divided into three stages as shown in Table 1.

Table1: Stages of the sanctuaries' co-management process

Phase	Stage	Activity	Time frame	
			Kimana	GM
Ex ante	1	Information acquisition	1995	1992-93
	2	Negotiations and setting up of sanctuaries	1995-96	1994-95
Ex post	3	Implementation of sanctuaries' activities	1996-2000	1995-2000

Source: Mburu and Birner (forthcoming)

For the ex ante phase, data were collected for the total time of participation in all the activities arising in the two stages. The ex post phase, however, is too long a period for the respondents to recall all the information for the entire phase. Thus only data for the activities of the current year was collected for this latter stage. Assuming that the number and type of activities do not change considerably between the years, the time of participation of the current year is regarded as the average (participation) time in the ex post stage.

Data on the time spent for the activities (e.g. meetings) and travelling to activities' venues was collected from the landowners for the two phases through in-depth interviews, based on a detailed semi-structured questionnaire, of a stratified random sample of members and non-members of the two sanctuaries. A total of 136 landowners (70 and 66 from Kimana and GM sanctuary, respectively) were interviewed.

4 Landowners' Characteristics and the Structure of Participation for Different Subgroups of Landowners

4.1 Socio-economic characteristics of the sample landowners

The landowners who are member of Kimana sanctuary belong to one ethnic group (Maasai), which constitutes of 71.5% of the total households in the area. The landowners are organized in a large and stable organization (the Kimana Group Ranch), which has a well-established power structure. The Group ranch operates under the Group Lands Act (1970) but it is also guided by traditional norms of the community. The landowners who

are not members of the Kimana sanctuary (non-members) belong to several other ethnic groups (constituting 28.5% of total households), which have migrated to the area for the purpose of irrigation farming in the swampy areas. Ethnically, these households include Kikuyu (14.3%), Luo (2.9%), Kamba (2.9%), Taita (1.4%), Meru (1.4%), Kalenjin (1.4%), who are from other parts of Kenya, as well as Chagga (2.9%) and Mpare (1.4%), who are from Tanzania.

The member landowners of GM consist of two small groups (Golini and Mwaluganje), which are geographically separated from one another by a river (River Pemba). The two groups were established at the beginning of the co-management process, and each elects its own representatives to the management board. As a resource management group, the GM landowners do not have an established power structure.

Table 2: Characteristics of sample landowners

Variables	GM (n=66)		Kimana (n=70)	
	Mean	Std Dev	Mean	Std Dev
Age household head in years	50	13.4	45	14.6
Household size	6.0	3.1	7.1	4.7
Education household head in years	4.7	4.79	4.39	4.41
Farm total (acres)	11.0	11.0	15.7	34.4
Farm cultivated (acres)	4.0	4.0	3.1	6.1
Farm under sanctuary	3.9	6.2	-	-
Farm grazed (acres)	2.5	4.8	13.0	30.3
Total livestock units	2.3	6.2	20.2	36.7
Total loss (Ksh/year) from wildlife menace	619	964	1165	2427
Number of local groups/household	0.14	0.49	0.66	0.81

Source: author

Members and non-members in this area belong to several ethnic groups (or races) that include Digo (68.2%), Duruma (24.2%), Giriama (3.0%), Arabs (1.5%), Kambas (1.5%) and Europeans (1.5%).

Table 2 provides a summary of some of the important characteristics of the households in the study areas, which are also used in the regression analysis. The households of Kimana are bigger and less educated, but younger than those of GM. As expected, the land

holding size per household in the semi-arid and arid areas of Kimana is higher than that in GM. Similarly, the average cultivated area is lower in this region, leaving larger uncultivated areas, which are not only important for livestock grazing but also provide habitats for the wildlife. In both areas, descriptive analysis indicates that the proportion of uncultivated land is positively correlated to the crop and livestock losses. However, this correlation is significant at 1% level in Kimana, but not in GM area. Abundance of livestock and horticultural crops production in some irrigated pockets also have the effect that Kimana experiences higher losses (in terms of monetary value) from wildlife, because these activities have a higher market value than the rainfed crops of GM. The higher affiliation of local groups in Kimana can be attributed to the efforts of the migrants to build social capital among themselves, but not with the native Maasai. Due to wildlife presence in the uncultivated areas, livestock keeping, which is the major wealth determinant in both study areas, is a more important farming enterprise in Kimana than in GM (compare the averages in Table 2).

4.2 Participation of landowners' subgroups at different stages of the co-management process

In both study areas, participation is structured according to the three stages of the co-management process identified in the methodology section. Stage 1 activities were confined to information exchange workshops, exposure tours and 'after-tour' meetings (meant for exchanging information between tours' participants and non-participants). Activities of stage 2 included negotiations and setting-up of sanctuaries. In stage 3, the activities consisted in management meetings, monitoring, conflict resolution and enforcement of contracts.

In the following, the time spent in all the activities/meetings of each stage is combined and, using independent samples t-tests, levels of participation between different subgroups or categories of landowners are compared. In GM, three categories of landowners, based on membership, location and gender are identified. In Kimana, only the membership and gender criteria can be applied. This analysis enables us to identify whether any of these large subgroups of landowners in the study areas were omitted or less involved than others during the participatory process.

4.2.1 Participation of GM subgroups

The GM independent t-test results in Table 3 indicate that there was no significant difference between the participation of members and non-members in the first two stages (ex ante phase) of the co-management process. As the results of the mean time of participation suggest, the insignificant difference could largely be attributed to the involvement of the non- members from the Mwaluganje side, the region where beneficiaries' (genuine landowners) identification was a rather big problem, since land had not been adjudicated. As expected, participation of members is significantly different from that of the non-members at the third stage (ex post phase) since the former subgroup has gained legitimacy and has benefits as an incentive.

Table 3: Participation of GM's subgroups at the different stages of the co-management process

| Stage | Category | Mean time of participation | | T-test for equality of means | | |
		Non-Mem/ Go[a] Female	Mem/ Mwa Male	t	df	Sig. (2-tailed)
Stage 1	Membership	3.800	10.355	0.967	54	0.338
	Location	0.000	14.857	2.29	27	0.030**
	Gender	5.500	7.66	0.197	54	0.845
Stage 2	Membership	20.340	21.355	0.182	54	0.856
	Location	13.464	28.339	2.879	54	0.006***
	Gender	11.750	22.000	2.046	12	0.064*
Stage 3	Membership	7.7200	22.209	4.636	36	0.000***
	Location	12.357	19.125	1.771	41	0.084*
	Gender	8.417	16.620	3.173	34	0.003***
Overall	Membership	31.860	53.919	3.535	36	0.01***
	Location	25.822	62.321	1.983	54	0.053*
	Gender	25.667	46.280	1.126	54	0.264

[a] Go, Mwa, Mem and Non-Mem represent Golini, Mwaluganje, members and non-members respectively. Mean time of participation for each sub-group of landowners falls under the corresponding row.
*, **, *** represent 10%, 5% , 1% significant levels respectively.
Source: author

Participation of the Golini and Mwaluganje landowner subgroups is significantly different in both ex ante and ex post phases of the process. The reason for this unexpected trend can be attributed to the different cultural backgrounds, household characteristics and economic interests of these two subgroups, who also live in different agro-ecological zones (see Table 4). Thus, the GM landowners group, which consists of these two subgroups, is rather heterogeneous.

Table 4: Comparison of characteristics of Mwaluganje and Golini landowners

Explanatory variable	Independent samples t-test	Non-parametric test
	t-value	*z-value*
Age of household head in year	-1.428	
Education level of household head in years	-0.196	
Total livestock units	1.723*	
Uncultivated farm area in acres	1.078	
Farm area under wildlife conservation in acres	0.126	
Occupation of the household head (most to least paying)		-2.733***
Number of local groups the household is a member	0.816	
Total loss from wildlife-human conflicts	1.150	
Clan of the household (most to least common)		-1.427
Land tenure (most to least secure)		-6.564***
Ethic group (biggest to smallest)		-4.283***

*, **, *** represent 10%, 5% , 1% significant levels respectively.
Coding: Mwaluganje=1; Golini=0

Source: author

Since there was no already established landowners organisation or group in GM, the mean time of participation for men and women in the first stage does not differ considerably and, thus, there is no significant difference in their level of participation. However, at the second and third stages, co-management activities are more or less related to land ownership and, therefore, women were sidelined because very few of them possess own land parcels.

4.2.2 Participation of Kimana subgroups

The Kimana results show that in the first two stages, the participation of members is not significantly different from that of the non-members. This is mainly because, among the members, only the committee members of the group ranch and their nominees were involved in the information gathering and bargaining activities. In other words, since the ordinary group ranch members who participated in the activities of these two stages were few, the level of participation of the members did not differ significantly from that of the few non-members, who could accompany them to the meetings. Similarly, due to reliance on the group ranch committee at these two stages, the participation of men is not significantly different from that of the women. As with small samples the independent t-test may have insufficient power to reject H_o, these results have been confirmed with a non-parametric test (Mann-Whitney U test).

Table 5: Participation of Kimana's subgroups at the different stages of the co-management process

		Mean time of participation		T-test for equality of means		
Stage	Category	Non-Mem[a]	Mem	t	df	Sig. (2-tailed)
		Female	Male			
Stage 1	Membership	1.167	10.743	0.501	39	0.619
	Gender	1.083	10.75	0.507	39	0.615
Stage 2	Membership	4.917	3.900	-0.894	9	0.396
	Gender	3.833	4.086	0.175	39	0.862
Stage 3	Membership	1.643	29.243	4.985	37	0.000***
	Gender	14.083	26.402	0.903	40	0.372
Overall	Membership	6.857	43.890	1.333	40	0.190**
	Gender	19.000	40.833	0.727	40	0.472

[a]Mem and Non-Mem represent members and non-members respectively. Mean time of participation for each sub-group of landowners falls under the corresponding row.
*, **, *** represent 10%, 5% , 1% significant levels respectively.
Source: author

Just like in GM, members mainly participate more than the non-members at the third stage because they are the legitimate beneficiaries of the sanctuary. Due to the robustness of the results for this stage, the results on the overall level of participation indicate that the difference between these two categories of landowners is highly significant. However, since women are also registered as members of the sanctuary (though are rarely involved in decision making), their participation is not significantly different from that of men.

4.2.3 Discussion

The stakeholders involved in the negotiations expressed during interviews that none of the two sanctuaries can be considered as successful in terms of fulfilling the set or agreed upon objectives. The GM sanctuary experiences discontentment of the Golini landowners due to the low level of revenues. The Kimana leadership denies the sanctuary members their right to equal distribution of the benefits. In both cases, these problems can be linked to the way in which the landowners participated in the ex ante phase (see arguments of Hanna 1995 as discussed above). In GM, the Golini landowners, who were not fully incorporated into the co-management process at the ex ante phase (see Table 3), are not assured of the importance of the co-management arrangements, which has resulted in their non-compliance with the implementation of some activities of the initial contract. An example is the delayed fencing of the Golini side of the sanctuary, which has caused considerable production and transaction costs at the ex post phase for both landowners and other stakeholder groups (Mburu & Birner, forthcoming). Structuring participation in this sanctuary was also confronted by another problem: the involvement of two heterogeneous community groups of landowners, who live in separate areas, in the participatory process of a common project. While in such situations the heterogeneity problem could be dealt with by designing appropriate institutions (Varughese & Ostrom (2001), GM's landowners still function as two distinct groups with diverse interests. Moreover, the landowners' heterogeneity in this sanctuary arises at the communities' level, which presumably would be more difficult to deal with than at the households' level.

In Kimana, the involvement of the Group ranch committee and a few other landowners in the ex ante phase could be regarded as a cheaper way—in terms of time and other resources—of ensuring participation. However, participation may not have been effective, since views and interests of majority of the members were not catered for. This may have resulted in an incomplete co-management contract, which gave room to the post- opportunistic behaviour of the Group Ranch committee.

It is, however, difficult in this analysis to link the trend of the participation of non-members and the gender sub-groups to the objectives of the co-management arrangements, because no points of disapproval were raised during the field survey.

5. Factors Determining Landowners Level of Participation

For the ex ante phase (stage1 and 2), the characteristics of the landowners that influence their level of participation are determined through an ordinary least square model.

However, in the second phase, a two-stage least-squares model is used since the BENEFIT variable, which could not be measured in phase 1, exhibits endogeneity. The explanatory variables used in both models are shown in Table 6. The dependent variable for each phase is the total time of participation. In the discussions, hypotheses whether the explanatory variables have a positive or a negative influence on the landowners' level of participation have been explained.

Table 6: Meaning of explanatory variables used in the regression analysis

Explanatory variables	Meaning
A) Demographic characteristics and human capital of the landowners	
AGE	Age of the household head in years
SQAGE	Quadratic specification for age
HEADMALE	Dummy variable =1 if the household is male headed and =0 if female headed
CH_15HHTOT	Ratio of children below 15 years old to the total household size
MWA_GOLI	GM: dummy variable=1 if the household is located in Golini and =0 if Mwaluganje
EDULEVEL	Level of education of the household head in years
B) Financial capital and tenure security of the household	
TENURE	Dummy variable =1 if the household has land with a title deed, otherwise=0
FG_FATOT	Ratio of uncultivated land to the total farm size
OPCOST_HR	The opportunity cost of labour/hour while participating in co-management activities.
C) Social capital of the household	
LOGRONOS	Number of local groups (e.g. women groups) in which the household is an active member
CLAN	Kimana: dummy variable =1 if the household belongs to Ilmolelian clan (biggest clan), otherwise=0; GM: =1 if Mukinamboza and Mukinangandi clans (two biggest clans), otherwise=0
ETHNIC	Kimana: Dummy variable=1 if the household belong to Maasai tribe (biggest tribe) GM: =1 if the household belong to Digo (biggest tribe), otherwise =0
D) Farming system and damages incurred by the household due to wildlife	
DESTCROP	Kimana: Dummy variable=1 if irrigated crops destroyed by wildlife, otherwise=0
TLOSSWHC	Annual total loss in Ksh. incurred by the household as a result of wildlife attacks.
E) Relation between household and state agencies	
RELKWS	Dummy variable=1 if the relationship with the conservation state agency is perceived as good and =0 if bad
F) Drawing of benefits from wildlife conservation and interests	
BENEFIT	Dummy variable = 1 if the household has benefited from wildlife in any way including receiving cash from the sanctuaries, otherwise=0
INTEREST	Dummy variable = 1 if the felt need of the landowner is to earn income from wildlife, otherwise=0

Source: author

5.1 Factors influencing landowners participation in the ex ante phase

The regression analysis at this phase considers only the household variables that are likely to have remained unchanged even after establishing the sanctuaries. Variables like BENEFITS, INTEREST, RELKWS, etc., which are dependent on the kind of incentives created by the establishment of the sanctuaries, were excluded.

Table 7: Determinants of landowners' level of participation in the ex ante phase of GM sanctuary (n=66)

Variable	Coefficient	Standard error	t-ratio
Constant	9.7009	59.1755	0.164
AGE	0.2110	2.0460	0.103
SQAGE	-0.2998E-02	0.2052E-01	-0.146
EDULEVEL	-0.4833	0.8485	-0.570
OPCOST_HR	0.7820E-01	0.1454	0.538
LOGRONOS	8.5934	5.7631	1.491*
HEADMALE	25.1121	12.4888	2.011**
CLANHH	6.0745	7.9597	0.763
ETHNIC	-1.7153	11.0283	-0.156
C15_HHTOT	-34.9873	20.3875	-1.716 **
FG_FATOT	2.0216	13.4288	0.151
MWA_GOLI	17.9567	8.3847	2.142***
Adjusted R^2	14.7%		

*, ** and *** : significant at 15%, 10% and 5% levels respectively
Dependent variable is number of hours in EX ANTE phase of GM.
Source: author

Table 8: Determinants of landowners' level of participation in the ex ante phase of Kimana (n=70)

Variable t-	Coefficient	Standard Error	ratio
Constan t	-1.8269	8.1922	-0.223
AGE	0.1900	0.2788	0.681
SQAGE	-0.1875E-02	0.2652E-02	-0.707
EDULEVEL	-0.1264	0.1430	-0.883
OPCOST_HR	0.5929E-01	0.3163E-01	1.875**
LOGRONOS	-0.5138	0.8057	-0.638
HEADMALE	0.9286	2.0202	0.460
CLANHH	1.5814	1.3358	1.184
ETHNIC	3.6865	2.2375	1.648*
C15_HHTOT	-1.1334	0.6649	-1.705*
FG_FATOT	1.9116	1.7889	1.069
Adjusted R^2	37.2%		

*, ** and *** : significant at 15%, 10% and 5% respectively
Dependent variable is number of hours in EX ANTE phase of Kimana.
Source: author

In the conceptual framework in Section 2.5, human capital has been hypothesised to have a positive influence on the level of participation. Variables representing this factor in the regression models include AGE and EDULEVEL. Though the two are not significant, the former is positive in both sanctuaries, as expected. However, the latter is negative because the main participants during the negotiations were the community opinion leaders, who are, in both sanctuaries, illiterate or semi-illiterate elderly men. This reliance on elderly men at this phase also renders the MALEHEAD variable (dummy for gender) positive in both sanctuaries. In particular, the variable is significant (at 10%) in GM since sorting out land ownership, which was accomplished at the second stage, is regarded as men's responsibility.

CH15_HHTOT is a measure of the dependency ratio or vulnerability to adverse shocks of the household. It has been argued that households with a higher dependency ratio are more risk averse and therefore willing to participate in rural development activities in order to reduce future uncertainties (Sharma and Zeller, 1997). However, such households also have a poor resource base that fails to support their participation, or they may find themselves trapped in other activities in order to provide for the daily needs of the children. Since the variable is negative and significant in both sanctuaries, the latter hypothesis is strongly supported.

In this analysis, LOGRONOS is a measure of social capital at the household level while CLANHH and ETHNIC measures the same variable at the community level. The hypothesis that social capital is positively linked to participation (see Section 2.4) is strongly supported by the positive and significant values (at 15%) of LOGRONOS and ETHNIC in GM and Kimana, respectively. Though not significant, the CLANHH variable is also positive in both sanctuaries. The results of these variables suggest that it was probably easier at this phase to organise, at the community level, the Kimana landowners than the GM's, since the former are more homogenous in terms of socio-cultural aspects. Lack of homogeneity among the GM landowners is increased by their sub-division into the Mwaluganje and Golini groups, which, as discussed in the Section 5, live in different agro-ecological areas and differ in many aspects both at the household and community levels (see Table 4). The variable MWA_GOLI (dummy for these two areas) is positive and significant, confirming the results of the independent t-tests which showed that participation at this phase is strongly linked to landowners living in Mwaluganje area (see Table 3).

As a measure of the financial capital of the household, OPCOST_HR and FG_FATOT are positive, as hypothesised. Further, the former variable is significant in Kimana, where the cost of travelling to meetings is higher due to longer distances that landowners have to cover. In such an area, where the villages are located far from one another, it can be presumed that only those with higher income from their regular sources are able to cover the transport costs. Landowners with a piece meal income can be assumed to be more risk averse and would therefore tend to avoid spending money for the meetings or forgoing the revenues from income generating activities.

5.2 Factors influencing landowners participation in the ex post phase

The econometric model applied at this phase is specified as:

$$y= \alpha_1 + \beta_1 x + \delta_1 z + E_1 \qquad (1)$$

$$z^{\bullet} = \alpha_2 + \beta_2 v + E_2 \qquad (2)$$

$$z = 1 \text{ if } z^{\bullet} => 0 \text{ and } z = 0, \text{ if otherwise.}$$

In this case, y, the total time of the landowners' participation in the ex post phase (third stage) is a function of the exogenous variables represented by x and the endogenous variable z (α is a constant; β and δ are the estimated regression coefficients and E_1 and E_2 are error terms). As mentioned is Section 5.1, the BENEFIT variable is endogenous since it is determined by similar factors as is the landowners' participation. It is also argued in the literature that, in the absence of benefits from wildlife conservation and management, landowners will not be involved at all (see, for example, Ashley 2000). The model is estimated through a two-stage least squares (2SLS) procedure, using as the instrumental variables for z, the probit maximum likelihood estimates from equation (2). Applying such a model overcomes the problem of inconsistent estimates if OLS is used when one of the variables exhibits endogeneity (see Green, 1998).

Discussions of the results of this phase are confined to the variables of the second stage analysis in Tables 11 and 12.

For brevity, probabilities of variables that determine whether landowners derive benefits from co-management arrangements are not discussed. They are, however, shown in Tables 9 and 10.

Table 9: Probability of benefiting from GM's co-management arrangements

Variable	Coefficient	Standard error	t-ratio
Constant	-10.0243	8.5129	-1.178
AGE	0.3789	0.3364	1.127
SQAGE	-0.2512E-02	0.2918E-02	-0.861
EDULEVEL	0.3647	0.1739	2.097***
OPCOST_HR	0.6809E-02	0.2028E-01	0.336
C15_HHTOT	0.9922	2.0482	0.484
HEADMALE	-1.2102	1.3208	-0.916
INTEREST	1.7033	1.3156	1.295
FG_FATOT	-3.9959	1.7746	-2.252***
LOGRONOS	-0.9640	0.9519	-1.013
MWA_GOLI	1.5864	0.8448	1.878**
RELKWS	1.9412	0.9902	1.960***
CLANHH	-2.6734	1.1147	-2.398***
TENURE	-1.9157	1.6259	-1.178

*, ** and *** : significant at 15%, 10% and 5% levels respectively
Dependent variable: BENEFIT

Table 10: Probability of benefiting from Kimana's co-management arrangements

Variable	Coefficient	Standard error	t-ratio.
Constant	-7.7496	3.5417	-2.188***
AGE	0.2766	0.1327	2.084***
SQAGE	-0.2284E-02	0.1267E-02	-1.802**
EDULEVEL	0.1391	0.8305E-01	1.675**
C15_HHTOT	0.5558	0.3387	1.641**
OPCOST_HR	0.9415E-03	0.1644E-01	0.057
HEADMALE	-0.7152	0.8603	-0.831
INTEREST	0.9893E-02	0.5845	0.017
DESTCROP	1.2029	0.5877	2.047***
RELKWS	-1.0195	0.8179	-1.246
CLANHH	-0.1484	0.5519	-0.269

*, ** and *** : significant at 15%, 10% and 5% levels respectively
Dependent variable: BENEFIT

Deriving BENEFIT(s) from co-management arrangements is an incentive to landowners' participation, hence the expected sign is positive. The results show that in GM sanctuary, where cash benefits have been distributed twice to the landowners, this variable is significantly and positively linked to the time invested in participating in the activities of the ex post phase. However, the variable is negative and not significant in Kimana, where since the beginning cash benefits have been withheld by the Group ranch committee and mainly spent on common projects and emergency needs (e.g. hospital bills) of poorer members. These results imply that equitable distribution of benefits arising from co-management arrangements, particularly cash, are an important source of motivation for the landowners to participate.

Table 11: Determinants of the level of participation in the GM's ex post phase

Variable	Coefficient	Standard error	t-ratio
Constant	12.8025	7.2232	10.743
AGE	-0.8159	0.5712	-1.429*
SQAGE	0.7376E-02	0.5376E-02	1.372
EDULEVEL	-0.5687	0.2804	-2.028***
OPCOST_HR	0.2520E-01	0.4601E-01	0.548
TLOSSWHC	0.1554E-02	0.1074E-02	1.446*
LOGRONOS	3.2315	1.8854	1.714**
HEADMALE	6.3467	3.4967	1.815**
TENURE	7.2399	2.8104	2.576***
CLANHH	-0.9389	2.6898	-0.349
INTEREST	-3.1689	2.8717	-1.104
C15_HHTOT	-5.4386	5.2144	-1.043
ETHNIC	3.5844	3.0615	1.171
MWA_GOLI	3.3243	3.1752	1.047
BENEFIT	12.7102	4.7863	2.656***

Dependent variable: total hours of ex post phase in GM
*, ** and *** : significant at 15%, 10% and 5% levels respectively
Log likelihood = -14.08; Chi-square = 34.81; Significance level =0.0009
Source: author

Table 12: Determinants of the level of participation in the Kimana's ex post phase

Variable	Coefficient	Standard error	t-ratio
Constant	-32.9212	33.1073	-0.994
AGE	1.0561	0.9988	1.057
SQAGE	-0.9467E-02	0.8796E-02	-1.076
EDULEVEL	0.8296	0.6633	1.251
OPCOST_HR	0.1777	0.1032	1.722**
TLOSSWHC	-0.3058E-04	0.6562E-03	-0.047
LOGRONOS	0.3233	2.3677	0.137
HEADMALE	-0.7805	5.9618	-0.131
TENURE	7.0807	5.3019	1.335
CLANHH	4.0463	3.5517	1.139
ETHNIC	20.2659	9.9960	2.027***
INTEREST	-1.2467	3.5856	-0.348
C15_HHTOT	-4.3065	2.4661	-1.746**
BENEFIT	-10.8295	13.0785	-0.828

Dependent variable: total hours of ex post phase Kimana
*, ** and *** : significant at 15%, 10% and 5% levels respectively
Log likelihood = -17.81; Chi-square = 17.02; Significance level =0.0737
Source: author

Though not significant, the human capital indicators (AGE and EDULEVEL) are positive in Kimana, as hypothesised. However, in GM, both variables are significant (AGE at 15% and EDULEVEL at 5 %), but have a negative sign. As expected, the AGE factor in Kimana positively influences the level of participation at the ex post phase since the social set-up there,

unlike that of GM landowners, acknowledges the leading role of elderly community members in the governance of community activities, enforcing norms and resolving conflicts. In GM, this factor shows the unexpected influence due to the high level of involvement of younger men in the leadership and resolving of conflicts. Furthermore, since the existence of many different kinds of conflicts (fencing, level of cash benefits, land ownership, family wrangles, etc) in this phase calls for involvement of landowners with different education levels, the EDULEVEL variable does not have the expected positive sign.

The influence of the financial capital variable (OPCOST_HR) on the participation in this phase is similar to that of the ex ante phase. As such, the variable has a positive sign in both sanctuaries and is significant (at 10%) in Kimana. As explained in Section 5.1, it is a more important factor there, because landowners have to cover longer distances to meetings.

The TLOSSWHC factor, (total loss from wildlife in monetary terms) measures whether landowners are motivated by the losses they incur from wildlife conflicts to participate in the ex post co-management activities. It is expected that this factor would have a positive effect on participation, since one of the objectives of co-management is to ensure co-production of farming enterprises and wildlife-related goods in both sanctuaries' areas. Therefore, the expected sign of this variable is positive. In GM sanctuary, the coefficient of this factor has the expected positive sign and is also significant at 15%. However, it is not significant and has a negative sign in Kimana. The latter is not a surprising result since the landowners who participate in most activities are the Maasai pastoralists, who, through their local knowledge, co-exist with wildlife without incurring heavy losses.

Just as in the ex ante phase, the number of local groups in which landowners are active members (LOGRONOS), and clan (CLANHH) and ethnic group (ETHNIC) affiliations are measures of social capital in this analysis, which are expected to have a positive influence on participation. In Kimana, the three variables have the expected positive sign, and, in addition, ETHNIC is significant at 5% probability level. In GM, only the CLANHH has an unexpected negative sign. LOGRONOS is significant at 10% probability level. These results support the same conclusion as in the ex ante phase: achieving collective action is mainly dependent on socio-cultural cohesion in Kimana, while in GM it is enhanced by participation in groups' activities.

In both sanctuaries' areas, it is postulated that landowners with security of TENURE would be motivated to participate more than those without. The factor is indeed positive in both sanctuaries, and highly significant (at 1% probability level) in GM. Tenure security is a strong incentive for participation in this sanctuary since all the landowners had to have their land

adjudicated before becoming members of the sanctuary. Moreover, with failure or success of the co-management arrangements, members could still retain their security of tenure, which they did not have before the creation of the sanctuaries.

INTEREST is a dummy that equals one, if the desire of the landowner (in relation to wildlife) is to earn income from conservation. It is postulated that such an interest would motivate landowners to participate more in the implementation of the management arrangements since wildlife would become an additional source of household income, and hence the variable is expected to have a positive sign. In both sanctuaries, this variable is not significant. With a negative sign, the factor also fails to support the above hypothesis. This is because the landowners' main desire is to have the wildlife fenced off their land in order to carry out farming in the areas adjacent to the sanctuaries. The result supports the argument found in the literature that landowners may only opt for wildlife conservation, if investing in tourism is more profitable than alternative land uses (Mwau, 1995[2]; IIED, 1994).

Though not significant in GM, the results of the variable C15_HHTOT at this phase are similar to those of the ex ante phase. The negative sign confirms the hypothesis that households with higher dependency ratio also lack resources to enable them participate in co-management arrangements.

MALEHEAD and MWA_GOLI are the only dummy variables for landowners' sub-groups in this analysis. The results for the gender variable in GM are positive and significant, just as indicated by the independent t-tests (see Table 3). Though not significant, the positive coefficient of MWA_GOLI variable also confirms that participation during the implementation of the co-management arrangements of the GM sanctuary was linked to the Mwaluganje sub-group of landowners. With women being members of the Group ranch in Kimana, gender is not an important factor in this sanctuary. This argument is supported by the negative HEADMALE variable, whose probability is almost equal to one.

6 Conclusions

The results of the cases studied in this paper point to the importance of structuring co-management process in a way that all categories of landowners participate effectively in the ex ante phase (information gaining and negotiations). Though it may be expensive in terms of time and other resources to fulfil the demands of such a participatory process, uncertainty on the importance of co-management, opportunism and non-compliance behaviour of the landowners

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[2] Mwau (1995) also shows that small-scale mixed farming and irrigation of horticultural corps (practised in areas surrounding GM and Kimana respectively) are more profitable than wildlife conservation.

that arise in the ex post phase would be avoided. Due to heterogeneity as a result of differences in socio-cultural background, economic interests, etc., it may also be difficult for co-management experts to ensure effective participation in cases where more than one community group is involved in the participatory process.

The regression analysis of this paper provides a number of key determinants of the level of landowners' participation in the co-management process. A strong financial capital base of the households is a major incentive for participation, particularly in areas where villages are placed far from one another. Closely related to financial capital, it is the dependency ratio of the households, which, according to the results, negatively influences participation. Since most the households with large numbers of dependants are also poor, their potential for participation is also low. The question of what kind of incentives could enhance the participation of such poor households was, however, not addressed by the analysis.

At any stage of the participatory process, landowners' access to social capital, either at households or community level, enhanced the potential for participation, because it reduced the effects of heterogeneity. Other landowners' characteristics influencing their level of participation in the cases studied are their human capital, level of losses from human-wildlife conflicts, land tenure conditions and sharing of benefits. Whereas drawing of benefits is a strong incentive for participation, in conditions where cash benefits are not fairly distributed, legitimate non-benefiting landowners may appear to participate more as they contest for their rights (equal distribution).

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