



# What Drives Compliance with Rules in Community-Based Conservation? Lessons from Maasai Mara, Kenya

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## Abstract

Environmental conservation efforts on different scales, from species to ecosystems, are mostly centered on regulating human behaviours (activities) through rules governing resource access and use. However, local resource users do not always respond positively to rules. Non-compliance with conservation rules renders them ineffective, which undermines the achievement of ecological and development goals in environmental management. Therefore the factors that determine compliance with conservation rules require thorough consideration in environmental conservation planning. While a substantial literature explores the factors influencing rule compliance in the context of formal protected areas that rely mostly on enforcement of legislation by regulatory authorities, less is known about such dynamics in Community-Based Conservation (CBC) that rely mostly on conformity with local collective decisions. Taking a qualitative case study approach, this paper examines the determinants of compliance with livestock grazing rules for a particular CBC model, namely the community conservancies of Maasai Mara in southwestern Kenya, which continue to struggle with livestock encroachment. The findings highlight the drivers and barriers to compliance with livestock grazing rules by conservancy members (landowners), offering key lessons into how conducive factors can be leveraged for behavioural changes critical for progress towards sustainability of conservancies. Overall, economic benefits, deterrence (enforcement and sanctions), and normative incentives (social and personal norms) came out as key motivating factors, reinforced by high dependence on natural resources. Recommended policy actions include strengthening and diversifying revenue streams, improving conservancy governance structures, enhancing enforcement capacity, and raising conservation awareness.

## Introduction

The urgency of protecting nature and biodiversity has intensified amid an unprecedented global biodiversity decline (IPBES 2019). At the heart of this decline lies human behaviour which is widely recognised as the primary factor threatening environmental sustainability (Crutzen 2002; IPBES 2019; Maxwell et al. 2016; Veríssimo 2013). Therefore, shaping human behaviour is an important goal of environmental management and conservation. Environmental conservation efforts on different scales from species

to ecosystems are mostly rooted in regulating human activities through the establishment of rules governing resource access and use. Hence, while compliance with rules is certainly not a panacea to resolve all natural resource management challenges, conservation success is highly reliant on people's compliance with rules (Arias 2015; Arlidge et al. 2023; Keane et al. 2008; Ostrom et al. 1999). The enactment of (formal) rules does not, however, guarantee positive responses from local resource users (Arias 2015; Etiegni et al. 2017; Keane et al. 2008; Oyanedel et al. 2020; St John et al. 2010). This is because compliance with rules is influenced by a combination of multiple conditions which underlie decisions of resource users, including economic, social and ecological factors (Arias 2015). Etiegni et al. (2017) for example cited weak enforcement attributed to corruption as the main cause of non-compliance with fishing regulations in Lake Victoria in Kenya, whereas Oyanedel et al. (2020) cited a combination of instrumental and normative motivations for compliance in a small scale fishery in Chile.

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Non-compliance, which is pervasive in environmental and natural resources management, undermines the achievement of ecological and development goals at all levels and scales (Arias 2015; Arlidge et al. 2023; Fairbrass et al. 2016; Gavin et al. 2010; Gore 2011; Matseketsa et al. 2022; Solomon et al. 2015). The magnitude of non-compliance with rules (e.g. the scale of illegal fishing or wildlife poaching) determines whether the impacts are moderate or extreme. Unauthorised activities in ecosystems under conservation (i.e. illegal acts such as logging, poaching, fishing, livestock grazing, artisanal mining, water abstraction, and encroachment) can have far reaching environmental, economic and social impacts including decline in biodiversity and ecosystem services, loss of income and livelihoods suffered by legitimate (legal) resource users, and conflicts over resources (Gavin et al. 2010; Gore 2011). For instance, illegal logging at commercial scales decimates the resources that forest dependent communities rely on leading to loss of traditional livelihoods (e.g. Human-Rights-Watch 2009; Wabiwa 2015), and encroachment in protected areas often lead to violent confrontations between authorities and local people (e.g. Ayivor et al. 2013; Mombeshora and Le Bel 2009; Otieno 2024).

The compliance deficit in environmental management suggests that there is a need for research that informs targeted interventions to mitigate non-compliant behaviours (Bragagnolo et al. 2017; Oyanedel et al. 2020). Addressing non-compliance effectively demands in-depth understanding of the factors that motivate human behaviour. While a substantial literature explores the factors influencing rule compliance in formal protected areas that rely mostly on legislation enforcement by regulatory authorities (e.g. Atuo et al. 2020; Bragagnolo et al. 2017; Collins et al. 2021; Heinrich 2016; Ibbett et al. 2024; Matseketsa et al. 2022; Sjöstedt and Linell 2021; Travers et al. 2019), less is known about such dynamics in Community-Based Conservation (CBC), which rely mostly on conformity with local collective decisions. This paper seeks to bridge that gap by examining the determinants of compliance with rules for livestock grazing in ‘community conservancies’, which are a model of CBC implemented in Kenya’s wildlife rich rangelands. High prevalence of non-compliance with the rules have been documented (Bedelian 2012; Bedelian and Ogutu 2017; Osano et al. 2013b), but there is a lack of corresponding studies that disentangle the underlying motivations. CBC approaches empower local communities to manage common-pool natural resources for sustainable utilisation in order to benefit both people and nature, in contrast with exclusionary centralized (state-led) management approaches that separate people and nature. Therefore, CBC entails the development of existing or new institutions (rules) at local levels to regulate resource access and use.

The term rules (or rules-in-use) is often used in natural resource management literature to refer to the “shared understandings by participants regarding enforced prescriptions of what actions are required, prohibited or permitted,” implying both formal and informal rules (Ostrom 2005, p. 18). This study focuses on formal (written) rules or by-laws that are developed collectively by local resource users and their partners to regulate management of natural resources.

Community conservancies in Kenya’s rangelands are communal or consolidated private lands that are set aside and jointly managed by local communities for biodiversity conservation, transhumance pastoralism, and other compatible land uses for livelihoods enhancement (Bashir and Wanyonyi 2024; KWCA 2016; Liang et al. 2018). Like other CBC models, conservancies are intended to give local communities more control over how natural resources are managed for both conservation and livelihood benefits. Conservancies generally employ economic incentives through ecotourism, payments for ecosystem services, and employment opportunities to motivate local people’s participation, reflecting the increasingly neoliberal nature of CBC (Igoe and Brockington 2007). Neoliberal conservation refers to the application of market-based instruments to enhance stakeholder engagement in conservation efforts (Büscher and Whande 2007; Roth and Dressler 2012). Neoliberal approaches hold the promise of creating synergies between livelihoods and conservation (Roth and Dressler 2012). Conservancies in Maasai Mara often entail partnerships between landowners and tourism entrepreneurs under land-lease arrangements, in which landowners formally agree to limit access to the lands in exchange for economic benefits while the lands are primarily dedicated to conservation and tourism. They have gained traction as a key income strategy for the local communities that face limited land use options and high poverty levels (Bedelian and Ogutu 2017; Homewood et al. 2012a). However, a conundrum of the conservancies in Maasai Mara is balancing local people’s livelihoods with conservation. Although wildlife tourism offers additional income to participating households (Homewood et al. 2012a; Homewood et al. 2012b; Osano et al. 2013a), local people are still highly reliant on natural resources (pastoralism) for their subsistence (Bedelian et al. 2024; Løvschal et al. 2019; Osano et al. 2013b). On average, households in Maasai Mara derive up to 70% of their income from livestock (Thompson et al. 2009), yet conservancies constrain access to rangeland resources that are essential for livestock production (Bedelian 2012; Bedelian and Ogutu 2017; Nyariki et al. 2009).

To harmonize pastoral livelihoods and conservation, conservancies in Maasai Mara have introduced livestock grazing rules which control livestock access on rotational basis depending on variability of livestock forage. The rules

entail group grazing arrangements and set restrictions on who may graze livestock within a conservancy, the types of livestock permitted, the designated grazing zones, and the specific periods or seasons when grazing is allowed. However, given the heavy reliance on livestock and pressure on forage in alternative areas, adhering to these rules often presents significant trade-offs for landowners (Bedelian and Ogutu 2017). As a result, illegal grazing (livestock encroachment) remains a persistent challenge, particularly during dry seasons when forage is scarce (Bedelian and Ogutu 2017; Osano et al. 2013b). Conflicts revolving around grazing areas, water sources for livestock, denial of access routes for livestock, and fines imposed on livestock encroachment are not uncommon (Kieti et al. 2020). Osano et al. (2013b), for instance, established that there were approximately 50 grazing violations per month during the dry season in 2011 in Olare Orok Conservancy in Maasai Mara. Similarly, Bedelian (2014) reported that up to 46% of conservancy members grazed regularly in the conservancies regardless of the restrictions, and that the figures were higher during dry periods. Uncontrolled grazing is often cited as a major threat to the sustainability of conservation areas (Green et al. 2019; Ogutu et al. 2011; Xu and Butt 2024). In the case of conservancies, livestock grazing has ecological implications (livestock compete for resources with wildlife), economic implications (tourists expect to enjoy pristine wilderness devoid of human activities such as livestock grazing), and social implications (source of resource-use conflicts) (Butt 2014). Therefore, understanding the factors influencing compliance with livestock grazing rules is critical for the sustainable management of conservancies.

In this study, empirical research was conducted in three conservancies in Maasai Mara to answer the following questions: i) what conditions and incentives influence the compliance of landowners with conservancy livestock grazing rules? ii) how can the conducive factors and conditions be leveraged towards sustainability of conservancies? The remainder of the paper is organised as follows: Section “Theoretical framework” explains the theoretical framing of the study; Section “Materials and methods” elaborates on the methods that were employed to carry out the research; Section “Results” presents the results; Section “Discussion” discusses the relevance of the results and offers concrete recommendations; and Section “Conclusion” provides concluding remarks.

## Theoretical Framework

This study drew on multiple theories on human behaviour to investigate the drivers of rule-compliance in CBC, because many factors contribute to an individuals’ decision-

making. Specifically, it employed an established social-psychological theory, the Theory of Planned Behaviour (TPB) (Ajzen 1991) as a theoretical framework, supported by theoretical insights from several compliance theories outlined by Kuiper et al. (2023), namely the rational choice theories, social theories, legitimacy theories, capacity theories, and opportunity theories.

According to the TPB, individuals make decisions to engage in a strategic behaviour by evaluating their salient beliefs about the behaviour, i.e. behavioural beliefs, normative beliefs and control beliefs, that respectively correspond to the expected outcomes of the behaviour (attitudes), what significant referents in the domain expect about the behaviour (subjective norms), and the extent to which the individual is capable of performing the behaviour (perceived behavioural control). The attitudes, subjective norms and perceived behavioural control interact to produce an actor’s intention, willingness or motivation to engage in the behaviour (Ajzen 1991).

Rational choice theories posit that individuals behave as rational actors, making decisions based on an evaluation of the costs and benefits of different options to maximize personal gain (Van Den Bergh et al. 2000). According to this view, people are more likely to comply with rules when the perceived benefits of compliance outweigh the associated costs. Another aspect of rational choice is the mechanism of deterrence related with the costs of non-compliance versus the benefits. This is determined by perceived certainty and severity of enforcement and sanctions (Kuperan and Sutinen 1998; Thomson and Freudenberger 1997). People are more likely to comply in situations where enforcement is certain and punishment severe; attempt to circumvent rules, e.g. through corruption, where enforcement is inconsistent and punishment is weak; and may not comply at all where enforcement is absent (Thomson and Freudenberger 1997). Social theories focus on the influence of social context and relationships in shaping individual behaviours. They propose that rule compliance is more likely when they are widely accepted within a community or align with social norms, e.g. individuals are more inclined to follow rules if they observe others doing the same (Kuiper et al. 2023). Legitimacy theories argue that compliance is strongly affected by how people perceive the fairness of rules (procedural legitimacy) and how well those rules align with their personal values, morals and preferences (substantive legitimacy) (Kuiper et al. 2023). Literature on collaborative management of natural resources indicate that greater involvement of local resource users in rule-making leads to increased compliance because those rules are accorded greater legitimacy (Bisack and Das 2015; Tang’are and Mwanyoka 2023; Tegegne et al. 2022). Capacity theories suggest that compliance is highly influenced by the ability of an individual to comply with a rule,

i.e. how practically difficult or easy it is to carry out the requirements relating to the rule which may depend on access to resources and knowledge (Kuiper et al. 2023). Closely related are opportunity theories, which emphasize that the situational context (opportunity) can shape compliance behaviour, e.g. when targets or objects related to a rule are unsecured or readily accessible, it can provide an incentive for individuals to exploit those opportunities (Kuiper et al. 2023). For instance, when it is difficult to exclude people from accessing a resource, which is a typical trait of common-pool resources, it creates an incentive for people to take advantage of the situation by accessing the resource regardless of the rules (free-riding) (Ostrom 2005; Ostrom et al. 1999). Concepts from these theories helped to explain causal relationships between the variables identified by the TPB.

Analysis of behavioural determinants of compliance with livestock grazing rules in conservancies using the theoretical framework entails identifying the beliefs underlying: i) attitudes- the expected economic, social and environmental values, benefits, costs and effects of complying to the individual and the community, whether positive or negative; ii) subjective norms- the expectations of valued individuals and groups/ organisations regarding compliance, whether in approval or disapproval, and the influence of social norms and values which encourage or discourage compliance; and iii) perceived behavioural control- existence of factors that enable or impede ability to comply, whether personal or contextual such as time, knowledge, skills, resources, and opportunity (Fig. 1).

## Materials and Methods

### Data Collection and Analysis

This study followed a qualitative approach for both data collection and analysis. The TPB is often applied in a two-step process: an initial qualitative step that involves eliciting underlying beliefs through interviews to uncover the drivers of a particular behaviour (as was the case in this study); followed by a quantitative step whereby the strength of these beliefs is assessed via large-scale surveys using structured questionnaires to predict likelihood of the behaviour (Wehn and Almomani 2019). In this research, the qualitative elicitation phase allowed for a rich understanding of the reasons behind compliance or non-compliance with grazing rules, as expressed by the interviewees in their own words. This is crucial where the objective is to identify strategic interventions for behaviour change (Kaeser et al. 2018). The quantitative step was not implemented because the aim was to explain the reasons

why the behaviour occurs rather than to predict its occurrence.

Data was collected in 2020 and 2021 in three conservancies in Maasai Mara using in-depth interviews. The in-depth interviews were conducted using open ended questions (Supplementary Material 1) which facilitated detailed conversations and allowed further probing of the interviewees, yielding rich data on participants' perceptions and experiences. Interviewees were identified using purposive sampling and random route sampling techniques. Purposive sampling involves deliberately selecting a sample rich in the information necessary to answer the research question, based on certain variables that might influence the informants' ability to contribute, such as specific knowledge and experiences (Marshall 1996). Random route sampling entails choosing a geographical location within the study site based on specified variables, and systematically selecting informants from households moving in a designated direction from that starting point (Bauer 2014). After selecting the initial study group (conservancy members) through purposive sampling, random route sampling was further employed during field excursions in settlement areas in order to capture a diverse range of perspectives within the specified case study areas, thereby enriching the study's findings (only the homesteads of conservancy members were targeted during random-route sampling). Only one person was interviewed per household and preference was given to heads of households whenever they were available, because of their prominent role in household decision-making and their recognition as the bona-fide conservancy members or land owners. Heads of households in the local society are typically older males hence an overwhelming percentage of the interviewees were men. The sample size was determined by data saturation, i.e. interviews were stopped once new significant data ceased to emerge (Marshall 1996). To determine the point of saturation, data was analysed iteratively (as data collection was ongoing) and the themes that emerged during the analyses were tracked and monitored for new insights. A total of 74 conservancy members were interviewed in a face to face setting, including 17 women (Table 1). The interviews lasted about 45 min each. The interview protocol was designed to identify individuals' interests, expectations and experiences of participating in the conservancies, as well as the behavioural, normative and control beliefs about their own compliance with conservancy livestock grazing rules. The interviews were conducted by the principal author in the local language of Kiswahili (of which he is proficient) and translated into English. To account for idiomatic and colloquial expressions, the translator (principal author) focused on translating for meaning and not word for word (conveying the intent and cultural nuance rather than direct

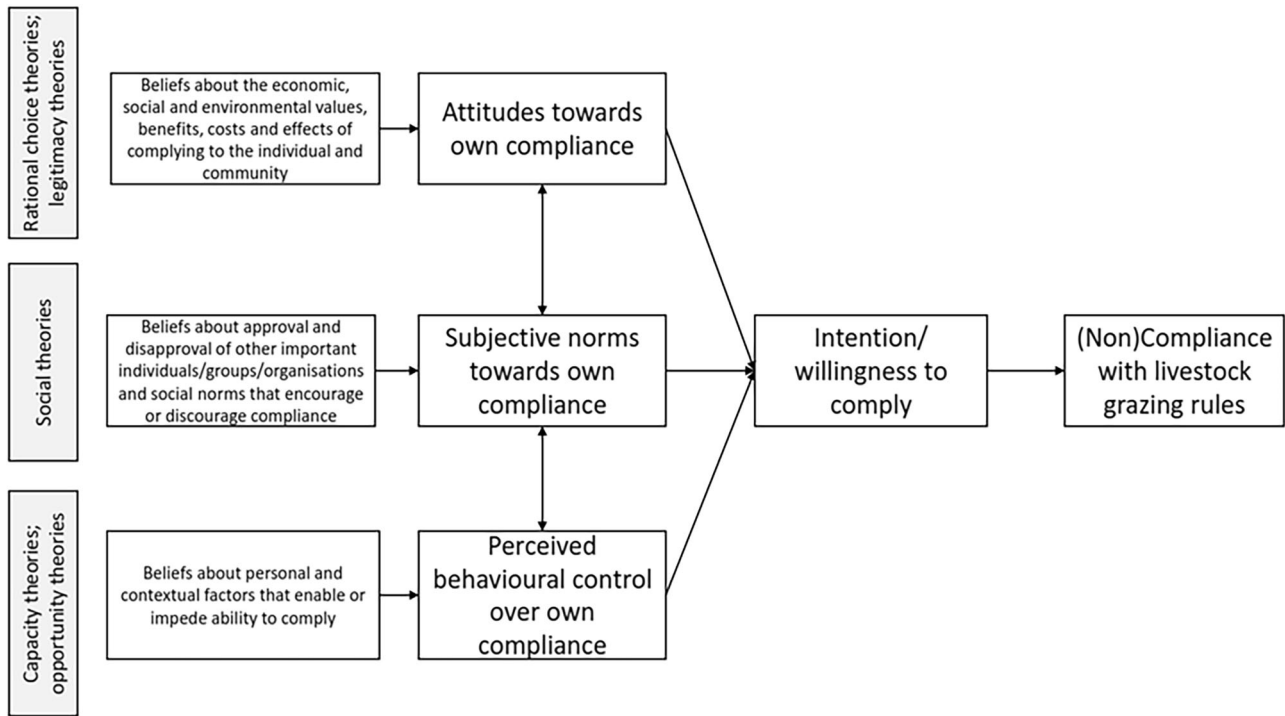


Fig. 1 Framework for analysing determinants of compliance with livestock grazing rules (Adapted from Ajzen 1991)

**Table 1** Participants of in-depth interviews and their demographic characteristics

Category	Conservancy	Number	Identification codes	Social characteristics
Conservancy members/ landowners	Olderkesi conservancy	34 (6 women)	O-1 to O-34	Ethnicity: Maasai (74)
	Mara North conservancy	20 (6 women)	M-1 to M-20	Age: 18–35: - (19) 36–60: - (41)
	Oloisukut conservancy	20 (5 women)	OL-1 to OL-20	Over 60: - (14) Education: None (13) Primary (32) Secondary (21) Post-secondary (8)
Total		74		

linguistic match). Interviewees were asked the same questions in the same order as listed in the interview protocol.

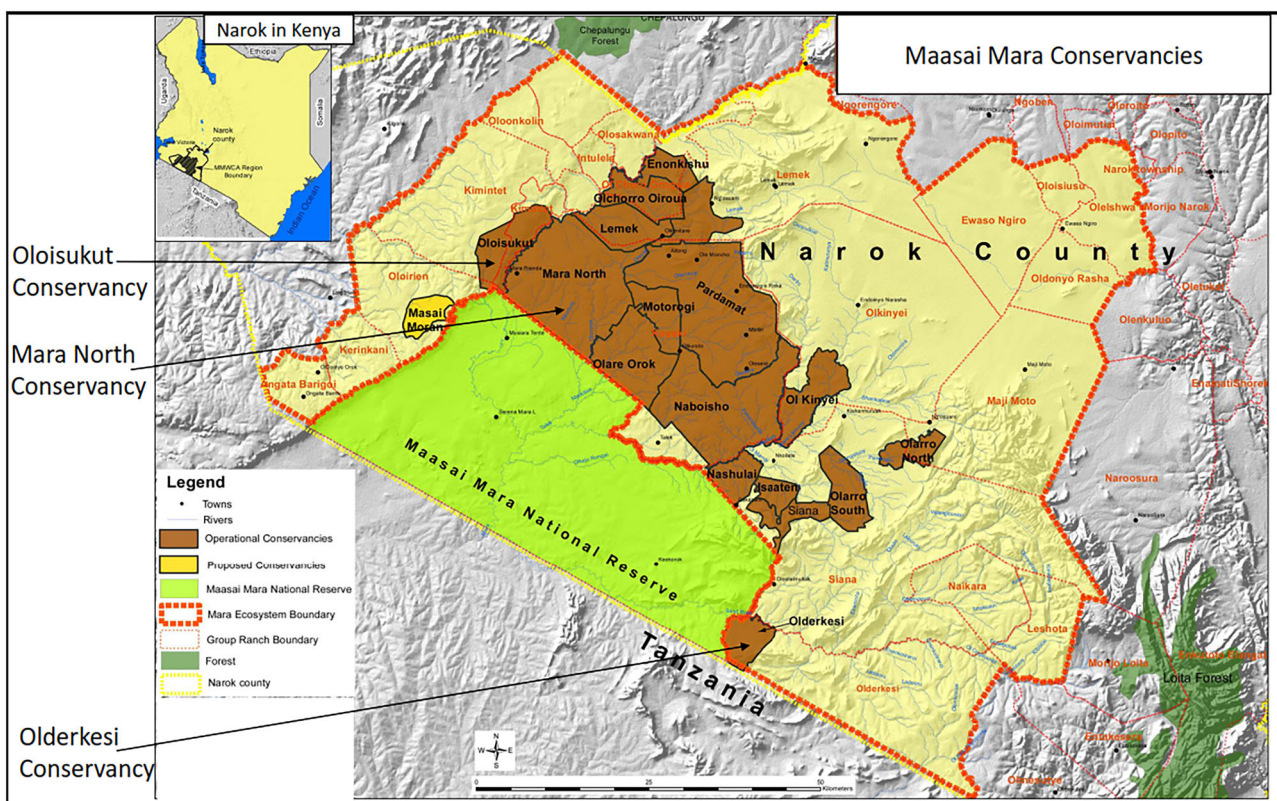
The data was documented in narrative form (by taking written notes during data collection) and analysed through Qualitative Content Analysis which involves systematically coding and identifying themes and patterns within the text (Cavanagh 1997). The coding primarily followed a deductive approach, using key concepts and variables from the theoretical framework (TPB) as initial coding categories, which were refined iteratively during preliminary data analysis by incorporating some emergent themes from the data. The coding was done by the principal author. The qualitative data analysis software MAXQDA was used as a tool to conduct the analysis.

### The Study Area

This research was conducted in three conservancies in Maasai Mara: Olderkesi Conservancy (Case Study A); Mara North Conservancy (Case Study B); and Oloisukut Conservancy (Case Study C). The case studies were chosen from a total of 20 operational conservancies in Maasai Mara (NCG 2023) by selecting one well established conservancy from each of the three categories of conservancies in Maasai Mara, i.e. those that are formed on communal land, those that are formed by consolidating contiguous private lands and are leased to tourism investors, and those that are formed by consolidating contiguous private lands and are managed by the land owners themselves (Table 2).

**Table 2** Case study conservancies

Case study	Name	Salient features
A	Olderkesi Conservancy	Formed by setting aside communal land (in Olderkesi Group Ranch) and managed through a contractual agreement with a tourism investor. Established in 2012 but formally launched in 2016. Covers 7000 acres and has about 7000 members. Has the highest number of landowners in the Mara (MMWCA 2019).
B	Mara North Conservancy	Formed by consolidating private lands and leased to a consortium of private tourism investors for its management. Established in 2009 from the merger of 12 wildlife associations from the former Koiyaki Group Ranch. Covers 68 000 acres and has about 900 members. Largest conservancy in terms of land size in the Mara (MMWCA 2019).
C	Oloisukut Conservancy	Formed by consolidating private lands and managed by the landowners themselves (no partnerships with private tourism investors although conservation NGOs are highly involved). Established in 2010 by members of the former Kimintet Group Ranch and re-launched in 2016. Covers 23 000 acres and has 109 members (MMWCA 2019).

**Fig. 2** Map depicting the Maasai Mara Region and the case study conservancies in Narok County, Kenya (Source: <https://kwakenya.com/>)

The Maasai Mara region is found in Narok County in south-western Kenya between latitudes  $0^{\circ} 50'$  and  $1^{\circ} 50'$  South and longitude  $35^{\circ} 28'$  and  $36^{\circ} 25'$  East, covering about  $6600 \text{ km}^2$  (Fig. 2) (NCG 2018, 2023). The ecosystem can be categorized into three geographical zones on the basis of land use and land tenure. These are the protected areas (the Maasai Mara National Reserve managed by the Narok County Government), the semi-protected areas (community conservancies where wildlife is protected and livestock grazing regulated), and the non-protected areas

(rangelands outside conservancies that are put under mixed uses including settlement, crop farming and livestock keeping) (NCG 2023). Land ownership in Maasai Mara has progressively shifted from communal ownership to private ownership following continuing subdivision of group ranches (NCG 2018). The majority of land owners in Maasai Mara are the indigenous Maasai, who have maintained their traditionally strong communal social structure (Maldonado et al. 2015). Households rely primarily on pastoralism but also participate in other activities such as agro-pastoralism,

business and trade, casual labour, salaried employment, and land leasing for both conservation and agriculture (Thompson et al. 2009).

The ecosystem is characterised by semi-arid savannah grasslands interposed with shrublands and scattered woodlands, creating ecological landscapes that are ideal for not only livestock production but also wildlife habitation (Bennett 2003). The ecosystem, which is home to some of the greatest assemblages of large mammals in Africa (Waithaka 2004), accounts for about 25% of Kenya's total wildlife populations (Western et al. 2009), including significant populations of the 'big five' species (Kennedy and Beard 2012), making it a wildlife tourism hotspot (MMWCA 2019; NCG 2018). Livestock and wildlife dynamics are driven principally by seasonal rainfall patterns (Bartzke et al. 2018; Mteuele et al. 2023; Ogotu et al. 2008). The distribution of seasonal rainfall exhibits a distinct bimodal pattern, with the wet season (short and long rains) occurring from November to June, and the dry season from July to October. January to February is often dry and is regarded as the short dry season (Bartzke et al. 2018). Recent decades have seen an increase in recurrent droughts in the Mara (Ogotu et al. 2008; Osano et al. 2013a), that has contributed to significant habitat degradation (Ogotu et al. 2011; Ogotu et al. 2016). During dry periods, seasonal watercourses dry up, leaving only isolated pools, ponds, springs, and a diminished Mara River, the sole permanent river in the ecosystem, as the remaining natural water sources for wildlife and livestock. The quality and quantity of forage deteriorates over time as the dry season progresses (Bartzke et al. 2018).

## Results

The inquiry sought to understand the conservancy members' awareness of the grazing rules (knowledge), legitimacy of the rules (acceptability), and the prevalence of illegal grazing (non-compliance). The drivers and barriers for individual conservancy members' own compliance with the livestock grazing rules were then examined using the main TPB constructs, i.e. attitudes (behavioural beliefs), subjective norms (normative beliefs), and perceived behavioural control (control beliefs).

Interviewees were asked about their knowledge of the livestock grazing rules. Most of the interviewees across the three conservancies ( $n = 66$ ) were found to be well aware of the rules and could explain the particulars of the by-laws (such as what is allowed and disallowed in which areas and the sanctions for non-compliance). An interviewee at Mara North Conservancy (Case Study B) explained as follows:

*The conservancy is managed by controlling livestock access because the land is required for wildlife use and tourists do not expect to see cattle. All members are therefore aware of the grazing rules. The conservancy has several grazing committees assigned to manage grazing in different zones of the conservancy. The committees communicate the grazing arrangements during community meetings and monitor grazing activities in their respective areas. Grazing is allowed on rotation in allocated grazing blocks throughout the year depending on pasture availability and whether it's low or high tourism season. It is only herds of cattle belonging to members that are allowed access - sheep and goats are prohibited because they are considered destructive to wildlife habitats. Anybody found violating the by-laws is liable to a fine of KSH 5000 per herd. The conservancy has employed rangers who patrol to enforce the rules.*

In the three case studies, conservancy members generally considered the grazing rules as legitimate because they are collective decisions ratified by the majority of members. However, some interviewees in Case Study A ( $n = 5$ ) stated categorically that they did not consider the rules as legitimate because they were opposed to the establishment of the conservancy and still held mistrust against the conservancy management. Many interviewees across the case studies ( $n = 31$ ) also added a caveat that the rules are only considered fair to the extent that conservancies deliver on their promise of monetary payments to landowners. An interviewee from Olderkesi Conservancy (Case Study A) stated:

*The rules are only relevant if a conservancy benefits landowners financially, which is currently not happening at Olderkesi.*

All interviewees across the cases indicated that their households owned some livestock in the form of cattle or sheep or goats. While a few were non-committal, many conservancy members ( $n = 42$ ) self-reported that their households disregarded the grazing rules from time to time, more so during dry and low tourism seasons, citing the need to access livestock production resources such as grass, water, saltlicks and mobility routes. An interviewee at Mara North Conservancy (Case Study B) stated:

*Sometimes the dry season coincides with the high tourism season which is tricky for pastoralists as grass is scarce yet they are required to keep off the conservancy for the sake of tourists. When grass is limited during high tourism season, many of us resort to grazing in the conservancy at night when there is less surveillance by rangers and tourists are not around.*

Acts of non-compliance with the grazing rules in the three conservancies include grazing livestock during times that are not allowed, grazing beyond the areas where it is allowed, and grazing of sheep and goats which is prohibited.

## Behavioural Beliefs

Interviewees were asked about the positive and negative economic, social, or environmental outcomes and values for both their households and the community that they expected from complying with the grazing rules. Discussions with the interviewees revealed that economic incentives were the prime variable influencing attitudes towards the rules. Interviewees exhibited more optimism towards the grazing rules in Case Study B compared with Case Studies A and C because of the regular monetary payments that individual conservancy members received. Direct monetary payments to individual landowners had seemingly not been forthcoming regularly or equitably in Case Studies A and C, which was a cause of discontentment. Due to the existence of financial repercussions for rule violation (deduction of fines from the monthly payments), conservancy members in Case Study B perceived a major disadvantage associated with non-compliance, a condition which differed in Case Studies A and C where imposition of fines was considered by some interviewees as non-existent. One interviewee in Mara North Conservancy (Case Study B) stated that:

*There is a lot to lose if your cattle are found encroaching on conservancy land. They will deduct huge amounts of money from your monthly land lease payment and disqualify you from accessing other benefits such as the loan facility or school fee bursaries.*

Other expected positive outcomes of complying with the grazing rules for individuals and the community that were elicited across the case studies were pasture management for year-round livestock forage (grass bank), wildlife conservation for tourism revenue generation, good relations with the conservancy management and members for access to conservancy benefits, other members getting influenced to also comply, and continuity of traditional and cultural practices such as communal grazing. Ecological conservation was elicited as a benefit in Case Studies A and C only. Avoidance of punitive grazing fines was cited as a positive outcome in Case Study B only.

The expected negative outcomes of complying with the grazing rules for individuals and the community that were elicited across the case studies were losing resources to other landowners who do not comply, and increase in wildlife leading to escalation of human-wildlife conflicts. Interviewees in Cases Studies A and C stated that lack of monetary payments in return, and elite capture and inequitable distribution of accruing conservancy benefits were anticipated as negative consequences of compliance. Inadequate compensation for opportunity costs of livestock production was mentioned in Cases Study B (conservancy members felt that even though they were paid regularly, the land lease rates should be increased). The fear of losing the conservancy land to local elites after group ranch

subdivision was mentioned as an expected negative consequence in Case Study C (Table 3).

## Normative Beliefs

Interviewees were asked about the expectations of other actors whose opinions they value and the influence of relevant informal institutions (social and cultural norms and values) that encourage or discourage their own compliance with the grazing rules. According to explanations by the interviewees, social pressure to comply emanated mostly from within the local communities (conservancy managements and members) rather than from external actors. Interviewees across the conservancies believed that conservancy managements and landowners committees, fellow conservancy members, tourism investors, and conservation NGOs expected them to comply with the grazing rules. Many interviewees were of the opinion that there were dire social consequences for non-compliance. An interviewee in Olderkesi Conservancy (Case Study A) stated that:

*There is fear of being blacklisted by the land adjudication committee for violating conservancy rules because they can retaliate during land allocation.*

In Case Studies A and C, it emerged that some disgruntled conservancy members did not expect others to comply. In Case Study B, some interviewees stated that neighbouring non-members who also host livestock belonging to conservancy members demand reciprocity and therefore do not expect the conservancy members to comply with the rules when forage is scarce.

There were sentiments to the effect that individuals felt culturally inclined to conform to legitimate community decisions such as the grazing rules, that the grazing rules were viewed favourably because they promoted the traditional practice of communal and rotational grazing which is endangered by ongoing land privatisation, and that cultural beliefs concerning co-existence with wildlife contributed to acceptance of conservancy grazing rules (Table 4).

## Control Beliefs

Interviewees were asked about the factors and conditions that either facilitate or hinder their ability to comply with the grazing rules, whether personal to the individual (e.g. resources, knowledge and capabilities) or circumstantial (e.g. local conditions). Discussions with interviewees uncovered that availability of pasture in alternative areas outside the conservancies, which is mainly dependent on rainfall, was the main variable influencing perceived behavioural control over compliance. An interviewee in Oloisukut Conservancy (Case Study C) stated:

**Table 3** Determinants of attitudes of conservancy members towards compliance with grazing rules

Behavioural beliefs	Mentioned by <i>n</i> = interviewees	In case study
Positive outcomes		
For the individual		
Receipt of monetary payments	20	B
Pasture management (grass bank)	38	A,B,C
Good relations with management/ members	33	A,B,C
Avoidance of punitive grazing fines	12	B
No positive outcome	7	A,C
For the community		
Wildlife conservation for tourism revenue	28	A,B,C
Preservation of traditional and cultural practices	7	A,B,C
Other members are influenced to comply	7	A,B,C
Ecological conservation	4	A,C
Negative outcomes		
For the individual		
Lack of monetary payments in return	39	A,C
Inadequate compensation for opportunity costs	10	B
Losing resources to others who don't comply	26	A,B,C
Increase in human-wildlife conflicts	12	A,B,C
Elite capture and inequitable benefits distribution	18	A,C
No negative outcome	1	C
For the community		
Losing conservancy land to local elites	5	A

**Table 4** Determinants of social pressure for conservancy members to comply with grazing rules

Normative beliefs	Mentioned by <i>n</i> = interviewees	In case study
Positive pressure		
By individuals		
Conservancy members	32	A,B,C
Tourism investors	12	A,B
By groups		
Conservancy/land committee/board/assembly	54	A,B,C
Conservation NGOs/ conservancies association	11	A,B,C
By social norms/values		
Norm of conformity with collective decisions	6	A,B,C
Norm of communal/ rotational grazing	21	A,B,C
Norm of co-existence with wildlife	3	B
Negative pressure		
By individuals		
Conservancy members	13	A,C
Non-members	3	B
By groups/organisations	Nil	
By social norms/values	Nil	

*“Most of us do not have a problem obeying the grazing rules. However, what options do we have when grass is depleted everywhere else especially during drought?”*

Other factors that enable compliance that were elicited in all the conservancies were responsive pasture management plans that allow access during critical periods, personal acceptance of the rules, and possession of manageable (relatively few) number of livestock. Awareness of conservation benefits such as land regeneration, and long distance to the conservancy were mentioned as factors that enable compliance in Case Study A only. Strict enforcement of rules (high likelihood of being detected and arrested) was mentioned as a factor that lessened opportunity for non-compliance (thereby enabling compliance) in Case Study B only. Similarly, existence of a dual land-use strategy was mentioned as an enabling factor in Case Study C only.

The factors and conditions which make it difficult to comply with the grazing rules identified across the case studies were scarcity of pasture/ water in alternative areas, other people grazing in the conservancy, livestock mobility routes through the conservancy, ownership of large livestock numbers, overdependence on livestock (few alternative livelihoods), labour and time constraint, and strict enforcement of grazing restrictions at Maasai Mara National Reserve which previously served as an alternative grazing

**Table 5** Determinant of behavioural control by conservancy members over compliance with grazing rules

Control beliefs	Mentioned by <i>n</i> = interviewees	In case study
<b>Facilitating factors</b>		
<b>Personal</b>		
Ownership of few livestock	11	A,B,C
Knowledge of conservation benefits	2	A
Personal acceptance of rules	5	A,B,C
<b>Contextual</b>		
Abundance of pasture/water in alternative areas	63	A,B,C
Responsive pasture management plan	18	A,B,C
Long distance to conservancy	2	A
Strict enforcement	7	B
Dual land-use strategy	6	C
<b>Inhibiting factors</b>		
<b>Personal</b>		
Habit of grazing in the area	3	A
Ownership of many livestock numbers	9	A,B,C
Labour and time constraint	5	A,B,C
Lack of compensation for opportunity costs	32	A,C
Opposition to the restrictions/ mistrust	5	A
<b>Contextual</b>		
Scarcity of pasture/ water in alternative areas	63	A,B,C
Overdependence on livestock (few alternatives)	9	A,B,C
Other people not complying	31	A,B,C
Close proximity	4	A
Livestock mobility routes through conservancy	14	A,B,C
Weak enforcement	8	A,C
Strict enforcement at Maasai Mara N. Reserve	6	A,B,C
Access to saltlick in conservancy	3	B

area. Lack of compensation for the lost opportunity for livestock production, and weak enforcement of the rules which creates opportunity to graze illegally were mentioned as inhibitive to compliance in Case Studies A and C. Close proximity to the conservancy (convenience), opposition to the restrictions, and habit of grazing in the area were cited as hindrances to compliance in Case Study A only. The need to access saltlick in the conservancy was cited in Case Study B only (Table 5).

## Discussion

This study aimed to understand the factors influencing compliance with rules in Community-Based Conservation (CBC) based on an analysis of compliance with livestock grazing rules in conservancies in Maasai Mara in Kenya. The theoretical framework guided the examination of factors that influence the decisions of conservancy members to comply or not by considering the expected positive and negative outcomes of complying to themselves and the community (attitudes), the expectations of other stakeholders such as fellow community members that they value (subjective norms), and the ease or difficulty of complying with the rules (behavioural control). The applied theories also stipulate that factors such as knowledge of the rules and perceptions of their legitimacy shape compliance. In-depth interviews yielded rich data on conservancy members' perceptions and experiences with the rules, which helped explain their behaviours towards them. Overall, the patterns of compliance with the livestock grazing rules in the three conservancies was found to be intermittent. Despite this, awareness of the rules was generally high among conservancy members in all the cases, suggesting that non-compliance was not due to lack of knowledge. Furthermore, conservancy members broadly recognized the legitimacy of the grazing rules because they are local collective decisions. These two factors are important considerations, because the capacity of people to comply with rules depends on having adequate knowledge of what is required of them (Van Rooij 2020), and perceptions of legitimacy influence social acceptance of rules (Tegegne et al. 2022; Tyler 1997, 2009, 2017).

There were no discernible differences found in salient beliefs concerning drivers and barriers for compliance across the three case studies. Many of the beliefs are also reinforcing or overlapping, underscoring the complexity and interconnectedness of the factors that influence decisions to comply. Positive attitudes towards complying with the grazing rules are mainly shaped by expectations of financial benefits for conservancy members and expectations of pasture management for year round livestock forage. On the other hand, negative attitudes associated with non-compliance are primarily driven by inadequate or lack of financial compensation, which is amplified by lost opportunity for livestock production, and other people not complying with the rules which renders them meaningless to those with the intention to comply. Social pressure to comply mainly stems from conservancy management and fellow members, especially in situations where financial returns are realized. In such instances, economic incentives help align individual and collective interests, reinforcing personal commitment. Additionally, the grazing rules align well with entrenched traditional practices of communal land

management and rotational grazing, further encouraging compliance. On the other hand, negative social pressures derive from conservancy members frustrated by lack of the promised monetary payments. Perceptions of control over own compliance are positively influenced mainly by the availability of alternative grazing areas. The grazing management plans are also responsive to local conditions (pasture variability) which enables compliance. Conversely, limited alternative grazing areas, heavy reliance on livestock compounded by ownership of large numbers of livestock, lack of compensation for opportunity costs, and rule violations by other people exacerbated by weak enforcement, contribute to a diminished sense of control over compliance.

The findings can serve to explain why illegal grazing occurs and the variations in the prevalence of illegal grazing in different conservancies. For instance, it can be argued that conservancy members in Case Study B have stronger reasons to comply with the grazing rules, which manifests in lower prevalence of illegal grazing, in comparison with Case Studies A and C, on the basis of two main factors: i) individual members in Case Study B receive direct monetary payments regularly which strongly incentivises compliance, unlike the situation in Case Study A, where benefits are channelled through a communal entity which exposes members to elite capture, and in Case Study C, where revenues have been unreliable due to lack of strong tourism partnerships; and ii) enforcement of rules is stricter (regular monitoring) and sanctions are consistently applied in Case Study B (fines are deducted from monthly payments) which creates stronger deterrence, in comparison with the other two cases where imposition of fines is almost non-existent.

The study has highlighted that economic incentives is the primary motivator for compliance with livestock grazing rules in conservancies, which is in concurrence with the longstanding view that local communities are willing and able to co-operate in CBC only if they obtain tangible economic benefits (Emerton 1999; Kiss 2004). Unmet expectations of economic benefits, especially direct monetary payments, have compelled landowners who were initially in support of conservancies to re-evaluate their decisions, which has increasingly led to violation of conservancy rules and other acts of resistance (erosion of cooperative behaviour over time). Conservancies emerged as a supplementary activity to livestock production and remain viable as a land use option only if they provide economic returns. Therefore, robust and secure revenue generation mechanisms are essential to sustain participation and cooperation in conservancies for the long run. Tourism is the main revenue strategy for conservancies, which underscores both the critical role of partnerships with private tourism entrepreneurs who provide the capital and expertise that local communities lack, and the need to develop the

capacities of local communities to engage more effectively and equitably in tourism decision-making. Furthermore, given the necessity to optimise revenues as well as to spread risk, the study recommends greater efforts at diversifying income sources for conservancies by exploring other forms of payments for ecosystem services such as carbon markets (e.g. Büscher 2011). Additionally, it was established that elite capture and inequitable sharing of accruing economic benefits in conservancies has engendered mistrust which undermines co-operation, contributing to non-compliance with rules. Past studies of CBC have demonstrated that equitable sharing of economic benefits is essential for building the trust and reciprocity needed to sustain collective action (Groom and Harris 2008; Saif et al. 2022). Strengthening conservancy governance structures to enhance transparency and accountability in benefit sharing is therefore a precondition to improving rule compliance. Direct payments to personal accounts bypassing potentially corrupt community entities, which is already being implemented in some conservancies such as the Mara North Conservancy (Case Study B), is an effective method to ensure fair benefit-sharing which should be up-scaled as an example of good practice.

Although economic incentives provided by conservancies were found to be essential, the results also show that they are not sufficient on their own to guarantee compliance with conservancy rules, underlining the need to complement voluntary rule compliance with strong deterrence mechanisms. This is in recognition of local people's high resource dependence (and limited social flexibility and livelihood options) which is a strong interceding factor in decision-making over resource access and use. For that matter, providing sufficient monetary returns to conservancy members to offset potential gains from grazing in the conservancies is difficult if not impossible. According to the basic deterrence theory, individuals are more likely to comply with rules when enforcement is certain and punishment is considered severe (Piquero et al. 2011). Enforcement of rules was found to be generally weak in the conservancies, reducing the effectiveness of deterrence. In two of the studied conservancies for instance, it was observed that fines are difficult to impose because, as yet, conservancy members do not receive regular monetary payments from which the fines can be deducted. Therefore, the benefits of non-compliance to individuals tend to exceed the costs, which contributes to the high prevalence of illegal grazing. On the other hand, weak enforcement creates the impression that other people will take advantage of the opportunity and free-ride on the efforts of those who comply, which is a strong disincentive for compliance with the rules (it is pointless to follow rules when others are not held accountable for breaking them especially in the case of highly subtractive resources such as pasture, i.e. resources where one person's use reduces the amount available for

others). This explains why there was a lot of scepticism in the conservancies about other people complying with the grazing rules. To strengthen rule enforcement, conservancies are encouraged to consider multiple strategies, such as establishing legal contractual agreements with landowners to allow for legal recourse, allocating adequate funds for monitoring systems, and partnering with government authorities to support rule enforcement. The wildlife law for instance requires the Kenya Wildlife Service to participate in enforcement of gazetted conservancy management plans (GOK 2013, 2015). Enforcement should be tempered with inclusive participation of conservancy members in formulation of the rules to enhance their legitimacy.

Finally, while it is argued that external or instrumental incentives rooted in anticipated benefits and costs (economic gain and deterrence) are the primary forces shaping compliance with livestock grazing rules in conservancies, internal or normative incentives rooted in social and personal values remain highly relevant. In the scenario of limited economic incentives and weak enforcement such as in Case Studies A and C, the presence of normative factors becomes a key driver of the decision to comply. The local communities in Maasai Mara are highly cohesive through ethnic and cultural homogeneity, and strong communal organisation which creates conditions, incentives and pressures for individuals to engage in collective action (Agrawal et al. 1997; Aryal 2018; Pretty 2003; Thomson and Freudenberger 1997; Throsby 1999). This has a strong bearing on rule compliance which should be leveraged upon as an inherent strength of conservancies. Although this study does not establish causal relation between subjective norms (social pressure) and actual compliance with the grazing rules, it was apparent that individuals take into consideration the expectations and actions of important referents (conservancy managements and fellow members) regarding the rules, and that they expected to suffer some social sanctions from those groups in case of non-compliance. Individuals also recognised their personal obligations to conform to legitimate community decisions which has influence on rule compliance. Moreover, resonance between the grazing rules and traditional rangelands management practices that historically sustained pastoralism contributes to social acceptance of the rules, therefore shaping compliance. This highlights the importance of ensuring that formal rules are compatible with social norms in CBC, as individuals navigate a mix of formal and informal institutions in their decision-making. Otherwise formal rules may prove ineffectual without such alignment (Cleaver 2012; Helmke and Levitsky 2004). The relevance of normative incentives also points to a potential to instill environmental knowledge and values to strengthen conservation behaviours through enhanced environmental awareness. The limited reference by conservancy members to

environmental values and ecosystem services as motivators for compliance with the grazing rules suggests a gap in understanding the broader benefits of conservation beyond financial gains. Informal conservation education campaigns that emphasize both the intrinsic value of nature and its benefits to people could help shift attitudes and promote long-term behavioural change. Evidence from a study by Johansson et al. (2013) in Sweden supports this approach: landowners and farmers who participated in two conservation education projects on forest and wetlands ecosystem services were more aware of the consequences of their activities on the environment, ascribed more responsibility to themselves, and felt more obligated to engage in biodiversity conservation in comparison with those who did not participate in the projects.

Whilst this study focused on rule compliance within conservancies, its findings can be reasonably generalized to other CBC contexts that have comparable conditions, such as high reliance on natural resources for livelihoods and similar ecological and social-cultural characteristics. The findings suggest that, in general, a combination of factors and conditions underlie rule compliance in CBC, namely the prospect of tangible benefits such as financial compensation (that can offset opportunity costs), institutional and governance factors (such as rule enforcement, inclusive decision-making and equitable benefits sharing), social and cultural dynamics (such as social cohesion and complementarity between formal and informal rules), ecological conditions (such as availability of essential natural resources), and psychological factors (like awareness and understanding of the rules and moral obligations) Therefore, fostering compliance with conservation rules requires a holistic approach that addresses material needs, strengthens institutions, raises conservation awareness, and is responsive to local resource conditions and livelihood strategies.

## Conclusion

Understanding the factors that shape individual's compliance with rules is critical for designing practical and policy interventions to mitigate non-compliance in environmental conservation. The objective of this study was to examine the factors and conditions that influence rule compliance in Community-Based Conservation (CBC) through analysis of compliance with livestock grazing rules in the community conservancies of Maasai Mara in Kenya. Using the Theory of Planned Behaviour (TPB) as a theoretical framework, the study applied qualitative methods to identify the types and nature of incentives and disincentives that individuals perceive to comply with the rules, providing a foundational understanding of the complex motivations driving individual and collective action in the conservancies' model. The study

calls attention to the importance of both instrumental incentives (economic benefits and deterrence) and normative influences (social and personal values) for ensuring compliance with conservation rules. The findings suggest that the different mechanisms (instrumental and normative) can be combined as strategic choices to influence resource use behaviours in CBC. The research findings are expected to provide conservancy stakeholders with some valuable insights to incorporate during conservancy management planning. The knowledge can be escalated by applying quantitative methods to measure the strengths and impacts of the elicited incentives (face to face interview survey data may be appropriate in the context of Maasai Mara), and using longitudinal research to model how changes in policy or contextual conditions that alter the incentives might influence behaviour.

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## Compliance with ethical standards

**Conflict of Interest** The authors declare no competing interests.

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