

*Full Length Research Paper*

# **Cultural heritage as a pathway for sustaining natural resources in the Maasai's Pastoral Social-Ecological System in Kajiado County, Kenya**

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The Maasai pastoralists inhabiting Kajiado County are known for rearing large herds of animals. Livestock has enabled them to attain food and nutritional security. However, natural resources are dwindling fast under the swift development context. The private holding of land is becoming more prevalent in an area formally known for its communal land setup. The emerging land tenure systems have disregarded the traditional production systems. Consequently, their herds have exhibited poor health status and low productivity. To address these problems, the study focussed on the Maasai pastoralists' perception to evaluate their cultural dispositions. The study employed a cross-sectional design which consisted of semi-structured questionnaires. The qualitative data generated were subjected to thematic analysis and thereafter, translated into meaningful actions and summarised. The quantitative data was aggregated into frequencies and composite scores computed. The results revealed increased production risks, changes in land utility and notable growing numbers of Maasai pastoralists being dispossessed from their customary land by private landholders. Despite the aforementioned hurdles, the Maasai pastoralists had shown cohesiveness in rangeland management. It was also evident that the Maasai pastoralists were embracing different livelihoods, conservation, tourism and institutional support based on their strategic priorities to enhance their resilience. Thus, the study recommends that the Maasai pastoralists be assigned a proactive role as the Government relooks at territorial demarcations in the ongoing land registration process.

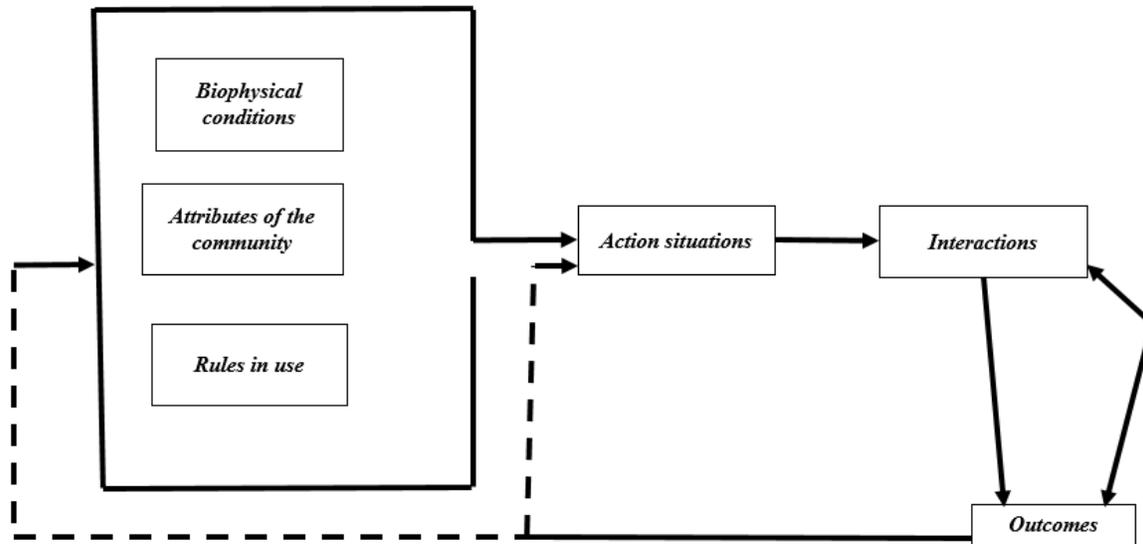
**Key words:** Socio-ecological system, livelihoods, cultural values, pastoralism.

## **INTRODUCTION**

The act of adherence to cultural practices inculcates discipline which is integral for the sustenance of natural resources (O'Brien and Leichenko, 2007). Similarly, Robinson and Berkes (2011) and Gunderson and Holling

(2002) support cultural practices and recognized their integral roles in the pursuit of sustaining the Pastoral Social-Ecological System (SES). Social-Ecological Framework (Figure 1) is based on conservation and

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**Figure 1.** Social-ecological framework.  
Source: Adopted from Ostrom (2009).

cultural aspects of the SES that facilitates collective management of key natural resources. These social-ecological variables consist of local actors and processes that influence natural resources in particular ways (Ostrom, 2009).

In this particular study, the SES framework was to bring out cultural dimensions and provide guidance in the evaluation of natural resources. More importantly, it was to scrutinize why some resource systems are sustainable whereas others collapse (Ostrom, 2007). The study was particularly interested in the sustainability of the pastoral livelihood system among the Maasai pastoralists. Adams et al. (1998) reported that traditional institutions and heritage are critical components for enhancing resilience in the pastoral Social-Ecological System. Similar sentiments were echoed by the IUCN<sup>1</sup> (2010) that advocate for an adaptation model that emphasizes the preservation of natural systems and biodiversity under voluntary stewardship as practiced by the indigenous people.

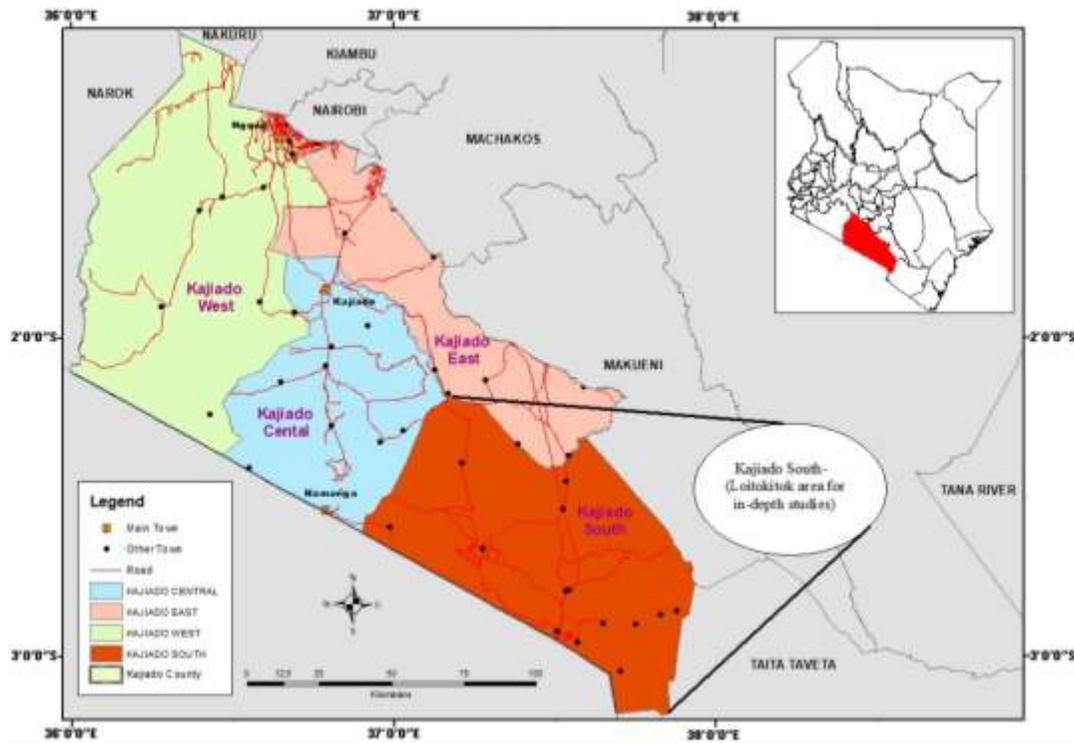
The cultural perspectives are key to adaptation planning. A similar opinion according to Adhikari (2018) reported that designing an implementable adaptation strategy in a community needs to factor in resources that are easily accessible with the intention of complementary actions. In this essence, culture management decisions denote “a community’s long-established rights, under its customary laws, to steward its land, water and natural resources” (Bavikatte and Bennett, 2015). These cultural aspects hold holistic views and concerns of the Maasai pastoralists as envisaged in their efforts to protect natural resources in their environment (Adger, 2003). Cultural

practices are aligned to social relations which links social and ecological resilience. Traditional production systems practiced by the Maasai pastoralists have integrated ecological stewardship approach in the attainment of both societal and ecosystem resilience in a pastoral Social-Ecological System (Obrist et al., 2010).

Pastoralism is the bedrock of the Maasai pastoralists’ livelihood and culture (Homewood and Rodgers, 1991; Mutangah, 2015). This simply means that there is a complex connection between livestock and the Maasai pastoralists’ social-cultural ways which were attributed to their unique cultural heritage (Behnke et al., 1993). Thus, the Maasai pastoralists have balanced ecological, social and economic goals as exhibited in sustained natural resources across their landscape. They have preserved their traditional production systems over the years and through generations (Mudimbe, 1998). According to Nyong et al. (2007), the Maasai pastoralists have high regards for environment despite external pressures. This view is in agreement with that of Saidu and Omedo (2010) and Samuels et al. (2008) who noted that for there to be an enhanced resilience, indigenous knowledge and practices are integral.

The Maasai pastoralists have in recent years experienced low livestock productivity as rotational grazing which allowed them to optimise pasture usage in the rangeland has been rendered untenable. The land sizes are getting fragmented and as a result threatening the sustenance of traditional production systems (Mussa et al., 2017) yet land size has a great influence on the species diversity and composition of natural resources (Bargali et al., 2018; Vibhuti et al., 2019) thus it remains a key factor in production. It is expected that with variation in land sizes and vegetation composition, the soil

<sup>1</sup> International Union for the Conservation of Nature



**Figure 2.** Map of Kajiado County showing Loitokitok and major towns

**Source:** Figure generated by the Author from ILRI (International Livestock Research Institute) shapefiles.

condition will also vary and might require different management practices for the sustainability of the land-use systems (Bargali et al., 2004, 2009, 2018). Under the swift development context, adverse effects on the natural vegetation as well as the biological properties of soil are inevitable (Bargali et al., 1993). To this end, the study hypothesized that the rich Maasai pastoralists' cultural heritage could provide a prudent pathway with greater potential for sustainable pastoralism. The presumption is that the existence of genuine social networks and linkages among them will influence the exploitation of natural resources as well as livestock population (Sparanza et al., 2014; Tanner et al., 2015). Thus, the study investigated the Maasai pastoralists' perceptions to evaluate their cultural dispositions.

## MATERIALS AND METHODS

### Study area

Kajiado County (Figure 2<sup>2</sup>) is located in the southern region of Kenya bordering five counties, namely; Nairobi, Machakos, Makeni,

Taita Taveta and Nakuru. The County also borders Tanzania where it shares a section of Mt. Kilimanjaro in the Loitokitok area. Its proximity to these locations is a recipe for increased demand for land for investment in alternative land uses.

### Data sources

This research was participatory hence eight local guides who are familiar with each of the eight villages in the study area were identified by the assistance of the area chief, with the consent of the County Commissioner's office, to oversee project implementation in each of the eight villages represented in the study. This team of participants, who were volunteers, were trained together with the eight village elders and the area chief. As a prerequisite, all the relevant permits and approvals were processed before the actual implementation of the study. Furthermore, the participants were briefed on the study objectives and the tools to guide them to capture the relevant data. The field surveys (Household surveys, Focus Group Discussions and Key Informant Interviews) were administered to consenting respondents from eight villages in Loitokitok area in Kajiado South which were purposely selected upon signing of the consent form.

### Field surveys to determine possible responses

The semi-structured questionnaires were used in the study to get a better understanding of the Maasai pastoralists' rich cultural heritage. The implementation covered Household questionnaires, Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) (Bargali et al., 2007, 2009; Pandey et al., 2011; Padalia et al.,

<sup>2</sup> The County's area is 21,900 km<sup>2</sup> and lies between latitudes 1mservation of Naturelongitude 36tween latitudes 1mnserrure 2). The County's altitude ranges between 1580 and 2460 metres above sea level (GoK, 2016) and it is predominantly occupied by the Maasai pastoralists (Mworira and Kinyamario, 2008)

2015). In this context, the Household questionnaires were triangulated with Focus Group Discussions and Key Informant Interviews taking into account similar Social-Ecological variables for easier interpretation. This is in line with Krueger (2002), who asserted the importance of having themes in a structured questionnaire that will guide the participants as they narrate their experiences that are pertinent to the key issues of the research. Denscombe (2010) supported the use of methodological triangulation with alternative data collection methods to create a provision for making a comparison with findings from other methods.

### Household surveys

The Household questionnaires consisted of a closed-ended 5-point Likert scale (Murray, 2013). These questions covered the past and recent experiences of the Maasai pastoralists. These questionnaires were administered through a drop-and-pick approach to ensure reliability and maximum response rate on the sampling frame of Kajiado County with a total population of 1,117,840 (KNBS, 2019). Since this research could not access all of them, the study employed the stratified simple random sampling technique based on livelihood system, settlement patterns and field characteristics of the respondents. Therefore, the respondents were carefully and systematically selected from homesteads guided by the area chief and village elders. This method is supported by Mugo (2002) who reported that a sample in a population is used to draw conclusions on the population. To this end, this study adopted the formula suggested for social science research that has a large population (Godden, 2004), Cochran equation:

$$n_0 = Z^2 p \frac{(1-p)}{e^2} \quad (1)$$

Where  $n_0$  = Sample size

$Z$  = zValue (1.96 for 95% confidence level)

$p$  = The estimated proportion of the population (assumed to be 50% or 0.5)

$e$  = Margin of error (assumed to be 0.07)

$$n_0 = \frac{1.96 \times 1.96 \times 0.5(1-0.5)}{0.0049}$$

Therefore

$$n_0 = 196$$

$$\text{Adjusted Sample } (S) = \frac{n_0}{1 + \left(\frac{n_0 - 1}{P}\right)} \quad (2)$$

Where:  $P$  is the population of Kajiado County given as 687,312.

$$\text{Adjusted sample } (S) = \frac{196}{1 + \left(\frac{196 - 1}{687,312}\right)}$$

Therefore adjusted samples for effective results is 195.

The sample size was 196 (Equation 2), which is an acceptable sample size according to Cochran (1971). However, a total of 200 household questionnaires were administered, 195 were filled and returned while 5 were returned blank leaving a total of 195 questionnaires whose feedbacks were found satisfactory. According to Boniface et al. (2014) response rate is expressed as the fraction of the eligible survey participants who are contacted and interviewed which was equated at 97.5%. This is in line with Saunders et al. (2007) who asserted that a response rate of 52 and 100% is adequate.

### Focus group discussions

Sampling for FGDs was based on the village level in Loitokitok. The participants were distributed across all the eight villages in Loitokitok namely; Inkoisuk, Mabatani, Nasipa, Oling'osua, Isitet, Inshura, Kalesirua and Namerok. In this context, the proportional allocation procedure gave each village an equal chance of being sampled as the research team engaged with the discussants. A total of 8 gender-based FGDs were administered with each of the FGDs targeting analogous villages that had similar biophysical features, socio-economic and cultural aspects that influence land use. Thus, the similar attributes, namely: livelihood systems, resource systems and field characteristics created a common base of shared experiences. The investigations were based at the community level which made it easier for the research team to create groups, make comparisons and engage in a mutually beneficial exchange of in-depth information. Each of the gender-based FGD comprised 9 to 11 discussants. This is in line with Dilshad and Latif (2013), who recommended that FGDs discussants should be within the range of 6 to 12.

### Key informant interviews

The sampling frame for KIIs was generated from a consolidated list of 40 institutions undertaking disaster-related programmes and 18 institutions were engaged in the interviews. Ogallo (2014) asserted that the interaction of the researcher with key informants is critical for this kind of study. His sentiments are supported by Carter and Beaulieu (1992) who reported that KIIs as a method of data collection makes it possible for one to acquire first-hand information from experts. In this context, an expert is a resource person with special knowledge in a particular field thus they play a critical role in data collection (Bogner et al., 2009). This systematic manner of gathering in-depth information borrowed heavily from Morgan (2006) assertion that shared experiences from diverse points of view enables integration of a wide world view which makes comparison possible especially when it comes to the key issues.

### Analysis using thematic, fractions and scores

Data entry, cleaning and coding were done through the use of emerging expectations. The responses from the Household questionnaires were then rated based on 5-point Likert scale and triangulated with those of FGDs and KIIs. In this context, similar thematic categorisations were based on Social-Ecological variables. The quantitative data were computed into fractions and composite scores to express the Maasai pastoralists' opinions based on an attitudinal scale (Hsieh and Sharron, 2005; Bonne, 2012). Meanwhile, the qualitative data from FGDs and KIIs were analysed through thematic analysis and appropriate conclusions were drawn to express perceptions on the focal issues of concern.

## RESULTS

The study reported (Table 1) that Kajiado County has been experiencing receding water levels and diminishing natural pastures. Besides the dwindling critical natural resources, the prevalence of invasive species in the county was evident. These invasive species were replacing the palatable natural pastures on an unprecedented spatial scale. The study also noted that transboundary resources remained underutilised due to the new land uses in the Maasai pastoralists' backyard.

**Table 1.** Status of natural resources.

Resources	Respondents (N=195)					Avg. score
	Very high (+2)	High (+1)	Neutral (0)	Low (-1)	Never (-2)	
<b>Receding water resources</b>	51	58	37	35	14	0.32
<b>Dwindling natural pastures</b>	64	59	27	20	25	0.60
<b>Proliferation of invasive species</b>	60	60	18	43	14	0.56
<b>Transboundary resources</b>	33	24	33	43	62	-0.35

Survey scale on perception is affirmed when the average score >0; disapproval when the average score <0.  
Source: Authors' computations.

**Table 2.** Levels of resource utilization.

Utility	Respondents (N=195)					Avg. score
	Very great	Great	Neutral	Lesser	None at all	
<b>Open grazing</b>	29	21	37	57	51	-0.40
<b>Enclosure</b>	10	23	53	50	59	-0.64
<b>Migration</b>	29	21	37	57	51	-0.40

Note: survey scale on perception is affirmed when the average score >0; disapproval when the average score <0  
Source: Authors' computations.

There was notable emergence of enclosures in the area making the seasonal mobility of herds untenable. Moreover, attempts to reach out for amicable consensus on the use of trans-boundary resources were facing hurdles due to land rights issues. The responses from the FGDs and KIIs under similar thematic categorisation confirmed that natural resources were fast dwindling.

In the FGDs, it was reported that invasive species were spreading out at an extensive spatial scale. According to FGDs such proliferation could adversely inflict on the available palatable natural pastures which the Maasai pastoralists depend on for their livestock. It was also reported in the FGDs that the high prevalence of invasive species had directly led to the poor nutritional status of the Maasai pastoralists' livestock as reflected on their poor health status. It was further stated in the FGDs that more timely interventions were necessary given the increased levels of uncertainties following the uninterrupted access to transboundary natural resources.

In the KIIs, the scares created by the invasive species were reported. According to the KIIs, the extensive green patches were identified as *Prosopis juliflora* and *Cinchrus ciliaris*. According to a KII discussant, the intrusion of these invasive species have rendered the formerly lush palatable pastures untenable. It was further reported by a KII discussant that the suppression of natural pastures have directly contributed to malnourishment leading to low livestock productivity (Table 1).

The study reported (Table 2) that most of the land parcels were held under communal trust and were yet to be registered. The study identified open grazing, enclosure and migration as forms in which livestock was

being managed. It was notable that the Maasai pastoralists had made various attempts to exploit land-based resources.

However, their livestock were still suffering from pasture inadequacy as reflected in the diet-related disorders noticed. The responses from FGDs and KIIs noted that land-use changes in Kajiado County were inevitable.

In the FGDs, it was reported that the Maasai pastoralists risk dispossession of their vast open grazing space to housing, agriculture, commerce and education which were competing with livestock rearing. The FGDs reported bias and minimal involvement of the Maasai pastoralists in the land adjudication process. It was further stated in the FGDs there were uproars over their participation in the land-use decisions. According to FGDs, the land registration exercise has been marred by secrecy and external influence could not be overruled taking into account the shrinking habitual pastoral grazing space. As such, it was reported by FGDs that seasonal migration patterns have been rendered untenable by the aforementioned encroachments.

In the KIIs, it was reported that the land registration process was ongoing, although this was marred by fears over the Maasai pastoralists losing their communal land. It was further stated in the KIIs that under the current circumstances of land registration, land grabbing tendencies could increase. A KII discussant further reported that some land management decisions have led to increased territorial disputes. It was further stated in the KIIs that some of the land-use decisions failed to incorporate the land history.

**Table 3.** Strategic priorities.

<b>Strategic priorities</b>	<b>Outcomes</b>	<b>Implementation</b>
<b>Livestock mix</b>	Peace initiatives Livestock off-take	Collaborative governance Policy interventions
<b>Institutional support (government and Non-Government Organisations)</b>	Food aid Remittances Regional index-based livestock insurance	Government's strategic food reserves NGOs' donations and emergency assistance Cash transfers platforms, livestock off-take programmes, cash inflows from relative or friends in the diaspora Payments, compensation/ pay-out
<b>Different livelihoods</b>	Beekeeping Artefacts Structured markets	Sale of honey Sale of beads/decorations Linkages with new markets Appropriate technologies
<b>Tourism and cultural conservation</b>	Employment Partnerships Capacity support	Scouts, guides, wardens and drivers Strengthening existing social networks to access critical resources Direct and indirect monetary incentives

Source: Authors' computations.

The study reported (Table 3) that the Maasai pastoralists were keen on upholding their ways of life.

However, it was notable that they had realized that relying on a single economic activity was unrealistic. Thus, they were keen on embracing certain intervention measures to facilitate their resilience building in the Arid and Semi-Arid Lands (ASALs). The short-term measures identified were remittances, food aid and livestock off-take. While the long-term measures identified were livestock insurance, livestock mix and cultural conservation. Livestock remained important in the attainment of key milestones and rites of passage among the Maasai pastoralists. Moreover, they had embraced wild herbivores in their backyards which were critical in the sustenance of the tourism sector. The tourism sector reciprocated their conservation efforts by sharing the accrued benefits albeit indirectly as revenue from tourism supports education, health and nutritional programmes in the county. The responses from FGDs and KIIs reaffirmed that the Maasai pastoralists had maintained ecological stewardship approach that balance ecological, social and economic goals in their cultural values meant well for the pastoral Social-Ecological System. This finding was contrary to other views which portrayed the Maasai pastoralists' livelihood as backward and environmentally destructive.

In the FGDs, livestock mix and insurance were identified as critical interventions and were ranked the highest. According to FGDs, other forms of productions were gaining acceptance namely: beekeeping for honey production, employment in the hospitality industries and involvement in artefact activities as sources of additional income to the Maasai pastoralists. It was also reported in

the FGDs that the aforementioned interventions have not only created opportunities to optimise the utility of resources but also cushioned them from a situation where one disaster threatens their entire livelihood.

In the KIIs, it was reported that the Maasai pastoralists were facing biophysical constraints. A KII discussant reported that under the dwindling natural resources, an upsurge in land disputes is inevitable and this could be challenging to resolve in the future considering the new land uses. It was further stated in the KII that adaptation plans in the dryland ecosystem should support coexistence. A KII discussant reported that the Maasai pastoralists had embraced partnerships with other stakeholders in their neighbourhood and such agreements were contributing to their improved living standards. According to a KII discussant, the Maasai pastoralists had embraced flexibility in their operation in the rangeland.

## DISCUSSION

The results of the study highlighted pastoral dynamism in the Maasai pastoralists' ecological management approach. There were diverse species of both fauna and flora in Kajiado County under the sustenance of the Maasai pastoralists. The results indicate that both wild and domesticated herbivores were conspicuously seen grazing harmoniously in the area while enjoying natural vegetation across the entire landscape. The unique observation where the wild herbivores exhibited a high degree of spatial overlaps with livestock demystifies the view that pastoralism is environmentally destructive.

Other related studies noted that the Maasai pastoralists had embraced adjustments in their social and cultural ways which have evolved through experiences (Birch and Grahn, 2007; Galvin et al., 2001; Little et al., 2001). As such, notions that belittle cultural conservation should be recanted in future trajectories. The results indicate that cultural practices influence the status of natural resources. A similar opinion was shared by Folke et al. (2010) who reported that cultural practices are for the common good and that they are rationally anchored on conscious choices which translates to sound environmental management.

The study identified pasture and water as critical natural resources for the sustenance of the pastoral livelihood system. However, these natural resources were being disenfranchised by emerging land protection policies. Therefore, the Maasai pastoralists who were directly dependent on these resources were experiencing low water levels and pasture scarcity thereby threatening the existence of traditional production systems.

The spread-out of invasive species and underutilised transboundary resources were notable. The study noted that the Maasai pastoralists were trekking far, wide and long distances in attempts to access pastures which were insufficient as reflected in their herds' poor body conformation inflicted by nutritional challenges. Moreover, privately held land was expanding. Such expansions in the emerging land uses were not in harmony with the Maasai pastoralists' ways of life. Thus, they were creating additional cultural and social constraints. This observation is in line with what Rankoana (2017) who reported that land fragmentation limits the flexibility of rotational grazing. Thus, as the field sizes get smaller, resource use and management become unsustainable for the Maasai pastoralists.

The fast-changing context in which land use transformation was taking place raises concerns over the natural renewal of resources. The results indicated the presence of enclosures with hedges deterring open grazing, a factor that enabled the Maasai pastoralists to sustain large herds. Another related study by Reynolds et al. (2007) reported that livestock rearing practices under traditional production systems are highly dependent on natural vegetation. Thus, restrictions have exacerbated the Maasai pastoralists suffering. A similar opinion was shared by Marius (2012), who reported that barriers to migration render the Maasai pastoralists vulnerable. Similarly, Reid et al. (2008) and Fitzgibbon (2012) argued that actions that constrain mobility also limits access to critical resources. However, seasonal mobility is facing hurdles attributed to the rising levels of food insecurity in the county.

The results indicate that the Maasai pastoralists are over-depend on natural resource-based livelihood and are prone to adverse impacts of change in land use which has necessitated external interventions from the Government and NGOs. The study also indicated that there were attempts by the Maasai pastoralists to

diversify their livelihoods. Moreover, they have embraced cultural conservation and their partnership with tourism had both societal and ecological benefits. A similar opinion was reaffirmed by Burnsilver et al. (2003) who stated that the Maasai pastoralists had benefited from the tourism ventures in their backyard. According to Benjamin (1999) and Toulmin (1999), the Maasai pastoralists' conservation efforts enhance sound environmental management in the area.

## Conclusion

The decline in open grazing space was attributed to new land uses in Kajiado County. The emerging land tenure systems were gaining acceptance yet they were contradictory to cultural values. Besides, the palatable natural pastures were being replaced by the spread-out of invasive species. These aforementioned setbacks together with the disputed transboundary resources threaten the existence of genuine traditional production systems. As such, it was inevitable that the Maasai pastoralists adjust their social-cultural ways in an attempt to concretize their resource utilization schemes. Otherwise, they would be on the verge of losing their primary source of livelihood. In pursuit of survival, the Maasai pastoralists had made deliberate actions to safeguard their livelihoods. These frantic efforts included embracing livestock mix and livelihood diversification. Other than reaching out for amicable consensus in the utilisation of natural resources, they have embraced collaborative management with other stakeholders in their backyard. Besides, being informal arrangements, these initiatives have contributed to resilience of the pastoral Social-Ecological System and more opportunities should be created to strengthen their existence.

## Recommendation

Land use history need to be recognized especially on issues touching on transboundary resources due to their overlapping nature. More so, in the push for private property rights as private landholding increasingly claim communal land. In this regard, the emerging land systems should not render the Maasai pastoralists marginalised but instead create easement to enable them access protected areas harbouring critical resources that have remained under-utilised over the year. Thus, the Maasai pastoralists' proactive involvement in the ongoing land adjudication process need to be given prominence as the government relooks at territorial demarcations in the land registration process.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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