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Customary ecological conservation of Mwanda-Marungu Pastoral Commons in Taita Hills, south-west Kenya

Daniel Maghanjo Mwamidi^{1*} , Abdirizak Arale Nunow² and Pablo Dominguez^{1,3}

¹ *Laboratory for the Analysis of Social-Ecological Systems in a Globalized World (LASEG), Institute of Environmental Sciences and Technology (ICTA), Autonomous University of Barcelona, Barcelona, Spain*

² *Department of Geography and Environmental Studies, Moi University, Eldoret, Kenya*

³ *Laboratoire Géographie de l'Environnement (GEODE), CNRS Université de Toulouse 2, Toulouse, France*

* Correspondence: dmmwamidi@gmail.com

Rural commons in East-Africa have historically played key socio-economic and environmental sustainability. Despite growing interest in this arena, there are still surprisingly few studies that examine rural customary management of pastoral communities in East Africa. This is striking given that this region is an exemplary area for pastoralism and thus ideal for communal systems such as commons. Deficient studies and political support in this area could be linked to widespread prejudice of branding pastoralism as perilous to the environment. We set out to conduct a study to examine and test pastoralists' customary norms that underpin environmental sustainability/unsustainability of pastoral commons focusing on Mwanda-Marungu, in Taita hills, Kenya where the first author originates and brought up as a pastoralist up to the age of 24. Through ethnographic approaches and semi-open interviews to 193 respondents conducted in 2019–2021 during water and pasture stress during the dry months of July–October, we examined whether customary governance of Mwanda-Marungu would offer sustainable model that conforms to the IUCN's Other Effective Area-Based Conservation Measures (OECMs). Our study showed that pastoral communities in this area have been developing inventive measures for generations that improve good management and ecological protection. These may be tied to the principles of OECMs which contests the misconception about pastoralism.

Keywords: conservation, environmental sustainability, norms, other effective area-based conservation measures, pastoralism

Introduction

There has been an increasing interest among the scientists and stakeholders in natural resources conservation and on the important roles in which rural communities play in the environmental protection in rural landscapes from the last decade (Imanishimwe 2018; UN 2021). In this connection, there has been accelerated discourse between environmental conservation, sustainable livelihoods and abilities of indigenous institutions to maintain resilient socio-ecological systems through community-based management and their potential for local development (Charles 2021; Schley et al. 2022).

This increasing interest may also be attributed to growing realisation that local communities may provide sustainable solutions to environmental crises because they are mainly driven by social and cultural values, which are well ascribed by the majority of community members (Anup 2016; Roka 2019; Turner et al. 2022). International environmental organisations such as the United Nations Environmental Programme (UNEP), United Nations Development Programme (UNDP), the Convention for Biological Diversity (CBD) and the Indigenous Peoples and Local Communities Conserved Areas Consortium (ICCAC) among many other organisations that are now taking a lead position in promoting this dialogue and action (Dawson et al. 2021).

The International Union for Conservation of Nature (IUCN) is fostering a new biodiversity conservation paradigm of 'Other Effective Area-based Conservation Measures – OECMs' which among other systems, recognises the role of local communities' cultural values in environmental conservation, increasing of livelihood opportunities whilst being important partners in helping to fulfil the UNEP's Convention of Biological Diversity (CBD) Aichi Target 11, which had aimed at attaining at least 17% of terrestrial landscapes biodiversity in conserved areas by 2020 (Jonas 2018).

The definition of OECMs is a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values (CBD Decision 14/8). According to IUCN/WCPA (2022), an OECM should meet the following: a site where management is addressing the threats; a site where management has the capacity to address threats and there is a realistic probability that severe damage to the biodiversity value of the site will be avoided; a site where legal means or other effective means (such as customary laws or binding agreements with landowners) to address

threats are in place; a site where sustainable traditional or low-impact management of natural resources is consistent with the conservation of important biodiversity values; a site with no current or future severe threats identified.

Moreover, Aichi's Target 11 very probably have not been fully met because there may be other important stakeholders, especially rural communities, whose contributions are still very far from being fully tapped. Their contribution can have great value because these commoners' livelihoods are derived directly from ecosystems, so they are the first interested actors in keeping their functionality and thus their non-participation could have profound ecological calamities (Zafra-Calvo and Geldmann 2019). In addition, the United Nations' Sustainable Development's Goals (SDGs) especially targets 1 [subsection (i) targets to eliminate extreme poverty; and subsection (v) targeting to build environmental resilience and shocks] and target 13 [subsection (i) which targets to build climate change adaptation and resilience], may be attained if all indigenous people and local communities are effectively included as important stakeholders in nature conservation and on which in eastern Africa and many other parts of the continent directly concern pastoralism.

Despite the emergent focus on the link between local communities and empirically proved environmental protection and contributors to sustainable development (Dominguez and Hammi 2009; Alves-Pinto et al. 2021), there are few studies that have systematically examined the roles of customary management of pastoral commons of East Africa (Renom et al 2020). In fact, there has been growing resentment among scholars, governments and other conservation agencies that have persistently linked pastoralism to environmental degradation (Amwata 2015; Basimba et al. 2016; Krattli and Toulmin 2021; Ntumva 2022).

This is striking given that the East Africa region is an exemplary area for pastoralism covering over 43% of the horn of Africa and directly supports over 20 million people in this region (Amwata et al. 2015; Nyariki and Amwata 2019). For instance, over 80% of Kenya's landmass which is classified as arid and semi-arid lands and which are particularly fragile ecosystems, are at the same time mostly wisely and sustainably shared among pastoral communities, which also host over 90% of wildlife (World Bank 2010; FAO 2018;).

In fact pastoralism as a means of livelihoods and has mostly co-evolved through millennia with local ecosystems, supporting over 200 million households worldwide. This is classified as one of a potential sustainable system that if properly managed, will continue being an important path that may lead to socio-economic and ecological development and has been evinced for millennia (Robertshaw 2021; Bollig and Schulte 1999; Behne 2008). It directly links to global initiatives dominating international agendas (e.g. on 15 March 2022, the United Nations General Assembly (UNGA) in New York unanimously declared 2026 the International Year of Rangelands and Pastoralists (IYRP): <https://iyrp.info/>). Focus on East African pastoral commons could therefore be on top, or at parity with, other rural livelihoods shaping the landscape considering that pastoralism alone contributes directly up to 30% of Kenya's GDP exclusive of other indirect

and unaccounted benefits (World Bank 2010) and that commons are a paradigmatic management of pastoralism.

Communal landscapes are known to support innumerable ecosystem services such as in-situ biodiversity conservation, carbon sequestration, soil and water retention, sustainable livelihoods, wildlife buffer zones and many others. Therefore, pastoral commons being such a system also ought to deserve scholarly attention in a bid to strengthen these pastoral communities and therefore these ecosystems, especially in a fragile and semi-arid region like East Africa (Bikila et al. 2016; Little 1996). Niamir-Fuller (2022) describes pastoralism as a proven nature-based solution that can help achieve many of our global development goals. Traditional pastoral communities are most often custodians of cultural environmental conservation models that most have been tried over centuries of ever-evolving in-depth local knowledge. Thus in many cases are very interesting systems in terms of offering sustainable conservation models of natural resources tested and consolidated through time.

Deficient studies in this area could be linked to prejudice/fallacy among scholars and policy makers that view pastoralism as perilous and regressive to environmental sustainability (IRIN 2013; Shanahan 2013; Basimba et al. 2016). For instance, CBD (2010) noted that most press articles cover pastoralism in a bad light of droughts and conflicts, thus painting a deprived depiction of pastoralism being a conflict-fermenting type of livelihood and thus not befitting to offer environmental management solutions.

In addition, many studies may have used weak study tools in interrogating the relationship between pastoralism and environmental protection by not using pastoralists' lenses or analysing more in-depth their communal governance bodies. Consequently, these studies may not reflect a true picture, especially considering that pastoralism is a way of life that is deeply embedded in culture of the practicing communities. Therefore, it would be ideal for future studies to interrogate this subject of pastoralism and environmental protection by understanding socio-cultural organisations within pastoral landscapes and how local pastoralists relate to their landscapes on a day-to-day basis. This will help us to understand how pastoralists' actions and motives may contribute to sustainability or unsustainability of these systems (Jobbins et al. 2021). This will be possible if a study directly approaches or involve the real 'practitioners' of pastoralism in having sovereignty of reporting what they do on day-to-day basis, their motives and aspirations behind each action they undertake, and how they interact with their environment and their goals.

The first author being brought up and practiced pastoralism for his first 24 years of life as a Taita Hills community member in south East Kenya, vividly understands customary norms for his local community as being fairly 'environmentally friendly', contrary to popular perception in urban areas as being not. The communities there enjoy ecosystem services such as water, herbal medicines, wild fruits and vegetables, pasture for their livestock and they still co-exist with wildlife in their territory – which maybe attribute to relatively sound customary management of these pastoral commons and landscapes administered by elders amid global climate change challenges and market forces as described in the results section.

In such context, we then set out to conduct an ethnographic study to examine and demonstrate pastoralists' customary values that underpin cases of environmental sustainability or unsustainability in management of pastoral commons focusing on agro-pastoralists of the community in Mwanda-Marungu, Taita Hills. We aim at giving an opportunity to pastoralists to share to the global audience about their practices, beliefs, traditions, taboos and local values attached to the management of natural resources in their communal land, because what this work shows is that they are the custodians of such sustainable practices. Through this study, we hope to raise awareness and change the global outlook about pastoralism and bring appreciation towards their environmental conservation efforts and capacities.

Furthermore, this interest was also driven by the zeal from the first author's fellow herders to counter constant pressures from environmental activists and leaders that they abandon pastoralism in favour of subsistence farming of growing crops, as it is perceived by these predominant actors in the region that pastoralism is an 'outdated' livelihood activity and injurious to the environment. We perceive this as ill-informed because Mwanda-Marungu receives low rainfall (650 mm per annum) where it is difficult to practice other rain-dependent agricultural activities, while pastoralism has proved through the generations to be the most suitable option and at the same time as co-creating the present landscapes that want to be conserved. To not go far with the proofs of this, nearby settlements that abandoned the traditional pastoral commons in favour of more intensive farming, proved to provide important immediate benefits but rapidly failed to prevail when the droughts appeared (Nyariki 2019), while the traditional and less productive commons continued to sustainably exist like for generations before. In addition, locals would wish to air their voices to the international community and conservation agencies to help them protect their landscapes and ways of life. One way of doing so is through demonstrating that the Taita community pastoralists have 'home grown' capacity and that their pastoral commons are a valuable tool in the protection of the environment. In such context the present paper was launched.

Methodology

Study area

The Taita community is a Bantu speaking group who migrated from Central Africa from 1000 BC to 1700 AD and occupying Kenya's south at the East African mountains of Taita Hills which borders Tanzania and are surrounded by Tsavo East and West National Parks (Bravman 1987).

The Taita population is currently estimated to be over 360 000 according to the population census conducted in 2019 (Gok 2022). Research based on oral sources suggests that Taita community is made up of clans/lineage called *Vuchuku*, each having their territorial land where livestock keeping is done in community-based ranches, and family/kinship livestock owned grazing bands called (*Maranu*) which are mainly situated in areas surrounding Tsavo West National Park at the lower ecological zones between the altitudes of 750 m to 1200 m above sea level (Mkangi 1983).

According to oral sources, Taita Community villages are governed by elected elders with good reputation, married, knowledgeable in matters of customary norms among other qualities, and are elected and given mandate by community members to manage communal resources (called *mitengo*), such as communal pastoral grazing lands, forests, water resources, caves, shrines, wildlife for a 5-year term. Elders also may delegate some administrative duties to Youths (aged 25–35) such as monitoring of commons' resources, managing pasture, water and adherence of norms in the community and also mandated to punish community members who contravene norms of the community.

Some of the Taita community-owned areas such as caves, rocks, water springs and indigenous forests are believed to be sacred and are associated with their traditional religion and *Fighi*, which had been an essential tool of in situ conservation of biodiversity (Mwamidi 2012). Besides, *Fighi*, Taita community still protect areas of worship called *Seso* which are conserved strictly by elders from specific lineage and are highly respected by all community members. According to oral sources, *seso* are considered sacred places and are out of bounds to youths, women who are of children-bearing age or to 'wicked' persons. It is forbidden to cut any tree, and fallen logs are left to decompose. Areas that have *seso* sites are: Mghange, Mulondo, Mghambonyi, Wumingu, Iziri, Mwanda, Marungu, Murughua, Chawia, Rong'e and Mbololo. These *seso* were initially established strategically along boundaries of pastoral commons to 'protect' pastoral resources such as pasture, livestock, and wildlife from external aggression such as cattle rustling and other resource theft from neighbouring communities.

Unfortunately, the areas where pastoralism is practiced (Mwatate, Kasighau, Maktau (Mwakitau), Taveta, Kishushe, Wanjala, Mwanda-Marungu and Paranga) are situated in the mineral rich zone of upper Proterozoic lower Paleozoic structural/metamorphic unit of the Mozambique Belt, which extends along the east coast of Africa (Horkel et al. 1979). Some of the industrial minerals such as iron ore, limestone, copper, manganese, marble, magnesite, asbestos, graphite, kaolin clay, mica and building stones (Horkel et al. 1979).

There are growing concerns by local communities in Taita hills brought about by mining activities in livestock rearing zones that supports over 179 864 cattle, 480 125 goats, 55 540 sheep, 671 174 poultry, 3 568 donkeys and 1 286 camels, and thus very important for local community's livelihoods (GoK 2013, 2016). According to Mghanga (2011), mineral mining may have some long-term consequences to pastoralists' livelihoods because of irreversible land degradation since the proceeds of minerals goes to multi-national companies and does not benefit local communities who bear the burden of land degradation.

In addition, Mwanda location where Mwanda-Marungu pastoral commons are situated (study area), borders Tsavo West National Park on the north-west and Vuria montane forest that is classified as an important bird area (IBA) with species of global importance which are endemic to this region and pasture dependent (Bennun and Njoroje 1999). Therefore, this study is timely because strengthening these pastoral commons will not only benefit the locals, but also a myriad of flora and fauna species because

Mwanda-Marungu commons act as migratory corridors for wildlife crossing from Tsavo West National Park to Tsavo East National Park as wildlife move from Bura region to Wanjala to Mtito Andei. Even though Mwanda-Marungu borders Tsavo West National park near Mwakitau, and pastoral commons area is not a protected zone, but is community land owned and managed by locals (see Figures 1 and 2).

Data was collected in three villages (Maranu gha Mkamwasi, Itinyi and Marungu) located in Njawuli sub-location Mwanda ward in Taita Taveta County. We selected these three villages because they are restricted only to local members for grazing, thus are not free access as it is neighbouring communal lands such as Wanjala, Kishushe, Kisima, Paranga, Sangenyi and Mwakinyambu where herders from outside locale can graze freely without restrictions.

Study approach

Since our study was geared towards establishing pastoralists as a way of conserving pastoral landscapes and environmental protection through their eyes, we had to adopt ethnographic approaches which would empower respondents to freely give their views. These included, participant observation, which was ideal to unearth hidden and salient actions in relation to environmental

conservation. Data collected through free-listing of pastoral activities showed what the herders and elders do on their day-to-day herding of livestock throughout the pastoral commons for a total of four months, whilst interrogating



Figure 2: The view of Mwanda Marungu pastoral commons (from the north-west) at Njawuli sublocation in Mwanda location, Taita Taveta County. Mwanda-Marungu pastoral commons are divided into three communal grazing zones: Maranu gha Mkamwasi, Itinyi (upper zone at the highlands/escarpment and Marungu (lower plains). Credit: Daniel Mwamidi

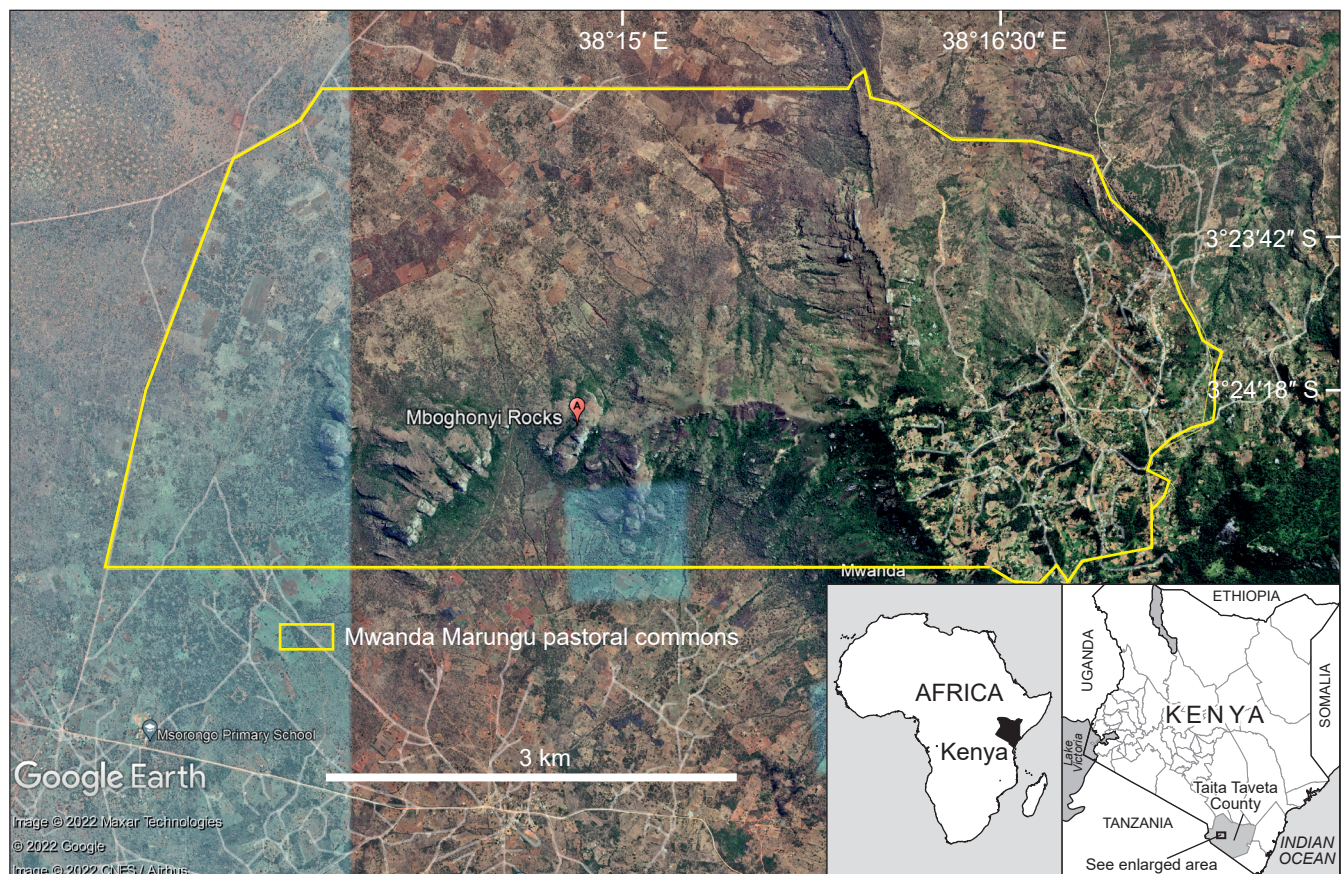


Figure 1: Mwanda Marungu pastoral commons found in Njawuli sub-location, in Mwanda Location, Wundanyi Constituency, Taita Taveta County, South West Kenya. The study area is located between elevation: 1 499 m asl (highlands) and 900 m asl (lowlands); 03°24' S, 38°15' E. Credit: Google Earth®

the relevance of each action to the protection of the environment. After participant observation, we employed semi-structured interviews through purposive sampling involving elders and herders as main respondents since they are most knowledgeable in the subject of pastoralism/herding and are the main custodians of cultural norms. In addition, they are the ones who actively participate in administration of day-to-day norms in relation to management of pastoral commons. Therefore, we interrogated respondents about ways in which Mwanda-Marungu pastoral commons are governed; how rules are decided and implemented; pastoral commons' physical/geographic boundaries that define the area of jurisdiction; the norms, taboos and/or values attached to wildlife found in Mwanda-Marungu within pastoral commons; and customary values that promotes co-existence of livestock and wildlife within Mwanda-Marungu pastoral commons.

For the purposes of examining the resilience of community regulations and their implementation, we conducted our study during all agro-pastoral seasons, in order to also have a good overall vision of the system from 2019 to 2021. Nevertheless, fieldwork was particularly intense on water/pasture stress during the dry months of July and October of 2019 to 2021, which was observed in situ and as also confirmed by Benjaminsen et al. (2012), is the period where customary rules become most apparent due to the increased scarcity of the given finite pastoral resources. However, data was also collected during wet seasons of long rains March–June of 2019 to 2021. In fact, it is the results for the dry seasons where competition for resources become higher and the customary rules are under greater pressure, that we can best demonstrate through this study the good governance of these pastoral commons by locals even during the most uncondusive weather conditions.

With 193 respondents (elders and herders) to a semi-structured interview and FGDs, we examined whether customary management systems of Mwanda-Marungu pastoralists are in tandem/conform to the IUCN's OECMs conservation paradigm.

We used a site-level tool for identifying if an area and its administration regimes may be considered as OECMs for 2020 (now revised as IUCN/WCPA 2022) and qualitatively examined: (1) geographically delineated boundaries which is not a protected area; (2) sustained governance authority and management regime (in this case customary governance); (3) important biodiversity values; and (4) promotes in-situ biodiversity conservation. In the following section of results, we give descriptive account of pastoralists' customary management regimes with associated indicators that qualifies them to be considered as potential OECMs and thus highlighting the importance of these commons as a tool of environmental protection.

We first obtained free, prior and informed consent from each village and individual participating in this study, as well as the agreement from the relevant Government and regional administration. In addition, we did not coerce locals to give information or avail 'tokens' to solicit favours from them, which is in unison with legislation and ethics.

Data verification was done through series of 15 sessions of focus group discussions (FGD) consisting of between five and eight respondents per session (see Table 1). In FGD, the panel would discuss data collected through participant observation and semi-structure interviews to 'refine data to more accurate facts', and secondary data was also utilised. Data analysis was done through organising data in themes (descriptive concepts).

Results

The four criteria of OECMs, as outlined in methodology, that qualifies pastoralists' responses, whether their customary norms on management of their pastoral commons can be considered an ideal environmental protection approach.

Evident geographically delineated boundaries (not a protected area)

Question: Does Mwanda-Marungu pastoral commons have physical/geographic boundaries that defines the area of jurisdiction?

Ninety-eight percent (98%) of respondents reported to know exact boundaries of their villages and grazing lands, with 2% could not because they were married into this region and thus could not have known the exact boundaries of their locality. A 76-year-old elder reported:

'We normally show boundaries to all our children to ensure all of us in the village understand each and every inch of our ancestral land and that way nobody may deceive them by grabbing our community land because this is where all our livelihoods are derived from. We all get food, milk, herbal medicines, pasture, wild fruits and vegetables, insects, wild tubers and water from this area. Also, we have been living with wildlife among us and they are part of us, so if we forget our boundaries we will forfeit all these benefits to strangers'.

Boundaries are demarcated by seasonal rivers, village earth roads and by escarpments. A 74-year-old village elder/herder reported:

'God loved us so much because he gave us a natural boundary of a huge rock and escarpment which has been beneficial for protecting us from intruders on the eastern side and these rocks have big caves which are habitats for wild animals such as snakes of all kinds

Table 1: Characteristics of 193 respondents ($n = 108$ for semi-structure interviews and $n = 85$ for focus group discussion)

	Men	Women	Age			Total
			< 31	31–50	> 50	
Semi-structured interviews	87	21	27	60	21	108
Focus group discussions (15)	60	25	25	35	25	85
				Grand total		193

like African python, cobra, black mambas etc. We have leopards, hyenas, porcupines and many wild animals. If there was no natural boundary of this long-ranged escarpment, poachers would have long invaded and killed those pythons and leopards for their skins’.

This elder’s sentiment was supported by all five members on the FGD panel. See the rock/escarpment they referred to in Figure 3.

Community’s deep connection to their pastoral commons territory

Question: What are the community’s perceived importance of Mwanda-Marungu pastoral commons territory?

During interviews and FGDs, elders and herders reported that they have local spiritual shrines called *fighi* and *seso* which were used for worshipping their god called *mulungu*

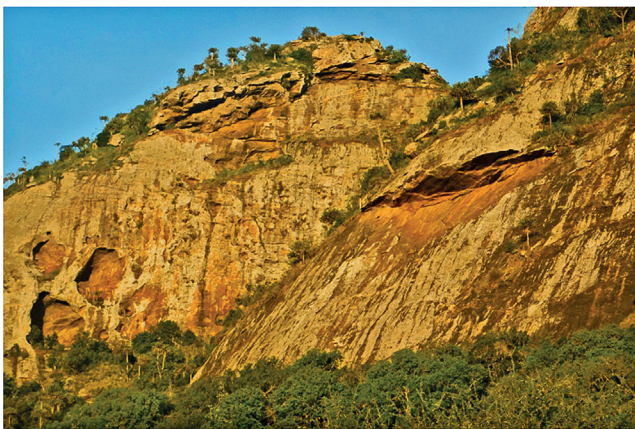


Figure 3: The rock/escarpment with steep falls acting as a physical boundary for Mwanda-Marungu pastoral commons in Njawuli sub-location, Mwanda location in Taita Taveta County, Kenya. According to elders, these rocks are habitat to many wildlife species and also source of water springs, salt licks and used as traditional religious shrines called *fighi* and *seso*. Credit: Daniel Mwamidi

and have existed for centuries and thus locals are attached to them. They often make periodic sacrifices by slaughtering animals to appease the spiritual being and also to ask for blessings of their land, livestock, pasture as well as for making rain, ward off human and livestock diseases. Elders and herders reported that big rocks and caves within pastoral ICCAs were used as burial sites by the locals and religious shrines and that some of these sites have since been abandoned but still remain sacred as they were used for sacrifices in case of disease in the family and livestock.

Ninety-seven percent (97%) of the elders and herders interviewed reported that they have very deep connection to their pastoral commons territory because it provides: source of wealth and livelihoods (88%); myriad keystone species for prediction of events and ecosystem integrity (86%); ancestral connection (95%); cultural ecosystem services (90%); and provisional ecosystem services (98%) (Figure 4). For instance, during the interview, a 79-year-old elder referred to Mwanda-Marungu pastoral commons as a ‘hospital’. Upon further inquiry as to why he referred to the commons as a hospital he said:

‘As you see, we do not have a conventional hospital in the entire region and the nearest is about 50 km away in Mwatate town which is difficult to reach at night especially in cases of snake bites which are very common in this area. So we have our own indigenous herbal medicines to treat our families and livestock from many diseases. We all depend on these indigenous trees you see around to treat deadly diseases such as cancer, schizophrenia, paralysis and many more diseases. If you destroy one tree, you may have killed more villagers because these indigenous trees may take hundreds of years to grow to maturity before one is able to use them as medicine’.

A 69-year-old elder supported the previous elder and said: *‘Besides herbal medicines, we live here in harmony with nature because we use animals around us to forecast events. Like now we are worried because the populations of bird species have gone down*

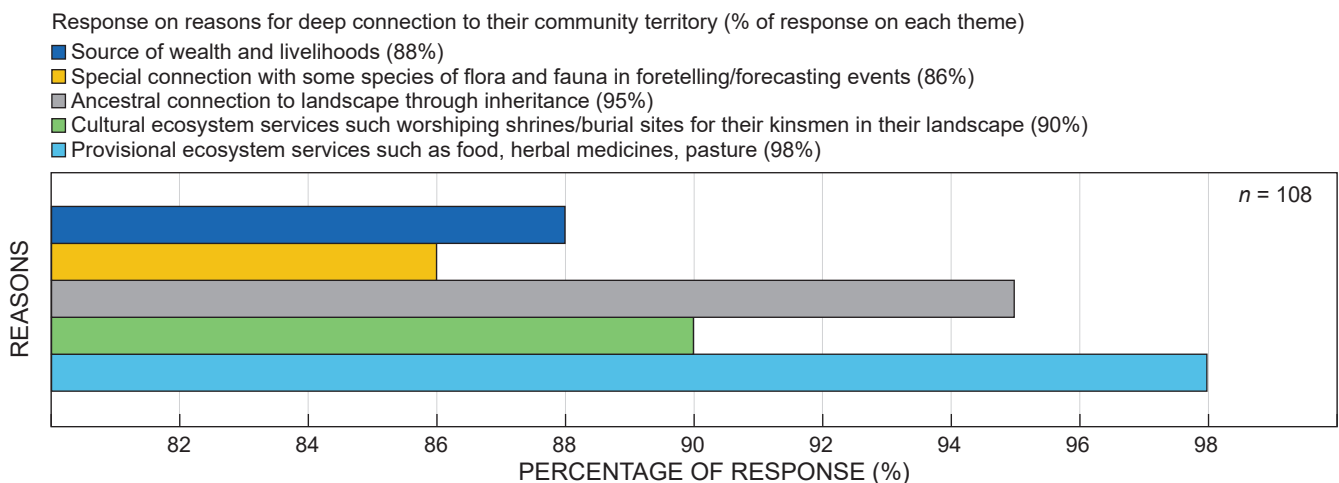


Figure 4: A summary of interviews responses on perceived reasons for deep connection of the locals to their pastoral commons in Mwanda-Marungu

and it is not a good indicator, and there could be an impending disaster that is about to happen, such as extreme drought, famine or disease outbreaks. We never went to school but we can foretell events by observing wildlife around us and with more accuracy than those who even went abroad to study'.

Sustained governance authority and management regime of pastoral commons

Question: How is Mwanda-Marungu pastoral commons governed?

Management of pastoral commons is conducted by elders called '*waghosi wa kireti*' translated to 'elders of pastoral commons'. Five elders are elected in each of the three villages in the Mwanda-Marungu pastoral commons (Maranu gha Mkamwasi, Itinyi and Marungu). Each elected elder serves a community-mandated five-year term, which can be renewed depending on the elder's performance during their tenure. These elders oversee all pastoral resources such as water, pasture, indigenous forests, wildlife, cultural norm reinforcements through punishments and fines. They are also oversee, maintain and enhance protection of community shrines called *fighi* and *seso*, which are the 'sacred grooves' and community sacrificial sites.

A locally elected elder from each of the three villages blow a wooden whistle (*firimbi*) to notify villagers of any new development or a problem within their community land. This may include anomalies such as breaking of pastoral norms set by elders, thus calling for an assembly to execute punishment or fines, intrusion of their pastoral landscapes, outbreak of pests or diseases or a message from the National/Regional Governments such as livestock vaccination or other information. The elders who blow whistles are called '*mghosi wa firimbi*' and they are also mandated to spearhead keeping vigil (alongside youths) in cases of intruders who may enter the pastoral commons with wicked intent of burning charcoal, cutting down of indigenous trees, harvesting of herbal medicines or hunting of wild game meat within commons. Youths who have attained ages of over 25 years are tasked by elders to block any attempt by the intruders to enter their pastoral commons to graze or utilise resources found there. In cases of rebellion to the youth's move, intruders are thoroughly beaten and sent away or their livestock confiscated.

Assemblies are conducted bi-monthly (after every two months) to closely monitor the well-being of the pastoral landscape. According to elders and herders, all villagers are required to attend the meetings and absconders are penalised with a fine of one goat (normally a male goat or buck) which is slaughtered and eaten by all villagers. Elders reported that they highly favour youths and are given a bigger stake in surveillance of community landscape because of what they said about youths being future elders in their community lands and thus they need to be involved at every stage of decision making. Women are also given responsibilities in village committees, such as pasture harvesting during wet seasons for use during the dry seasons. They are also involved in selling of dried pasture to other livestock owners outside their pastoral common.

During the focus group discussion of a panel of eight members, a 71-year-old elder reported:

'I have been elected since I was at the age of 36 years and until now. I have been very faithful to discharge my duties of protecting our pastoral commons because lives of all these local community members that you see here and our future generations are entirely dependent on this land... We are mandated to train our youth to be zealous in protecting their ancestral land because if they destroy it they have nowhere to go. That is why we are very strict not to admitting foreigners to settle in our land, because after welcoming them they may start destroying the environment because they will not understand our norms and it will be difficult to train an old man new skills. They may destroy the community resources such as indigenous trees, wildlife, and water and afterwards vanish never to see them again, thus leaving us behind with irreversible problem of ecological degradation'.

According to six elders in FGD panel, they have a strict rule that no one from outside Mwanda-Marungu is allowed to graze livestock in pastoral landscape since outsiders (*wachea mbai*) may not adhere or stick to their rules of pastoral commons' management. During FGD, elders said they fear that outsiders may view community rules as being 'oppressive' and thus becoming rebellious and influencing others not to obey. Consequently leading to degradation of their pastoral commons and resources found in their territory. A 65-year-old elder reported:

'You see our neighbouring Kishushe community grazing lands (situated about 20 km north-west of Mwanda Marungu) have been destroyed because of bad leadership where their elected elders became greedy and were compromised by foreigners (wachea mbai) and brought them inside at the heart of community land. After a while, those foreigners became rebellious to the norm that governs Kishushe pastoral commons and introduced bad practices such as burning of charcoal, cutting down of indigenous trees and selling them as logs to a town, hunting for game meat, burning of bushes to cultivate which has now made Kishushe community land look like a desert. They also introduced corrupt practices such as selling community land without the consent of the local community members. At the moment, Kishushe commons have been further destroyed after they allowed Wanjala iron ore mining company to do mining which has destroyed vast area of community grazing lands. You can go there and see for yourself the environmental disaster that is in Kishushe pastoral lands. Because locals elected bad leaders, they are now seeing consequences that will affect them and their entire future generations'.

The above elder's sentiment was supported by 100% of the six FGD members and a 62-year-old herder added:

'We avoid at all costs electing individuals who have tendencies of being corrupt by seeing how they manage their own families, livestock and homestead. You cannot elect an elder to rule over thousands of locals, whilst he cannot manage his own family with less than ten members. We make it mandatory that for an elder to be elected, he must have over 50 livestock

and he must be married and have children because that way he will have interest at heart to protect the pastoral commons since if he fails, his own livestock and family will also suffer’.

The herder’s sentiment was also supported by 100% of six FGD panel.

Elders also monitor the kraal as it is not supposed to be destroyed when one is migrating to other areas. It is a curse to destroy kraal structure locally called *waza* or *maranu*. The motive behind this is to safeguard environmental protection because building new *waza/maranu* demands a lot of trees to build structures to protect many livestock. A clan kraal is made of acacia thorny twigs to keep away predators (lions, leopards, cheetahs, hyenas) and it may hold over 500 cattle, over 700 goats and including donkeys.

Important cultural values that could contribute to conservation of biodiversity in Mwanda-Marungu pastoral commons

Question: what are the cultural norms, taboos and values attached to wildlife found in Mwanda-Marungu pastoral commons?

Elders and herders reported that they have a very close connection to their community landscape and biodiversity found in their pastoral commons. They acquire ecosystem services such as wild vegetables, root tubers, pasture (and hay for sale to neighbouring communities during dry seasons), fuel (firewood), water, herbal medicines

provision, wild game meat, wild mushrooms, gums, wild fruits to supplement their diets (see Figure 5).

During FGD, elders reported that they have used several wild animal species found in their land to foretell events. They mentioned the use several bird species to predict different occurrences in their landscape and some serve as warning to dangers of wild animals’ attack of humans or livestock. For instance, they mentioned to use Lesser Honey-guide (*Indicator monor*), locally called *kawuki*, to search for wild honey in *kireti* (pastoral commons). Seventy-eight percent (78%) of herders reported that whenever one sees or hears *ngelekele* (Bearded Woodpecker *Chloropicus namaquus*) singing and flying over you, it may be a sign of danger such as lion, snake or death of livestock due to a disease or death of very close family member or within your clan. A 53-year-old herder reported:

‘Woodpecker is a very important bird species that no one is allowed to kill, because it our “watchtower personnel” and it informs us of impending dangers ahead and thus we have a cultural duty of conserving and protecting it’.

All seven FGD panelists alluded to the herder’s sentiments about woodpecker and an elder (69 years old) referred to the woodpecker as a ‘*gift from God because it protects them and their livestock’.*

Eighty-three percent (83%) of herders interviewed reported that when *kiarara* the Common Cuckoo (*Cuculus canorus*) make a loud noise, there must be a big snake within that area such as python, cobra, puffadder, green

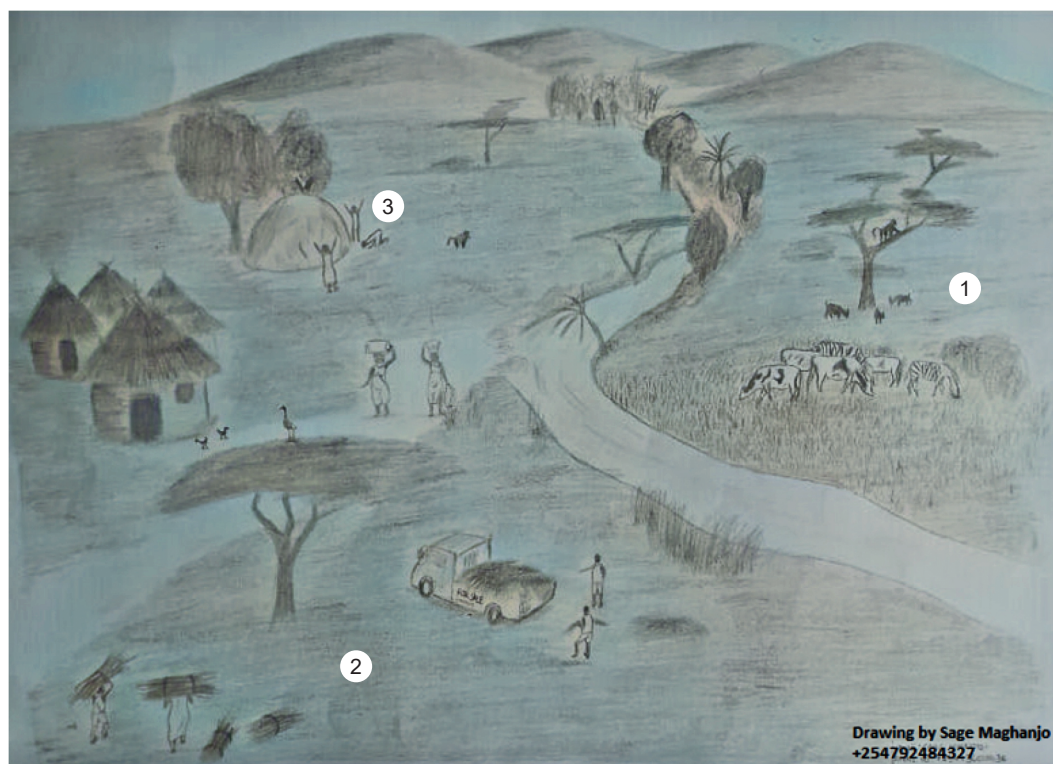


Figure 5: An artistic expression of Mwanda-Marungu community pastoral commons and the services associated with this communal landscape: (1) Wildlife habitat and livestock/wildlife co-existence; (2) Provisional services (firewood, water, thatching grass, hay sold to neighbouring community during dry seasons – thus local revenue); and (3) Shrines for worship and cultural values. Credit: Sage Maghanjo

mamba or black mamba, so they regard this bird as an important for early warning to herders to avoid passing or grazing in such areas. Elders reported that they normally predict abundance of pasture, rain or food harvest if many *irewu* D'Arnaud's Barbet (*Trachyphonus darnaudii*) nests in *Acacia tortilis* (*shighiri*). They said that when barbets build many nests, it signifies abundant rainfall for that year and but in the event of absence of barbet nesting, it correlates to very low rainfall and thus it informs herders to conserve pasture as hay or silage for use during drought seasons, thus they all said that it is taboo to kill barbet bird.

Ninety-three percent (93%) of respondents during FGD the elders reported that owls are indicator species as they signify healthy and productive pastoral commons and also as a very important biological control of rodents such as rats, squirrels and also snakes. They said that it is taboo to kill an owl and it is linked to a curse to the one who killed it. At the same time, elders reported that they are worried that of late they have seen fewer and heard less hooting of owls and thus probably their pastoral commons could be degrading.

Eighty-six percent (86%) of herders interviewed associate *nyagha* (ostrich) with safety of their livestock. They reported that they prefer taking their livestock to graze in areas that have ostriches. Elders alluded to this saying that since the time of their forefathers, ostrich is associated with wellness and calmness and thus you will be safe if your animals graze nearby.

Ninety-three percent (93%) of herders said that they monitor movement of *indoindo* (white headed vulture (*Trigonoceps occipitalis*) because whenever they are seen flying, there could be lions, leopard, hyenas or cheetahs nearby, so herders reported that they normally avoid taking their livestock to such areas as they may be attacked.

Ninety-two percent (92%) of respondents reported that there have put restrictions by cursing anyone who destroys indigenous trees at a water point or riverine ecosystem, which they said are very important for survival of the community, livestock and provide habitats to a myriad of wildlife species such as baboons, monkey, birds, bats, insects, monkeys etc. Some of the riverine indigenous tree species they mentioned are *Ficus thuningii* (*mvumu*), *Ficus sycomorous* (*muku*), *Acacia tortilis* (*mughunga*) and *Acacia mellifera*. During the FGD, one elder reported that:

'All community members have equal duty to conserve and protect riverine forests because we get pasture for our goats because trees normally shed leaves during the dry season. It is a punishable offence to cut a tree in riverine area because it also protects water sources and prevents erosion on seasonal riverbanks.'

All seven respondents (elders and herders) in the panel supported the elder's sentiment.

Community's customary norms that may promote in-situ biodiversity conservation

Question: Are there taboos, norms that promote co-existence with wildlife within Mwanda-Marungu pastoral commons?

Seventy-three percent (73%) of the elders and herders reported that they have put restrictions of not to kill wild animals within their territory and in extreme cases, such

as famine (e.g. those of 1991/1992, 1995/1995, 2000 and 2009) they reported to have killed a male wild animal, an antelope, for food and they restricted killing a female animal because of what they call 'killing the entire generation of species'. According to elders, such strategy has helped to maintain the antelope population of in their region. They however reported that there had been few incidences where hunters from outside have indiscriminately killed wild animals at night, thus endangering wildlife stocks.

Ninety-four percent (94%) of elders and herders reported on restrictions of grazing or taking livestock/salt lick points after 15:00 h every day, to pave way for wildlife to drink and lick salt. Elders explained that the 15:00 h rule was done by their forefathers because this strategy promotes co-existence with wildlife and minimises contact between wildlife and livestock. A 43-year-old herder said:

'We normally avoid taking our livestock to water points after 15:00 h because at that time wildlife would also come to drink. Wildlife just like our livestock are God's creation, and thus they also have the right to enjoy common resources such as water and salt lick. During the FGD, a 67-year-old herder said that 'we also avoid taking our livestock after 15:00 h to water points and salt licks because in the event of wildlife and livestock meeting, predators such as leopards, lions, hyenas may be tempted to attack and kill our livestock. Once this happens, it would be a disaster because those predators will develop taste for our livestock and intensify attacks instead of hunting wildlife such as antelopes.'

All FGD members supported the herder's sentiments and one elder (aged 70) reported that they also have a norm that restricts their people in pastoral commons from introducing plant crops that are not indigenous in this area. A 59-year-old herder agreed to the elder's sentiment and he added that:

'If a wild animal tastes a new crop, they often develop likings for it and thus making them come frequently to human settlements to look for the crop, thus increasing conflicts.'

A 69-year-old elder agreed by saying that:

'We used to live well along with wild animals, but conflict with wildlife has increased due to some few locals who have planted exotic crops that are not indigenous in this area. If wild animals taste the crop, they often develop likings of the crop and thus making them come more frequently to villages to look for the crop. For instance, elephants now frequently come to our villages looking for maize, banana stalks, pawpaw and cassava which were introduced by some locals in these areas in early 2000s.'

A 61-year-old lady said:

*'There was a non-governmental organization (NGO) which introduced drumstick tree (*Moringa oleifera*) tree species in this region that has attracted antelopes, duikers (*mwakuli*) baboons and monkeys and now these animals are raiding village farms. Few people, who opted to plant drumstick trees, sold their livestock after a promise that they will quickly become rich by planting and selling this tree species, but the NGO has since become non-operational and now*

those who planted Moringa do not know where to sell the produce. We advised them not to accept the Moringa project, but some were greedy and now are very poor without livestock. They have problems with wildlife coming to feed on the plant. This place is only good for keeping livestock but not for farming of crops especially exotic ones’.

Ninety-seven of respondents reported that they have restriction on charcoal burning and fire burning in pastoral commons to conserve indigenous trees, wildlife and soil fertility.

Herders reported that before the introduction of electric fence in Tsavo national park, elephants used to graze alongside their livestock in Marungu village pastoral commons and they offered ecosystem services to the community and livestock. An elder called Maghanga from Marungu village aged 79 years reported during the FGD that:

‘Elephants are our servants because they normally prune the canopy on trees such as acacias and thus enabling sunlight to get to the ground, and this helps grass to grow and thus providing pasture for our livestock free of charge! We do not pay elephants, but they help us. In fact, they also help our women with firewood for cooking because the felled trees dry up and we use them to cook our food. We now benefit if they occasionally come to our grazing lands, but the frequency of coming has reduced because of electric fence at the Tsavo West National Park. We fear that if they come fewer times, we are going to have reduced grass to feed our livestock and thus impoverishing us day by day. We heard that elephants are killed inside the National park by “wadiwi” (poachers). When elephants are within our landscape, nobody kills them, but now they are being killed in the protected area.’

His sentiment was supported by all respondents in the Focus group discussion.

Elders said to have put strict norms that ensures sustainable utilisation of pasture in their landscapes. No herder or person is supposed to burn charcoal or smoke cigarettes within the commons as this many pose dangers of fire and destroying pasture and what elders described as ‘*Iwala Iwa mbuwa*’ (hardening of ground and bareness of land). A 69-year-old elder said:

‘Fire may make us poor within few minutes. If this beautiful land you see is razed by fire, all wild animals that we live with are killed plus their young, eggs, insects, snakes and also all pasture will be destroyed. Fire will scare away baboons, elephants and monkeys which help our goats during dry seasons by dropping acacia pods (muzaule) which are excellent food for our goats. So we cannot allow anyone to start fires that will cause suffering to innocent creation of GOD’.

His sentiment was supported by all members and a herder aged 48 years (*mwanyika*) said:

‘I have seen fire causing dangers in Kishushe commons. When I had visited my friend last month in Kishushe, I saw barren land because in December 2016, another evil man set on fire huge pastoral land because he was denied access to graze, and today this area has very little vegetation, not as it used to be before [see Figure 6 on what the respondent referred to]. In fact, herders from Kishushe, Paranga, Werugha,



Figure 6: The view of Kishushe/Paranga community grazing land. According to a respondent, this area’s vegetation was burnt by a person who was denied access to graze and did so in retaliation. According to elders, this area has diminished its productivity and can no longer support the livestock as before, thus demonstrating the dangers of fire in ecological integrity. The photograph was taken at the elevation of 735 m asl; 3°17’34” S, 38°23’59” E. Credit: Daniel Mwamidi

Wumingu, Mbulia, Mbololo, Voi, Mwatate and other neighbouring areas come to purchase pasture from our pastoral commons during the dry seasons. Our land will continue providing pasture for as long as we restrict the use of fire to burn bushes and forests’.

Discussion

Based on responses from the Mwanda-Marungu residents’ pastoral commons in this southern Kenyan territory, it provides evidence from the community members on how their pastoral landscape meets the description of being considered as Other Effective area based on Conservation Measures (OECMs) described by CBD (2018).

The results clearly indicate that Mwanda-Marungu locals are knowledgeable of their territory through boundaries and have clear understanding of every part of their ancestral landscapes. This may be a driver as to why Mwanda-Marungu enjoys relatively robust ecosystems (based on the number of livestock that is supported and a myriad of ecosystem services such as pasture, water, herbals, wild edible vegetables, fruits, insects among many that locals have reported to get; landscapes attracting tourism, etc.) as opposed to other neighbouring areas in Taita Hills for example Kishushe, Paranga, Mbulia community landscapes where private mining companies, sisal plantations were established in communal land thus also distorting community leadership jurisdiction. According to Wagner (1999), local people have higher tendencies to know their boundaries precisely if they have a close attachment to their landscapes either through aesthetic enjoyments and moral religious meaning they accrue from it. This is true with residents of Mwanda-Marungu, who are reported to have a very close attachment to their landscape and elders teach

their children each boundary of their community landscape. They even describe their land as a 'hospital' which shows the extent that this land is important for their day-to-day life. This has been demonstrated by Borrini-Feyerabend et al. (2004) in which they have observed that indigenous peoples and local communities have higher chances of success in conservation of nature because they conserve what is theirs, what they know and what they benefit from. Thus they perceive their ancestral landscape as all that they have and thus they have a moral obligation of protecting it.

Based on the Mwanda-Marungu herders and elders, it appears that they have great zeal and ability to sustainably manage their landscape and resources in the long-term because by involving their youths in identifying and protecting their landscapes and resources, then we can deduct that Mwanda-Marungu pastoral commons may still be protected if there are no external factors that may come to degrade the drivers that underpin its sustainability. This corroborates with Krettenauer (2017), who observed that youths who are taught about environmental protection matters by their parents/societal elders they have high possibilities of becoming environmental protectors later in their later lives.

As noted, Mwanda-Marungu is not a free access area where external or internal members freely get in to graze or utilise resources, but it strictly belongs to the local residents and must be used according to very concrete rules decided by a collective of leading and knowledgeable male elders, which qualify as OECMs and further meeting ICCAs criteria as described by Kothari et al. (2012). Kothari's criteria are handy in ensuring that there are rules governing the territory of an area occupied by the indigenous people/local communities, and that local members have regimes that protect resources found in the land to guarantee sustainability as opposed to free access where Hardin's (1968) tragedy of commons may set in. This is not the case with Mwanda-Marungu pastoral commons where elders themselves reported that they do not allow foreigners to graze inside their pastoral commons and block the attempt of other community members to enter their pastoral commons, if they do not adhere to the rules and norms that governs grazing in their landscapes in fear of severe punishments by the community. The authors (Maghanjo Mwamidi et al. 2018) had similar observations of boundary protection of pastoral commons by the Daasanach community in northern Kenya, where they restrict other communities from grazing in community-protected areas in fear of non-conformity to the norms that govern the sustainable use of pastoral resources in their communal land. According to Kothari et al. (2012), free access to community resources may be unsustainable in the long run because it is a free-for-all, thus a tragedy may occur (Hardin 1968), whilst this is contrary to the Mwanda-Marungu pastoral commons where only members have access and grazing, while they have to do so in adherence to the norms set, and thus qualifying Mwanda-Marungu as a potential OECM, and following Ostrom's principles of commons (Ostrom 2015).

It is interesting to note that Mwanda-Marungu continues to get ecosystem services as elders and herders continuously report. It is a clear indication that territorial protection may help to conserve natural resources in the landscape and can

guarantee future prosperity of the region. If such pastoral systems are supported and strengthened, they may help in attaining the UN's Millenium Development Goals (SDGs) such as target 1 (ensuring poverty eradication); and target 13 of building climate change resilience (UN 2015). In-situ biodiversity has been reported to be of the desirable strategy of coping with effects of climate change especially where there is key endogenous vegetation, species may cope easily than in areas where it would have been greatly modified (Greenwood et al. 2016). Greenwood's finding can be seen in action in Mwanda-Marungu whereby elders reported that they protect endogenous vegetation and species of fauna found in their landscapes, and have even restricted locals from introducing exotic plant species that may interrupt nature and wildlife co-existence. In addition, elders mentioned how they enjoy from beneficial symbiotic relationship with baboons, bird species and elephants alongside their livestock, which demonstrates that they encourage in-situ biodiversity conservation and co-existence.

The United Nations Development Programme (2015) pointed out that one of their strategies of eliminating poverty is through building local communities' resilience in food reliance through environmentally friendly mechanisms which are less costly and highly consistent and resilient. Mwanda-Marungu elders mentioned how they derive their livelihoods within their communal lands and the strategies they employ, to ensure that there is a sustainable supply of ecosystem services such as food, wild fruits, edible tubers, fruits, insects, vegetables, herbal medicines, water resources, etc. It clearly shows that pastoralists can provide important solutions for sustainability, and if well approached (e.g. participatory process of adding value to the different food chain production, inclusion of their service for environmental protection attractive for emerging tourism, etc.), can also contribute in poverty eradication in rural areas, especially where the other forms of livelihoods cannot or are very difficult be practiced such as in 80% of Kenya's landmass which lies in arid and semi-arid regions.

Conclusion

Sound customary norms and rules are linked to the well-being of the studied commons and this work opens the door to stimulate further studies in the area and other similar pastoral commons in the region, to quantify their exact effectiveness. Although we did not do a quantitative species assessment or others of the sort, reports from elders and our observations indicated that these pastoral commons in Mwanda-Marungu are relatively well conserved, in comparison to others nearby without such systems, and may offer lessons learnt to other degraded pastoral ecosystems.

Despite the neglect of customary pastoral commons in East Africa and especially in Kenya, and also assumptions that pastoralism may be irrelevant or even counter-productive in solving environmental crises, there are clear indications that the studied pastoral commons may offer sustainable models for environmental conservation and for attaining the Sustainable Development Goals – target 1 of extreme poverty eradication and target 13 of building resilience on climate change effects and enhancement of adaptation, which is for the moment contrary to many

perceptions and previously held notions about these important communal systems.

These commons provide a myriad of ecosystem services as indicated in the results section and by other authors cited here, while locals are so very closely linked economically and culturally to these ecosystems that they also have a big stake in biodiversity conservation of nature and biodiversity which is one pillar of sustainable environmental conservation.

Mwanda-Marungu clearly meets the characteristics of both OECMs and also Indigenous and Community Conserved Areas (ICCAs) in all fronts such as: (1) a community having a deep connection to their territory through historical, religious, ecosystem services (socio-ecological outputs) that are accrued in the landscapes; and (2) the local community have legitimate authority to safeguard and reinforce rules and norms that governs their area and all its members and ensures that their land is protected. This seems to be essential in guaranteeing sustainability of natural resource protection such as pasture, water, biodiversity, wild animals as well as cultural aspects attached to landscape elements through worshipping shrines, beliefs, etc. This is just an example of how many more pastoral commons work around all of Kenya and East Africa: the Mwanda-Marungu commons demonstrate their autonomy and capacity in building sustainable and resilient socio-ecological systems at local level, but are also important as a symbol and indicator of what exists over thousands of square kilometres of fragile ecosystems and populations throughout the horn of Africa, but are mostly ignored or even degraded by state actions or that of other international agencies that ignore such systems.

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ORCID

Daniel Maghanjo Mwamidi: <http://orcid.org/0000-0003-0083-4163>

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