Adaptation Strategies of Rendille Pastoralist Households to Climate Change and Variability

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Abstract

Pastoralists are increasingly employing different strategies to cope with the impacts of climate change and variability. These strategies have been found to be effective in maintaining the livelihoods of the pastoralists. This study examines the recent strategies used by the Rendille pastoralists in Marsabit County to cope with the impacts of climate change and variability. The qualitative study was conducted among 30 pastoral households using interviews and focus group discussions. Findings show that diversification of herd composition is a major adaptation strategy applied by Rendille community. Livestock diversification helps to improve household food security. Mobility as an adaptative strategy has also enabled Rendille pastoralists to maximise the use of natural resources found in Marsabit. During drought, some of the pastoralists sell their livestock to generate income and also use the money to restock when the drought seasons come to an end. Various organisations within the area have started emergency programs which allow for off-take and destocking. Cash transfer to households and diversification of livelihood alternatives are among the measures employed by Rendille pastoralists to cope with the impacts of climate change and variability. Even though the pastoralists are practicing various adaptive strategies, the impacts of climate change and variability continue to put strain on pastoralists' resources.

Key words: Adaptation strategies, Climate change, Kenya, Pastoralism, Rendille,Variability

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Introduction

The pastoralists from Rendille community in Marsabit county continue to struggle with the impacts of climate change and variability. The challenge is compounded by limited adaptation capacity especially among the pastoralists in Sub-Saharan Africa. Herrero *et al.* (2016) posit that one of the most significant challenges Africa faces in dealing with climate change and variability is the lack of adaptive capacity arising from inadequate financial resources, limited technical and technological capabilities, weak institutions and lack of awareness. Despite these challenges, several adaptive mechanisms are

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currently being used to cope with the impacts of climate change in Africa. This study explores five main coping strategies employed by the Rendille pastoralists. These strategies include herd diversification, mobility, livestock off-take, cash transfers and livelihood diversification.

Diversifying herd composition has been used by pastoralists to cope with environmental shocks caused by climate variability. Most of the Rendille pastoralists keep cattle, sheep, goats and camels. Camels, goats and sheep are considered hardy animals because they can withstand various climatic shocks found in ASALs. Little and Mcpeak (2014) reported that camels can survive for a long period without drinking water. Camels are browsing animals which produce higher amounts of milk than other animals. Regassa and Stoecker (2012) argue that livestock diversification helps to improve household food security.

Rendille pastoralists migrate with their herds to the slopes of Mount Kulal and towards the fringe of Ndoto Mountains during drought mobility, a strategy that has been used for a very long period to adjust to climate change (Turner 2014). Increased flexibility and mobility reduce herd losses as it enhances access to grazing land, thus increasing animal productivity (Little and Mcpeak 2014). During drought, Rendille pastoralists sell their livestock to generate income. Various organizations have started destocking emergency programs in Marsabit County. The program promotes the off-take and destocking of weak animals that cannot be sold (Pastoralists Community and Development Assistance and Food for the Hungry 2017). Sale of livestock by Rendille pastoralists enables them to avoid loss before the death of their livestock.

Indigenous knowledge of pastoralists' communities has been very crucial in responding to climate variability and change (Wsham and Thomas 2011). In addition, formal education has played a significant role in securing jobs for pastoralists and helping them to gain access to information that is critical for long-term adaptation strategy. Pastoralists have started using commercialized fodder production, fattening and water supply enterprises to cope with climate risks. Introduction of new water management technology helps pastoralists to avoid massive losses during drought (Arjjumend 2017).

Kenya and Ethiopia have invested in livestock insurance as a way of adapting to climate change especially during drought. They provide immediate pay-outs to pastoralists at this time so that they can keep their livestock alive. Waters-Baye (2016) states that livestock insurance has been used in a number of countries as one of the climate change and variability coping mechanisms. In the past, selling of milk

was uncommon among pastoralists of Marsabit County. Milk sale contributes significantly to pastoral household income especially during drought (Koirala and Bhandari 2020).

Due to political and economic reasons, some of the pastoralists have started fencing communal land for their personal use to ensure grazing land is always available (Belesova *et al.* 2019). Fencing of communal land denies other community members access to that land putting cultural norms and values in jeopardy. It also blocks the trekking routes to the market and water points (Koirala and Bhandari 2020).

Research area

The research was conducted in Marsabit County. The Northern boundary of the County is marked by the Chalbi desert while the western boundary is marked by Mt. Kulal. Ndoto Mountains and Mathews Range mark the southwestern boundary. The study was conducted among the Rendille community. The Cushitic-speaking Rendille are linguistically, physically, and culturally related to Somali populations, from whom they claim descent (Roth 1991, 1996).

In pre-colonial times, Rendille featured a subsistence base of nomadic mixed-species pastoralism, herding camels, goats, and sheep in the arid lowlands of the Kaisut and Chalbi Desert, in what today is Marsabit County, northern Kenya.

Severe droughts from the 1970s to the present resulted in large livestock losses (Roth 1991, 1996) and led to increased sedentarisation for the Rendille (Nathan *et al.* 1996; Fratkin *et al.* 1999). The Rendille were first described as a non-contraception population regulating their fertility by means of cultural practices by Douglas (1966), who listed the Rendille, along with three other cultures, the Pelly Bay Eskimo, Tikopian Islanders, and Nambudiri Brahmins, as exemplifying "population control in primitive groups" (Douglas 1966:271). She ascribed population control to the Rendille's dependence on their slow-growing camel herds. Rendille believe their population to be a fixed resource. A static stock population cannot support an increasing human population. Rendille have a problem of over-population in relation to camels.

Methods

The study included 30 pastoral households drawn from three *manyatta* including; Ntiliya, Lorokusho and Lemara of Laisamis sub-county, Marsabit county. The pastoral household members were sampled based on their willingness and availability to participate in the study. The sampling frame for

the study was a list of all pastoral households obtained from local administrative officers. In-depth interviews were conducted with 30 pastoralists to gather information on how the Rendille community copes with the impacts of climate change and variability. Focus Group Discussions (FGDs) were also conducted to address the research objectives. Two FGDs were conducted in each of the three manyattas. Separate FGDs were conducted for both men and women. In total six FGDs were conducted during the study. Audio recordings of the discussions were obtained with the permission of the participants. Data collected included the audio recordings of the opinions of the participants as well as demographic information of the participants. Key informant interviews were also performed. The interviews confirmed the information gleaned from in-depth interviews and FGDs. A total of five key informants within Laisamis Sub-County were interviewed. Key informants included chief, village elder, a veterinary officer and two members of the community.

Results

Herd diversification

A majority (63%) of the participants mentioned that herd diversification is a climate change adaptation strategy that Rendille pastoralists of Laisamis sub-county have used in the past and continues to be critical in mitigating the effects of climate change.

According to a key informant, browsers and grazers consume various kinds of food and have different rates of adaptation, which help a majority of pastoralists to reduce significant livestock loss because browsers can endure prolonged drought. Even though herd diversification is desired by many pastoralist households, 37% of the respondents did not have all varieties of herds due to loss of herds during the drought. The views of the respondents and key informants were corroborated by the following statement from one of the discussants:

> Our pastoral strategy is to keep a diverse range of species that use various parts of forage and have varying drought resistance. We breed each animal with a specific goal in mind: to meet the needs of pastoral households. Sheep and cattle are more sensitive to drought than other livestock species. Drought-resistant animals include goats, donkeys and camels. We keep cattle and camels for milk. We prefer goats because they give us cash income and also food; most pastoralists prefer to keep goats and camels to cattle because goats do not require a lot of fodder, they can go for several days without water and gain enough weight in six months to be sold after drought to help with drought resilience (Male discussant from Manyatta Lemara).

Livestock off-take

Almost all (80%) of the participants reported that livestock off-take during drought is a common practice among the Rendille pastoralists. Respondents argued that some animals, such as cattle, cannot withstand long periods of drought due to lack of food and water, so they are sold before they die. It was also noted that 20% of the participants were reluctant to sell their livestock when the drought intensifies with the hope that the situation will improve and the livestock stocks would eventually regain at the onset of rains. However, such households normally end up losing the entire herd, thus leading to double losses. Moreover, due to a decrease in milk and butter yields from cows and camels, most households are forced to sell even lactating animals, which were previously prohibited in order to purchase grains and other foods.

According to key informants, livestock off-take is a solution to reduce livestock losses during times of drought and food scarcity while meeting family expenses. The discussants stated that they prefer selling sheep and goats on a regular basis for small expenses and to cover other adaptation costs such as buying fodder, while cows are kept for milk and calf production as well as large expenses such as paying bride price. One of the key informants made the following remarks with regards to livestock off-take:

> Due to severe effects of the drought, most of us have begun to practice livestock off-take. The government, in collaboration with the Kenya Red Cross, have been implementing livestock off-take programs in this area during the times of severe drought. In 2022, the program assisted many of us to deal with severe effects of drought. They purchased goats and sheep at a cost of Kshs. 3,000 and Kshs. 15,000 for cows. The animals were slaughtered and the meat was distributed to drought-affected households. They were paying special attention and providing meat to mothers with children below five years, malnourished people, pregnant and lactating mothers and people with disabilities (A key informant from Laisamis sub-county).

Mobility

Rendille pastoralists migrate with their herds to the slopes of Mount Kulal and towards the fringe of Ndoto Mountains and Samburu regions during drought. Temporary migration of nomadic Rendille pastoralists increases their access to grazing land and thus promoting animal productivity; this minimizes livestock loss due to drought. The majority (92%) of the participants confirmed that livestock migration is an adaptation strategy they employ in order to reduce the risk associated with drought. Only

8% of the participants reported that they have never used migration as an adaptive strategy and instead opted to keep only goats which are likely to survive in the area even during severe drought. A discussant demonstrates how the pastoralists migrate during drought as follows:

> We move our livestock in accordance with rainfall patterns, for example, two days ago, it rained in Samburu and the livestock were taken there to look for water and pastures that might have grown (Male discussant from Manyatta Ntiliya).

Cash transfer

The majority (96%) of the participants reported that they have been beneficiaries of cash transfers. They indicated that they use the cash transfer funds to buy food for their families and also to buy fodder for their livestock. According to some key informants, the program provides resources for meeting basic needs. The cash transfer is critical in responding to climate shocks and reducing stress associated with climate variability. A small number (4%) of the participants indicated that they have never received cash transfer from the government or any NGO. A key informant said the following about cash transfer:

> There are three types of cash transfers provided by the government; those for people with disabilities, those for hunger relief and those for the elderly. The government of Kenya launched the Older Person Cash Transfer (OPCT) in 2007. Beneficiaries of OPCT, cash transfers for orphans and vulnerable children and cash transfers for people with disability are given Kshs.2000 per household per month. Furthermore, beneficiaries of Hunger Safety Net Program (HSNP) receive Kshs. 5,400 after every two months (A Key informant from Laisamis).

Another informant had this to say about cash transfer:

> Cash transfer has helped to improve pastoralists' food security by restoring livelihoods and reducing the need for negative impacts of climate change and variability. Cash transfer has also helped the recipients to purchase food and other basic commodities. For example, the six-month cash transfer, which was funded by UKAID and DEC and implemented by Christian Aid via PACIDA helped many vulnerable households to reduce the impacts of drought which has affected the pastoralists over the previous two years (A Key informant from Manyatta Ntiliya).

Livelihood diversification

The Rendille people traditionally relied on livestock products as the only source of livelihood for many years. However, frequent droughts have become a major threat to the pastoralists' livelihoods. Diversification of livelihoods alternatives by the Rendille pastoralists enables them to meet family needs, manage drought risks and recover quickly after drought. Most of the participants (77%) listed a number of livelihood alternatives including casual labour, micro business, employment and sand harvesting. Other activities include poultry keeping, honey production and making handicraft products such as beads.

The frequency of drought has forced the majority of the households to engage in different activities to supplement resources from livestock production as indicated by one of the key informants below:

> Rendille pastoralists have begun practicing various modes of production. Some have turned to poultry keeping and egg selling. Some people have formed Community-Based Organisations (CBOs) to assist one another to start and grow businesses. As a major adaptation strategy, livelihood diversification has assisted the pastoralists to supplement livestock production **(**A Key informant from Manyatta Lorokushu).

Another discussant had the following to say about livelihood diversification:

> We used to rely entirely on livestock. But we can now borrow, lend money and do casual jobs such as building manyattas, washing clothes, fetching water and harvesting sand just to survive. Moreover, learned relatives and different NGOs such as NAWIRI have taught us the importance of table banking. We have formed groups and we contribute on a weekly basis. These organisations have helped us to start and grow business such as selling ornaments and beads **(**A female discussant from Manyatta Lemara**).**

Discussion

In Marsabit County, 81% of the population relies on pastoral livelihoods as most parts of the county are arid and unsuitable for crop production. Additionally, 75% of its population is impoverished, thus are already vulnerable to environmental shocks (Kenya Food Security Steering Group 2022; Marsabit County Steering Group 2020). Drought has had a devastating impact on the pastoralists, resulting in massive livestock losses (up to 60% of the county's livestock) in recent years with dramatic impacts on pastoral lives (Ministry of Agriculture, Livestock and Fisheries 2017; Wanyoike *et al.* 2018).

Climate variability has an impact on food availability through its negative effects on crop yield and livestock production (Zougmore 2018). Famine Early Warning System Network (2022) states that 2021-2022 drought in Kenya led to reduction of milk production by 12-59 per cent below the three-year average.

Moreover, some of the households in Turkana and parts of Marsabit County reported no milk being produced due to livestock body conditions which impacted food productivity. The study shows that Rendille pastoralists keep a diverse range of livestock not only to maximise limited resources but also to reduce massive losses during drought. The Pastoralists prefer camels and goats as opposed to cattle because camels and goats are drought resistant. Similarly, research conducted by Kemal *et al.* (2020) among pastoralists of the Korahey zone in Ethiopia shows that they prefer keeping browsers (goats and camels) because these species are better adapted to harsh arid environments and can withstand droughts than cattle. These findings correspond to the findings of a study conducted by Hurst *et al.* (2012) and Mergersa *et al.* (2014) who discovered that pastoralists keep a variety of livestock species to extract resources from the rangeland.

During droughts, livestock off-take has allowed Rendille pastoralists to sell their livestock because animals such as cattle cannot withstand prolonged periods of drought due to scarcity of feeds and water. The programme also allows the pastoralists to reduce livestock losses while meeting family demand. The pastoralists sell goats and sheep on a regular basis for small expenses, whereas they keep camels and cows for production and occasionally for large expenses such as paying bride price. Tesema and Musa (2021) discovered that income generated from the sale of various livestock products during drought through the livestock off-take period had positive contribution in meeting family expenses.

The findings of this study show that during extended droughts, animals are separated into smaller groups. Sheep, lactating herds, and physically weak herds remain near the village with some family members such as the elderly, mothers, and children, while cattle, camels, and goats are driven away by young men in search of water and pasture. Recent droughts and their effects on the availability of scarce resources (pasture and water points) have resulted in the separation of animals and family members for longer periods of time, since the young men have to move far away in search of water and pasture. These findings are similar to those of Ahmed *et al.* (2023) who discovered that the vast majority of livestock migrate on a seasonal basis, during drought among Somali pastoral communities. Others, such

as lactating cattle, weak livestock and calves remain at home to serve the elderly, women and children in meeting family needs by selling animal products like butter and milk.

Rendille pastoralists traditionally travelled for long distances to look for green pastures and water for their livestock during droughts. According to the findings of this study, Rendille relocate to Samburu and Mount Kulal and towards the fringe of Ndoto Mountains to reduce risk of losing livestock during drought. Similarly, Nassef *et al.* (2009) posit that pastoralists not only migrate to feed their livestock but also gain access to markets, avoid diseases and conflict. The pastoralists' movements are either predictable or unpredictable depending on the rainfall patterns.

Employment, small trades and daily labour were examples of livelihood diversification activities reported by the respondents. A study by Opiyo *et al.* (2015) stated that livelihood diversification is a series of activities undertaken to supplement resources from livestock production and it is a major drought adaptation strategy used by pastoralists of Northwestern Kenya. Similarly, studies from other pastoral regions of the world, including Andean Mountains in South America (López-i-Gelats *et al.* 2015) and the Hindu Kush Himalayan region of Asia (Ning *et al.* 2014) revealed that livelihood diversification is a common climate change coping strategy applied by many pastoralists.

Conclusion

The pastoral communities of Marsabit County are already implementing various coping mechanisms and adaptation strategies in order to mitigate the negative effects of climate change. These include herd diversification, mobility, sale of animals, knowledge system, market and technology, insurance packages, commercialisation of milk and fencing of communal land. Even though the pastoralists are practicing various adaptive strategies, the impacts of climate change and variability continue to put strain on pastoralists' resources. Their coping mechanisms have evolved significantly over time. These strategies have been found to be very effective in maintaining the livelihoods of the pastoralists. As argued above, the one major adaptation strategy applied by Rendille community is diversification of herd composition. Livestock diversification helps to improve household food security. Mobility as an adaptative strategy has also enabled Rendille pastoralists to maximize the use of natural resources found in Marsabit.

During drought, some of the pastoralists sell their livestock to generate income and also use the money to restock when the drought seasons come to an end. Various organisations within the area have started emergency programs which allow for off-take and destocking. Cash transfer to households and

diversification of livelihood alternatives are among the measures employed by Rendille pastoralists to cope with the impacts of climate change and variability.

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