

*Full Length Research Paper*

# **The dynamics of pastoral mobility routes in relation to food security in semi-arid areas of Simanjiro and Handeni districts in Tanzania**

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**This study specifically examined the pastoral mobility routes in relation to food security in Simanjiro and Handeni districts. The pastoralists from Simanjiro district usually migrate to Handeni and other areas as a coping strategy. During the pastoral mobility the pastoralists face different problems such as food insecurity. The data were collected by using participatory geographic information system (PGIS) and the descriptive data using questionnaire survey, focus group discussion and interviews. A total of 367 respondents were asked to fill the questionnaire, eight focus discussion one from each village, each focus group discussion comprised of eight members. The focus group discussions were assigned to locate the current and former mobility routes; once these points are reached the food is always finished, and all of these were located on the satellite image. Data show that 58% of the respondents said that the dynamics of the route was because of looking for shortcut path. Most of the pastoralists about 38.9% stayed 3 to 4 months in the destination area, 61% of the respondents had no access of food on the mobility route. 39% of the respondents had food during mobility and the food available was maize flour 44.4%, beans 20.7% and milk 18.5%. Therefore, it is evident that pastoral mobility has an impact on pastoral communities especially on food security since walking long distance searching pasture and water causes the livestock to be unhealth which lead to poor production of milk. This study recommends that the pastoralists especially the Maasai pastoralists should reduce the number of their livestock so that during drought season it could be easier to handle the livestock without deciding mobility which is more problematic, as it causes challenges such as death of livestock due to long distance travel to the pastoralists themselves and the livestock.**

**Key words:** Pastoral mobility, pastoralism, food security, semi-arid areas.

## **INTRODUCTION**

Pastoralism is among the most vulnerable sector to climate change and variations as they depend on the

resources whose availability depend on seasonality. The major impacts of climate change on livestock production

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are through changes in production of pasture and water (Kimaro and Chibinga, 2013). The pastoral livelihoods which are mainly constituted of the delicate balance among pasture availability and livestock production are believed to be highly resilient to periodic shocks of drought and rainfall variability (Thornton and Herrero, 2015). However, the recent climate variability through increased frequencies of extreme events such as drought and floods undermine pasture and water availability (ibid). The success of pastoralist livestock production depends on mobility in order to ensure the timely and reliable access to pasture (Otieno, 2016).

Mobility of pastoral communities is part of their coping strategy to climate change and variability. Mobility is one of the tradition coping strategy based on movements within and across geographical distributed grazing units (Berhanu and Beyene, 2015). The pastoralists' way of living is reliant on the keeping of livestock and often sustained through national and regional migration (Krätli et al., 2012). Mobility is important for pastoralist living in dry land areas, as they move in search of water and forage. In this way, mobility is essential in order to reach the most optimal production in times of unstable climate and drought (Flintan et al., 2013).

This mobility create serious problems to the livestock as long distance movement weaken their body which lead to low production of milk and meat as a result the pastoralists eat ugali which they do not prefer (Helen, 2010). Also moving livestock outside of pastoralists' home areas increase the risk of livestock loss by force or through the exercise of power that means local elites and government officials which also can result to food insecurity as they lose their source of food which are livestock (Turner, 2011). Generally, pastoral mobility causes food insecurity to the pastoralists as they lack food during mobility because of overdependency on livestock products such as milk and meat which are affected by climate change and variability impacts. The pastoral mobility routes are not static, they usually change with some reasons such avoiding wild animals, shortcut in reaching the destination areas, avoiding areas with diseases such as trypanosomiasis. Therefore, this paper examines the dynamics of pastoral mobility routes in relation to food security.

## MATERIALS AND METHODS

### Description of the study areas

#### *Geographical location of Simanjiro and Handeni districts*

The study was undertaken in Simanjiro District, Manyara Region Tanzania (Figure 1). The region is located in the northern part of Tanzania. Geographically the district is found between latitude of 04° 30' 00''S and 05° 30' 00''S and longitude of 37° 00' 00'' E and 38° 00' 00''E covering an area of 20,591 km<sup>2</sup>. The district lies at an altitude between 560 m and 2,123 m above sea level. The area's topography stretches from vast plains to scattered ridges and hill valleys. Simanjiro District is one of the six districts of the Manyara

Region of Tanzania. It is bordered to the north by Arusha Region, to the north east by Kilimanjaro Region, to the south east by Tanga Region, to the south by Kiteto District, to the south west by Dodoma Region and to the west by Babati Rural District, (Homewood et al., 2012). Also the study was undertaken in Handeni District which is one of the eight districts of Tanga Region in Tanzania. Geographically the district is located between latitude of 05° 00' 00''S and 05° 30' 00''S and longitude of 38° 00' 00''E. It is bordered to the west by the Kilindi District, to the north by the Korogwe District, to the east by the Pangani District, and to the south by the Pwani Region (United Republic of Tanzania (URT), 2017).

### Climatic characteristics

The Simanjiro district is characterized by semi-arid climate with annual rainfall ranging between 650 mm and 700 mm. The rainfall pattern is bimodal with short rains which occur from November to December and long rains from February to May. The wettest months are March and April while the driest months are July and August. Temperature is ranging between 13 and 30°C characterized by cold months from May to July and hot months from August to February (Pittiglio et al., 2012). Handeni district experiences coastal climate with high temperatures about 27 to 30°C and high humidity while the mean annual precipitation is 800 mm to 1500 mm (United Republic of Tanzania (URT), 2017).

### Data collection and analysis

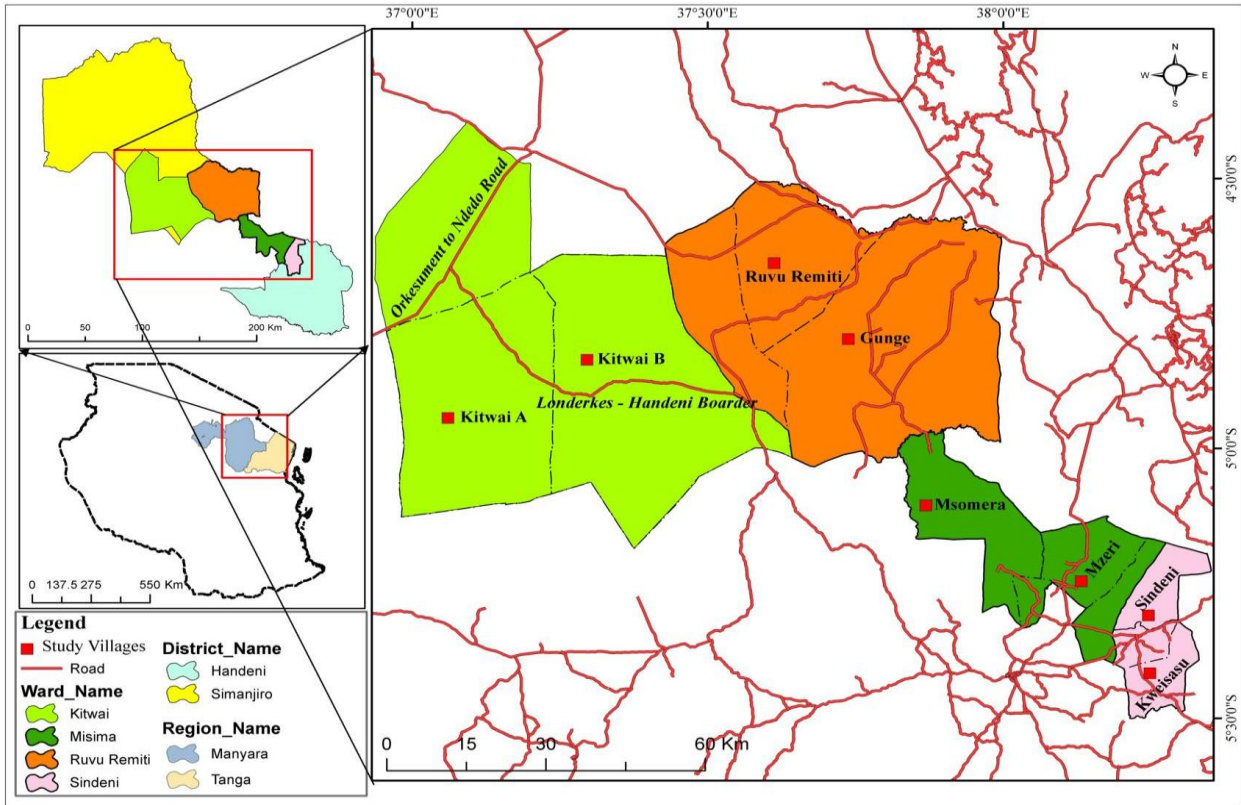
The study used both primary and secondary data to ensure the study aim is addressed. Secondary data sources include both published and unpublished materials relevant to the study aims. Sources of secondary data were from University of Dar es Salaam library, internet and other sources which are relevant. Primary data sources include household (boma) survey, focus group discussions, interviews with key informants (village leaders, village elders). The sample size of the household (boma) survey was 367 which was head of households in eight villages. Simple random selection procedure was used in selecting the heads of households who were surveyed. Quantitative data collected from household survey were analysed by the use of SPSS version 20. The data was analysed to get the frequencies and percentages. The PGIS was used to locate the former and old pastoral mobility routes and all the stations whereby the pastoralists rest during mobility.

## RESULTS AND DISCUSSION

### Demographic characteristics of the respondents

#### *Age of the respondents*

Age is used to indicate the level of maturity of individuals. It is believed that people of different ages have different needs, thinking, understanding and sighting of issues (Grillo, 2012). The results present the categorized age groups of respondents from the collected data based on ages. The rationale for categorizing respondents into different age groups was to facilitate clear understanding on people's perceptions on the impact of pastoral mobility on food security across different age groups. Also, it enabled the study to investigate the history of pastoral mobility. The involvement of respondents of different age groups bring different perspectives to the study which



**Figure 1.** Location of the study area.  
Source: Author generated (2018).

**Table 1.** The age of the respondents.

Age of respondents	Village of respondents								Sample total (n=367)
	Kitwai A (n=38)	Kitwai B (n=52)	Ruvu Remiti (n=58)	Gunge (n=26)	Msomera (n=29)	Mzeri (n=70)	Sindeni (n=52)	Kweisasu (n=42)	
Less than 25	8.5	6.5	14.5	2.4	3.1	4.5	8.3	19.2	<b>8.4</b>
25 to less than 35	25.5	16.1	35.5	22.0	31.3	24.2	27.1	26.9	<b>27.0</b>
35 to less than 45	34.0	38.7	21.1	19.5	25.0	24.2	29.2	38.5	<b>27.2</b>
45 to less than 55	6.4	22.6	17.1	29.3	25.0	22.7	12.5	11.5	<b>18.3</b>
55 to less than 65	10.6	6.5	7.9	22.0	12.5	13.6	14.6	0.0	<b>11.4</b>
65+	14.9	9.7	3.9	4.9	3.1	10.6	8.3	3.8	<b>7.6</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Field survey (2018).

makes it more representative.

Table 1 indicates age distribution of the sampled respondents. The results indicate that on average, 8.4 and 27% of respondents reported having age of “below 25 years” and “25 to 34 years” respectively while those reported having age of “35 to 44 years” were 27.2%. Likewise, 18.3, 11.4 and 7.6% of respondents reported having age of “45 to 54 years”, “55 to 64 years” and “65 years and above” respectively.

### Sex of the respondents

Table 2 shows that on average, 79.6% of respondents were male while females were only 20.4%. Female’s representation was higher at Kitwai A village followed by Gunge village, whereby sampled females were 46.8 and 43.9% respectively. Females were minimally sampled from Mzeri village followed by Msomera where sampled females were only 4.5 and 6.3% respectively. On

average, males were most presented in the sampled results because males were the ones who travel longer distance with livestock in search of pasture and water as compared to female. Females are left home with the children and elders, and their roles were to milk the remaining cattle and prepare food for the family. Also, the females were the ones who build the huts (Inkajijiik). The main problem for Maasai women was that men in the community made all the major decisions about food. Women were left home with few choices when it came to decisions that affected their nutrition and that of their children. As in FGD the women were asked and said they were prohibited in making decisions about selling or slaughtering livestock when their husbands were away looking for pastures for their livestock. Often the men would be gone for three to four months at a time. If the family ran out of food in this time, they would have to go hungry, unless it was possible to borrow food from their neighbors. Therefore, this caused food insecurity to the members of family who left at home.

#### **Level of education of the respondents**

Education is the main key to development and is considered as a strong defense in the fight against poverty. Both developing and developed countries consider education as a strong prerequisite for development (Federico and Claudio, 2005). The study reveals that level of education of the respondents varied from no formal education to college level education. Formal education was seen as not priority in the study area, in reality formal education is the key to the development and considered as strong defence against poverty (Boopen, 2019). The significance of education level was also highlighted by Sianesi and Reenen (2003) who said that education is very important in all development perspectives because it determines the level of participation in fighting against food security.

Table 3 indicates that on average 50.4% of responses reported having no formal education, while those reported having primary and secondary education were 43.9 and 4.4% respectively. The responses reported having post-secondary education were only 1.3%. The results indicate that Msomera village had many responses (78.1%) reported being illiterate (having no formal education) followed by Gunge (75.6%) and Kitwai A (68.1%) as compared to other sampled villages. The Kweisasu village is the most educated village among all sampled villages; 92.3% of responses reported having attained education level of primary to post-secondary level.

These findings were similar to that by John (2015) which show that illiteracy is very serious problem which hinders efforts towards improving food security and it is the main cause of underdevelopment among the society. The illiteracy hinders the pastoralists to initiate the

adaptation mechanisms to the problem of food insecurity that is why those who got secondary to college education had a good life, they do not suffer problems of food because they know the time to sell their livestock, the time to buy food.

#### **Boma size of the respondents**

Table 4 presents results for household size which was defined as boma size of sampled respondents. The results indicate that on average 45.8% of reported responses had boma (household) size of "0 to 9 persons" followed by 30.2 and 11.7% that reported having boma (household) size of "10 to 19 persons" and "20 to 29 persons" respectively. Those responses with boma size of "30 to 39 persons", "40 to 49 persons" as well as "50 and above" were 6.8, 1.1 and 4.4% respectively.

Increase in boma (household) size, implies increased population of particular community which implies more mouths to feed, creating more demand and therefore, exerting higher pressure on resources (Gatiso, 2017). Most of the Maasai boma size comprising of a lot of family members which when the problem of drought come, usually are affected much because they depend much on the livestock which are easy affected by drought. Therefore, due to the nature of their family of depending one source of their income.

#### **The nature of the pastoral mobility routes**

The pastoral mobility routes are the routes whereby the pastoralists with their livestock pass when moving from their area to the destination area. Most of the pastoral mobility routes start from the area where they live. Figure 8 shows direction of the pastoral mobility routes are from Simanjiro to Handeni districts and then coming back to Simanjiro district through the same pastoral mobility routes. These pastoral mobility routes pass on the areas where the livestock can get pasture and sometimes water. Most of the pastoralists from Ruvu Remiti are moving through Lerumo village passing Kitwai B until they enter Handeni districts in the Village known as Saunyi village. The pastoralists from Gunge village divided into two groups whereby others pass through Nguro Mountain and others passes through Larupa area, they all meet near the boundary between Simanjiro and Handeni districts and all enter Msomera village in Handeni district. The pastoralists from Kitwai A village have different mobility routes, others pass Lolongumaishi Mountain, Onyokye, Ngurret and then enter in Handeni district. Others pass Lolongumaishi Mountain then pass East of Ngurret to Saunyi village in Handeni district. Other pastoralists from Kitwai A migrate through Supaker passes Kitwai B to Saunyi village. Therefore, most of the pastoralists from Simanjiro district enter Handeni district

**Table 2.** Sex of the respondents.

Respondent's sex	Village of respondents								Sample total (n=367)
	Kitwai A (n=38)	Kitwai B (n=52)	R/ Remiti (n=58)	Gunge (n=26)	Msomera (n=29)	Mzeri (n=70)	Sindeni (n=52)	Kweisasu (n=42)	
Male	53.2	93.5	78.9	56.1	93.8	95.5	89.6	73.1	<b>79.6</b>
Female	46.8	6.5	21.1	43.9	6.3	4.5	10.4	26.9	<b>20.4</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Field survey (2018).

**Table 3.** Level of education.

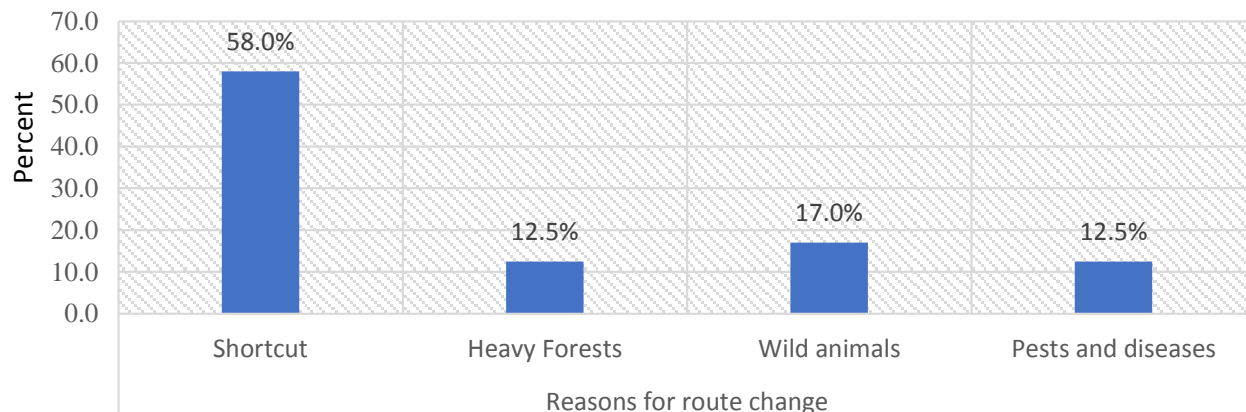
Level of education	Village of respondents								Sample total (n=367)
	Kitwai A (n=38)	Kitwai B (n=52)	Ruvu Remiti (n=58)	Gunge (n=26)	Msomera (n=29)	Mzeri (n=70)	Sindeni (n=52)	Kweisasu (n=42)	
Non formal education	68.1	45.2	48.7	75.6	78.1	37.9	39.6	7.7	<b>50.4</b>
Primary education	31.9	38.7	39.5	22.0	21.9	59.1	60.4	76.9	<b>43.9</b>
Secondary education	0.0	12.9	10.5	2.4	0.0	0.0	0.0	11.5	<b>4.4</b>
Post-secondary education	0.0	3.2	1.3	0.0	0.0	3.0	0.0	3.8	<b>1.3</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

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Less than 10	42.6	54.8	52.6	31.7	21.9	40.9	45.8	84.6	<b>45.8</b>
10 to less than 20	29.8	32.3	13.2	39.0	28.1	39.4	45.8	15.4	<b>30.2</b>
20 to less than 30	14.9	9.7	18.4	14.6	21.9	6.1	4.2	0.0	<b>11.7</b>
30 to less than 40	6.4	3.2	7.9	12.2	15.6	4.5	4.2	0.0	<b>6.8</b>
40 to less than 50	2.1	0.0	1.3	2.4	3.1	0.0	0.0	0.0	<b>1.1</b>
50+	4.3	0.0	6.6	0.0	9.4	9.1	0.0	0.0	<b>4.4</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Field survey (2018).



**Figure 2.** Reasons for route change.

**Source:** Field survey (2018).

through Msomera village to Mzeri village while others enter through Saunyi village to Sindeni and Kweisasu villages.

Figure 9 shows during the rainy season the pastoralists migrate from Handeni district to Simanjiro district. The Maasai pastoralists from Kweisasu village are divided into two groups, others move through Sindeni village then pass Mzeri village to Msomera village to Simanjiro district through Gunge village. Other Maasai pastoralists from Kweisasu village pass Mzeri village and then enter Simanjiro district through Gunge village. Those pastoralists who went in Msomera village also pass dry season pasture area and enter Simanjiro district through Gunge village, others from Msomera village pass Saunyi village and then enter Simanjiro district through Kitwai B village.

### The former and current pastoral mobility route

The pastoral mobility routes have been changing with time, the change of the routes depends on several reasons such as shortcut of the route so as to reduce number of travelling days, heavy forests because it is not easy to pass with livestock across heavy forest, wild animals are another reason for route change this mean that in some area when passing with their livestock the wild animals like lion attack the livestock, in so doing they decide to change the route. Also, pests and diseases have been the cause of pastoral mobility route changes. The findings from Figure 2 reveal that most of the Maasai pastoralists about 58% change their mobility route because of identifying the short cut route to reach their destinations, other pastoralists reveal that about 12.5% of the respondents reveal that heavy forests, pests and diseases were the cause of them to change the mobility route, 17% of the respondents revealed that wild animals were also the cause of the pastoralists to change the

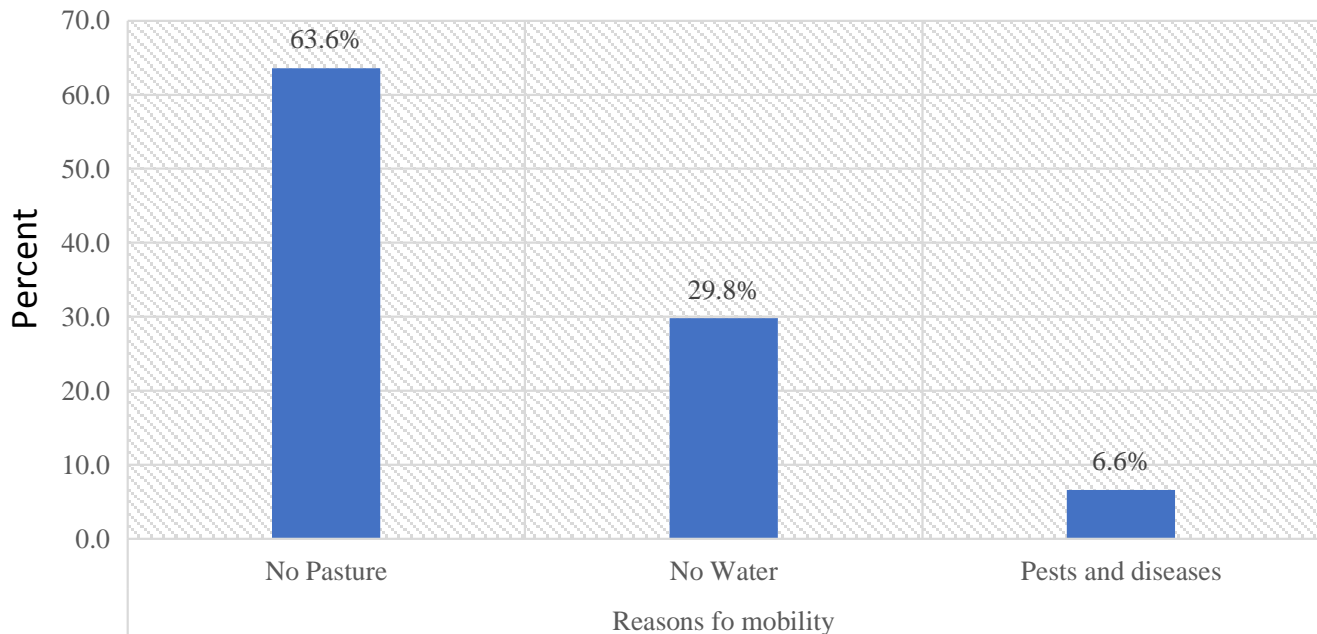
pastoral mobility route. These former and current routes are shown on the maps on the Figures 8 and 9; where the reasons of change also can be seen clearly.

Also, Shem (2010) support the study as identified the routes whereby one is like that identified by the pastoralists themselves during data collection. He categorized four pastoral mobility routes as follows: pastoral mobility route from lake zone, pastoral mobility route from central zone, northern zone pastoral mobility route and new formed pastoral mobility routes. The pastoral mobility routes from the North to South East of Tanzania, whereby those pastoralists from Monduli district migrate to Simanjiro district and when reaching in Simanjiro district the routes divided into two whereby one goes to Same then to Kenya and others goes to Lushoto district and on the other hand the other route from Simanjiro district to Kiteto and Handeni districts. Therefore, this route is much used by the Maasai pastoralists whereby their movement pass at Handeni district others move to Muheza whereby others remain at Handeni until the rainy season to go back at Simanjiro district (Shem, 2010). These routes are shown on the Figure 3. All the routes are moving southward because most of the northern part of Tanzania prone to drought while in the south of the country experiencing high rainfall which make the presence of pasture and water. The other routes include from lake zone to southern part of the country (Tanzania), another pastoral mobility route is from central zone to southern part of Tanzania, each pastoral mobility route is dominated by its own pastoralists' community, for instance red pastoral mobility route is dominated by Maasai community.

### The reasons for pastoral mobility

Most of the Maasai pastoralists opted for mobility as the coping strategy against the impact of climate change and





**Figure 3.** Reasons for mobility.  
Source: Field survey (2018).

variability. Therefore, the findings on Figure 3 reveal that most of the Maasai pastoralists about 63.6% were moving with their livestock because of having no pasture in their area during the dry season, also 29.8% of the respondents revealed that water scarcity is also one of the reasons make the move with their livestock to other areas outside their district and even outside the region. Few respondents about 6.6% of the respondents revealed that pests and diseases also made them to migrate to other areas outside the district and region. Therefore, the main reason for the Maasai to migrate to other areas is in search of pasture.

#### **Time spent at the destination area**

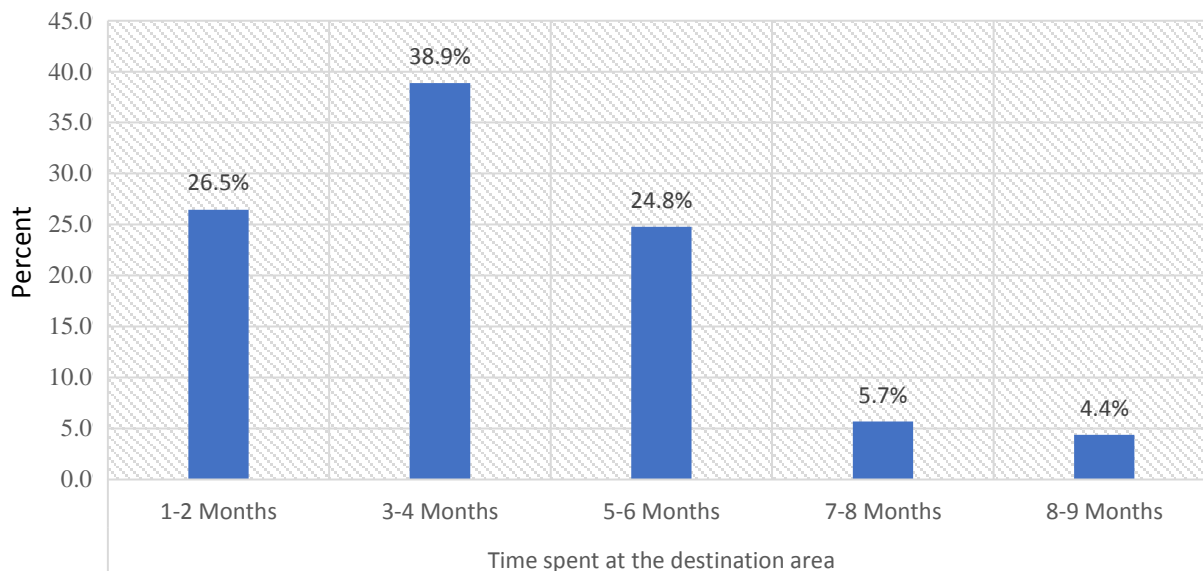
During the drought seasons the Maasai pastoralists move with their livestock to other areas outside their areas and when arriving at the destination area they usually stay more than a month until their area of origin gets rain. The findings as indicated on Figure 4 reveal that 38.9% of the respondents stayed 3-4 months away from their home in search of pasture and water. On the other hand 26.5% of the respondents revealed that they stayed 1-2 Months in the area which they went in search of pasture and water. 24.8% of the respondents said that they stayed about 5-6 months far away from their villages in search of pasture and water, and very few about 4.4% of the respondents stayed 8-9 months in the destination areas. Therefore, 3-4 months are the ones which many respondents stay while in the areas of destinations.

#### **Food availability during migration to destination**

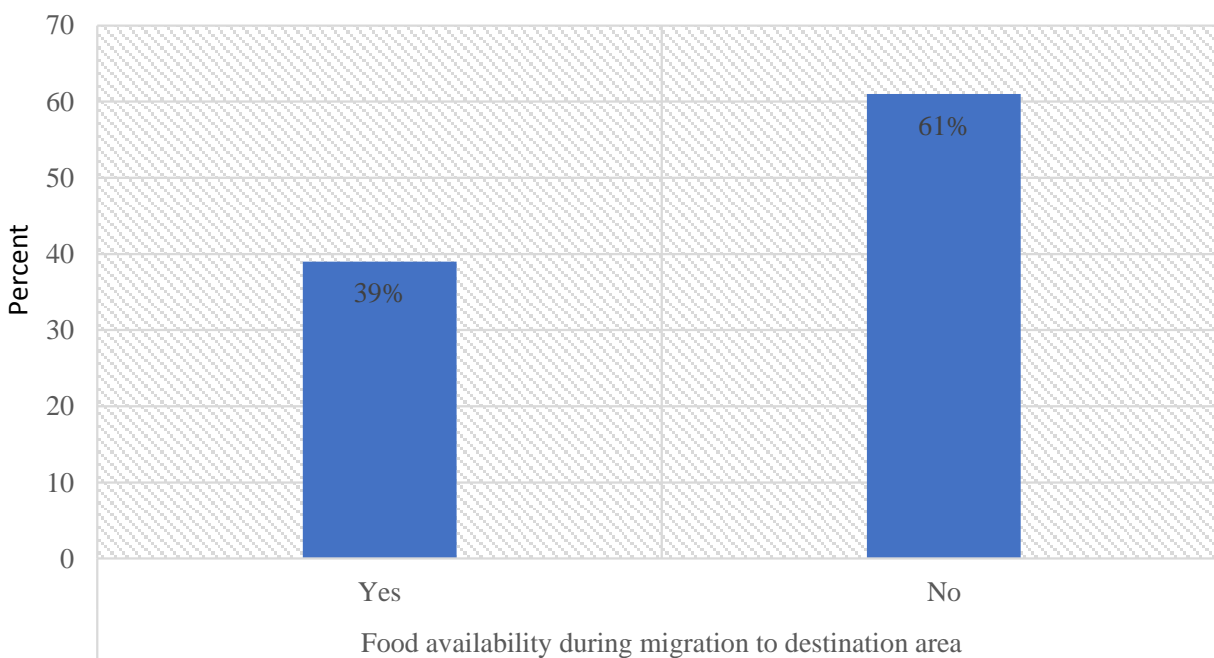
During the pastoral mobility, most of the pastoralists face the problem of food availability since most of the areas where they pass there is no food available, therefore when the food carried is finished then there is no alternative until they send the information home so as they should prepare food and send where the Moran and their livestock are, this causes them to remain without food for some days, but to those who have goats and sheep they just slaughter one and get food but the sufferings is for those who does not have goats and sheep. The findings from Figure 5 show that most of the respondents about 61% revealed that there was no food available when they were on the way to destination area and very few about 39% said there was food during mobility. Therefore, this shows that most of the pastoralists face the problem of food when they are on the way to destination area. Also, this was shown on the map Figure 8 which have pointed out the kilometers when reached the food carried is finished, these points are also the stations to rest for sometimes while waiting from their home or from somebody who is sent nearby village to buy the food, while waiting the Maasai pastoralists are just staying without food, sometimes eating roots, others with cattle which can produce milk they can get a little milk at that point because of long journey travelled.

#### **Type of food available around migration route**

Some of the Maasai pastoralists pass on the routes



**Figure 4.** Time spent at the destination area. Source: Field survey (2018).

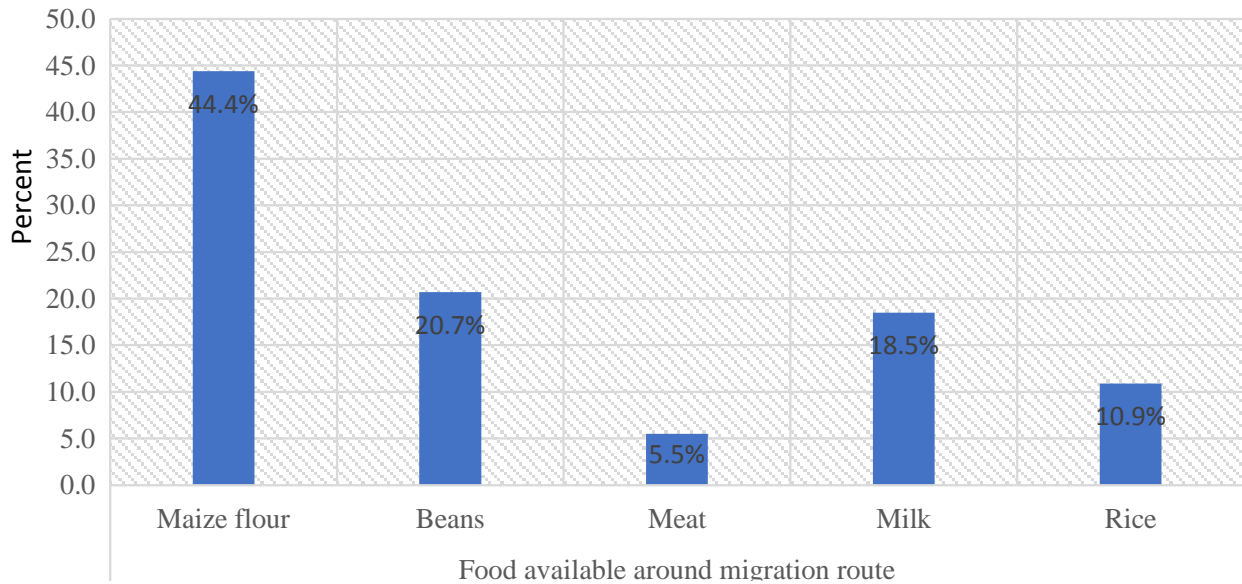


**Figure 5.** Food availability during migration to destination area. Source: Field survey, (2018).

which are along the villages whereby when their carried food is finished, they can access food on those villages. The food types are maize floor, beans, meat, milk and rice. The findings from Figure 6 show that most of the respondents about 44.4% revealed that the food type which was very much available when they were on the

way to destination areas was maize floor, next one was beans which about 20.7% of the respondents revealed it was the second to be found easily when they are moving with their livestock, milk also was another type of food which the pastoralists about 18.5% depend on when are travelling with the livestock in search of pasture and





**Figure 6.** Type of food available around migration routes.  
**Source:** Field survey (2018).

**Table 5.** Those who are involved in pastoral mobility.

Involved in Mobility	Responses		Percent of Cases
	N	Percent	
Elders	73	18.6	21.9
Morani	294	81.4	95.4
Total	367	100.0	117.2

**Source:** Field work (2018).

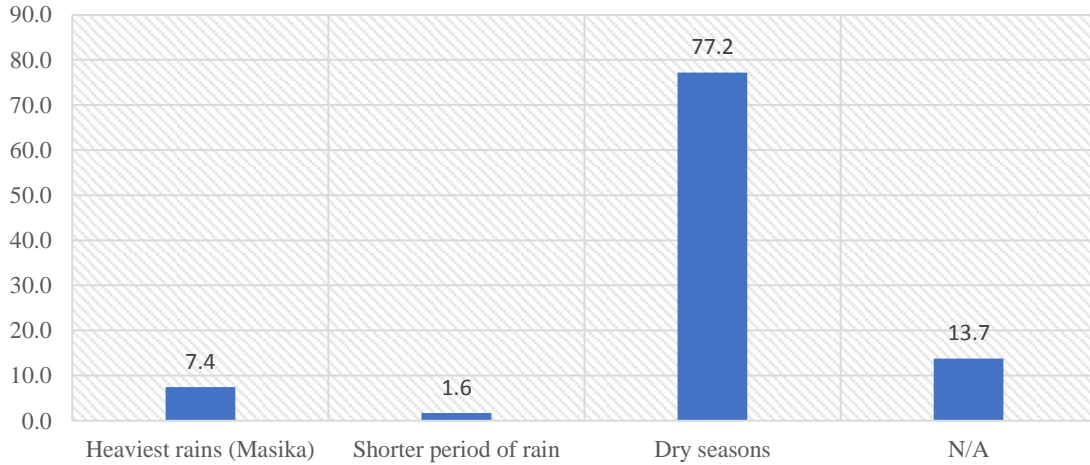
water and meat about 5.5% of the respondents reported it was another type of food which they depended on, this shows that even though the pastoralists depend their living on livestock but very rarely slaughter their livestock for food especially those without goats and sheep.

### Participants in pastoral mobility

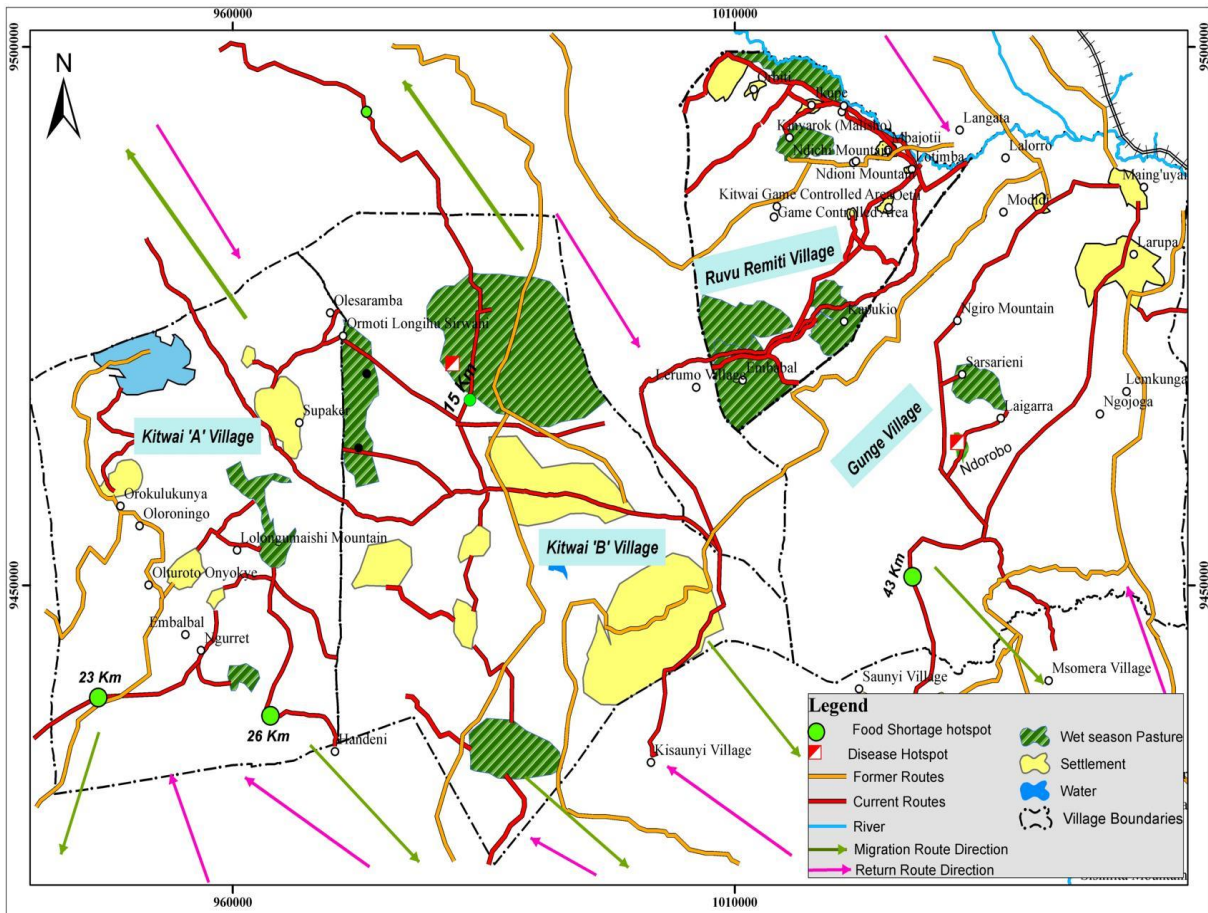
The pastoralists' communities do not involve every individual but there are people of a certain age who are involved in moving with livestock in search of pasture and water. Table 5 indicates that 81.4% of the respondents reported Morani as being most involved in travelling with livestock in search of pasture and water, while few respondents about 18.6% reported elders as being involved in traveling with livestock in search of pasture and water. Elders are involved in a situation where there is no any Morani in particular household, hence elders remain with no option but to take livestock themselves in search of pasture and water.

### The seasons for pastoral mobility

Simanjiro district is in semi-arid area and it is one of the areas which is very much affected by climate change. The most impact of climate change observed was drought which led to the mobility of Maasai pastoralists to the areas where they can find pasture and water for their livestock. The findings from Figure 7 revealed that most of the respondents about 77.2% were moving during dry seasons. This is because during this season there is no pasture and water around their areas especially to the villages which they do not have borehole. The Maasai pastoralists have several pastoral mobility; during the rainy season the Maasai pastoralists do not stay with their livestock near the bomas but they stay a bit far so that to preserve the pastures which are near the bomas for dry season. During the dry season the Maasai pastoralists and their livestock return home with their livestock and use the pasture preserved during the rainy season. Then, if the dry season prolong until the pasture are finished, they plan to go far away from their district,



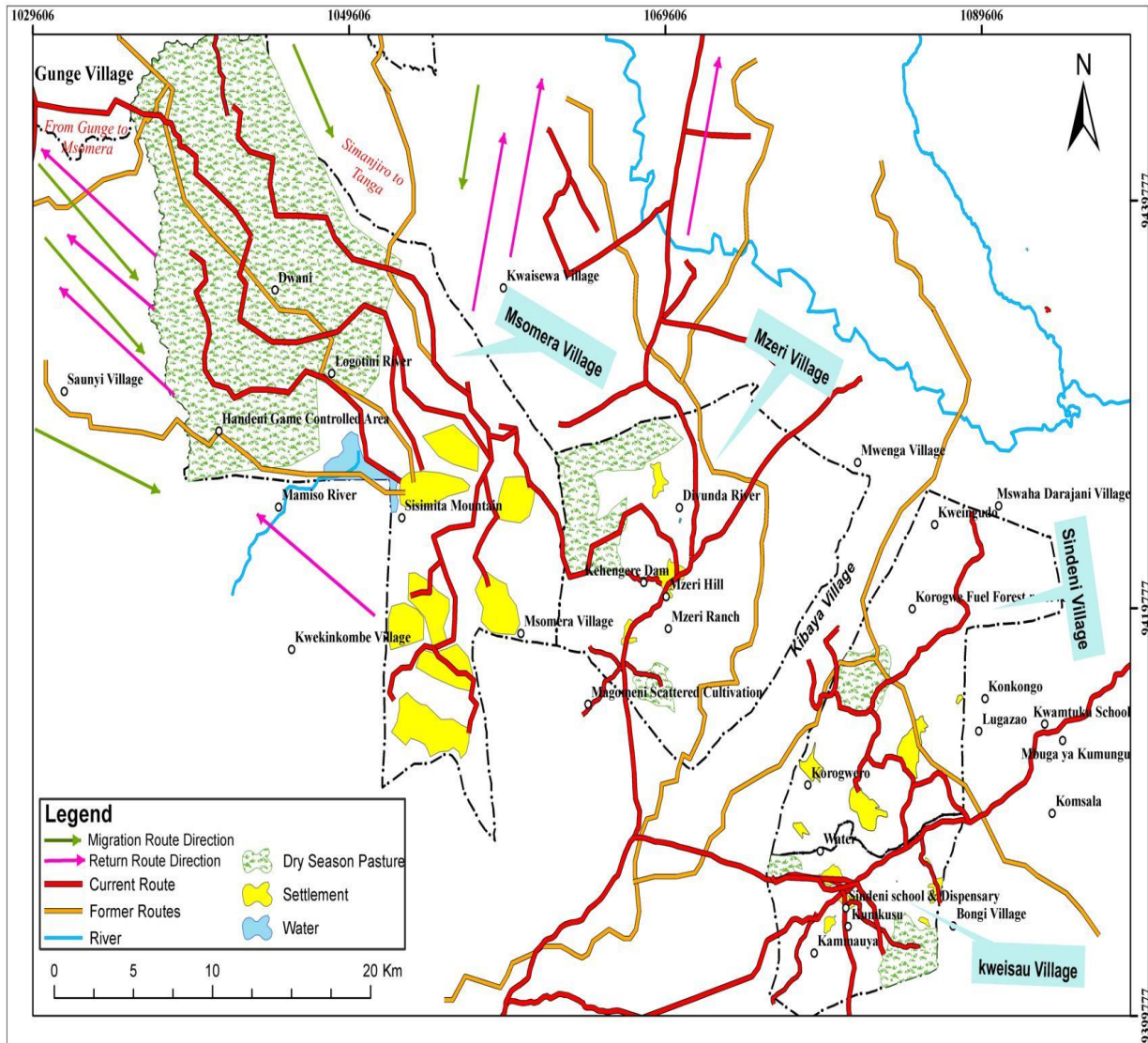
**Figure 7.** Seasons for pastoral mobility  
Source: Field work (2018).



**Figure 8.** Map showing pastoral mobility routes in Simanjiro districts.  
Source: Field survey (2018).

the Maasai pastoralists from Simanjiro districts usually go to Handeni district and Kilindi district.

This has been observed in Senegal whereby the pastoralists distinguished two main types of mobility



**Figure 9.** Map showing pastoral mobility routes in Simanjiro districts. Source: Field work (2018).

which were daily mobility within the pastoral unit and transhumance. The latter entails leaving the pastoral unit and making a temporary camp elsewhere and it is related to different seasons which were rainy season (June-August), Cold dry season (September-January), Hot dry season (February-April), Near rainy season (May) (Adriansen, 2008). The rationale for going on transhumance was to look for pasture and water wherever they are found or when meeting the rain. The livestock taken was depending on the need of the family left, if the family left is big then the livestock left should also be proportional (Adriansen, 2008). Therefore, the months for pastoral mobility are not common in every country depending with when the different seasons occur, that is why in Simanjiro the pastoralists start moving long

distance outside their compounds during dry seasons the same applied in Senegal.

**Pasture preservation in Maasai communities in Simanjiro district**

The Maasai communities of Simanjiro had their own way of preserving their pasture. During rainy season all the livestock except few about seven are sent far away around the village where they stayed until dry season. This is because during the rainy season the pasture and water are available everywhere in the village and around the village. During dry season the Maasai pastoralists with their livestock return to their boma and their livestock

eat the pasture around their boma which was not used in the rainy season. They have traditional regulations which guide them all these, and if somebody does not respect the rules and regulations concerning pasture preserving were punished by paying fines more than 250,000 Tanzania shillings (Maleko and Koipapi, 2015). In Figure 8 shows the wet season pasture which are not very far from their bomas but when the time came, they went on those areas and stay there until dry season is when they decide to come back in their village.

## Conclusion

It is evident that most of the pastoralists from Simanjiro district migrate to Handeni district in search of pasture and water. During pastoral mobility, the pastoralists face food insecurity both at home (boma) and on the way to destination areas. This is because most of the areas which they pass with their livestock are remote and sometimes cannot access food because the food is not available in those areas, the only option was to look for wild food and sometimes sending someone far to look for food. Usually, they leave few cattle about seven at their boma for food but due to drought these cattle die and lead to the suffering of food insecurity for the whole family remained at home. Therefore, in order to cope with the problem of food insecurity during pastoral mobility the pastoralists decide to sell their livestock and slaughtering some of the livestock such as goats which is not applied to all, most of them do not prefer this option. Therefore, ending up suffering from food insecurity.

## RECOMMENDATION

The study recommends that, the pastoralists especially, the Maasai should reduce the number of their livestock so that during drought season, it could be easier to handle the livestock without deciding mobility as a copying strategy which is more problematic as it causes challenges to the pastoralists themselves and the livestock. Keeping large number of livestock in small areas lead to the problem of environmental degradation where in turn may lead to climate variability and change.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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