



Dynamics of Gender Relations and Climate Change Adaptation Strategies among Pastoralists in Tanzania

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Abstract

This paper is based on a study conducted in Kilosa District, Tanzania. It assessed how pastoralists adapt to climate change with respect to the existing inequalities in gender relations. It adopted a cross-sectional research design where both primary and secondary data deployed using questionnaire and interview and desk review of various documents respectively on gender relations and climate change adaptation strategies. The data were analysed by using Statistical Package for Social Sciences computer software and the analysis was largely descriptive. The study results show that inequality in gender relations exists among the pastoralists in terms of household division of labour, ownership of resources and decision-making. Also, strategies such as crop farming, selling of animals, migration, shifting to new areas and fencing reserve pasture were used to adapt to climate change. The paper concludes that despite the strategies used to adapt to climate change impacts, the existing gender inequalities among the study population renders women vulnerable to climate change impacts. It is suggested that the government should institute gender sensitive policies and strategies on household division of labour, ownership of resources and decision-making to trim down women's vulnerability to climate change impact.

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1.0 Introduction

Climate change is experienced all over the world as one of the most significant challenges facing human society in the 21st century. The global climate change is generally, expected to have disproportionate negative impact on developing countries, particularly in Africa, south Asia and parts of Latin America. In Africa, climate change has resulted in uncertainties to rain-fed crop and animal production associated with increased temperatures, pest and diseases outbreaks that will affect human health. Also, frequent and severe extreme weather events such as droughts and floods affect food and water supplies as well as transportation systems. The risks associated with climate change have been apparent in different economic sectors essential for Tanzania's livelihood and sustenance to include water resources, energy generation, food security, human health and biodiversity. Climate change adverse impact prompts people to carry out adaption strategies in a struggle to sustain their livelihoods.

Adaptation refers to adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC, 2014c). It has also been described by Lambrou and Piana (2006) as changes in processes or structures to moderate or offset potential dangers or to take advantage of opportunities associated with changes in climate. It also implies various actions (adaptation strategies) taken to help communities and ecosystems deal with changing climate conditions. Such actions may include the planting of agricultural crops and trees more suited to warmer temperatures and drier soil conditions, keeping livestock breeds which are more resistant to diseases or the construction of flood walls to protect property from sea level rise (Skinner, 2011). The adaptation strategies differ from one region to another or from one society to another because the climate change vulnerabilities and impact vary depending on geographical regions but also on social and economic characteristics which may be differently influenced by formal and informal institutions including those that determine gender relations and structures that govern them.

Gender is a relational term describing socially constructed differences between men and women. It deals with the relations between men and women. Gender refers to the range of 'socially constructed' roles, behaviours, attributes, aptitudes and relative power associated with being female or male in a given society at a particular point in



time. Gender relations therefore is a dynamic phenomenon as it may change in relation to some alterations in a culturally-defined set of economic, social, and political roles, responsibilities, rights, entitlements, and obligations associated with being female or male, as well as the power relations between and among women and men and boys and girls.

Gender relations as may be determined by the informal institutions such as culture, religion or socially acceptable ways of thinking and making decisions forms an important factor to consider in implementing adaptation strategies. Gender relations may determine the type of roles played, resources owned and the power to decide between men and women which influence the capacity to adapt to climate change. As argued by Abebe (2014), women are often excluded from important decision and policy-making forums and institutions that govern them, which in turn make them more vulnerable to the impacts of climate change and other hazards.

Although there might be universal similarities between gender roles, responsibilities and relations, the ways in which they are shaped and realised vary considerably with time as well as between regions, countries and localities (Muralidharan, *et al.*, 2014; Skinner, 2011). Likewise climate change affects everybody in the community but its impact greatly affect one group especially the marginalized, including among others, women than their counterpart men (Habtezion, 2013; Meinzen-Dick, *et al.*, 2010). The underlying cause of the disparity in effect of climate change on men and women in the society is linked to institutionalised gender based behaviours and practices around resource ownership, decision-making and division of roles. In this regard, women may be involved in production but might not have a decision on what to produce on a particular piece of land.

Also, women may not own the production resources such as land and means to access production technologies. They often have more restricted access to, and control of, the resources on which they depend than men (IPCC, 2014a). Viewing gender relations as unequal power relations informs the ways in which reduction in vulnerability can be envisioned and configure possible mechanisms that would enable women and men to enhance their abilities to respond to climate change. Gendered lenses are vital in assessing the impacts of climate change as well as the outcomes of adaptation programs offered in response to climate change impacts (Sultana, 2014).



Women's traditional role as natural resource managers with special knowledge and skills in caring for the environment is well recognised over years throughout the world (Resurrección, 2013; Denton, 2002). However, as a result of climate change impact such as drought, women's responsibility of fetching water, collecting firewood and nurturing life in general increases their workload (Meinzen-Dick, *et al.*, 2010; Lambrou and Piana, 2006; Braidotti, *et al.*, 2004; Mhina, 2004). Apart from other responsibilities, women and girls are also the main water and fuel collectors in households without access to an improved water source and clean energy in their homes (UN Women, 2018). On fetching water specifically, a study of 24 countries in Sub-Saharan Africa (SSA) by Graham, *et al.* (2016) found that adult females were the primary collectors of water across all countries.

Increased workload in the household also reduces the time to be spent by women for economic activities. The presence of gender inequality makes it difficult to attain some of the Sustainable Development Goals (SDGs), especially goal 5, which aims at achieving gender equality and empowering all women and girls. One of the targets insists on undertaking reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws (UNDP, 2018).

In the most vulnerable communities like the pastoralists, the impacts of climate change pose a direct threat to people's survival. Various studies have been conducted on climate change and or gender (Abebe, 2014; Skinner, 2011; Shemsanga, *et al.*, 2010; Yanda and Moshy, 2007; Lambrou and Piana, 2006; Mhina, 2004). However, furthering the same with strong focus on climate change adaptation and gender relations, particularly in Tanzania is still relevant. The main objective of this paper is, therefore, to assess climate change adaptation strategies with respect to the existing inequalities in gender relations among the pastoralists in Kilosa District, Tanzania. The paper specifically: 1) examined gender relations in terms of division of labour, ownership of resources and decision-making with respect to climate change adaptations among the study population; and 2) determined climate change adaptation strategies pursued by the pastoralists in the study area.

2.0 Methodology

This paper resulted from a study conducted in two wards, Rudewa and Madoto in Kilosa District, Tanzania. Selection of study wards was done purposively based on the availability of pastoralists' households. The map for the study area is shown in Figure 1 below.

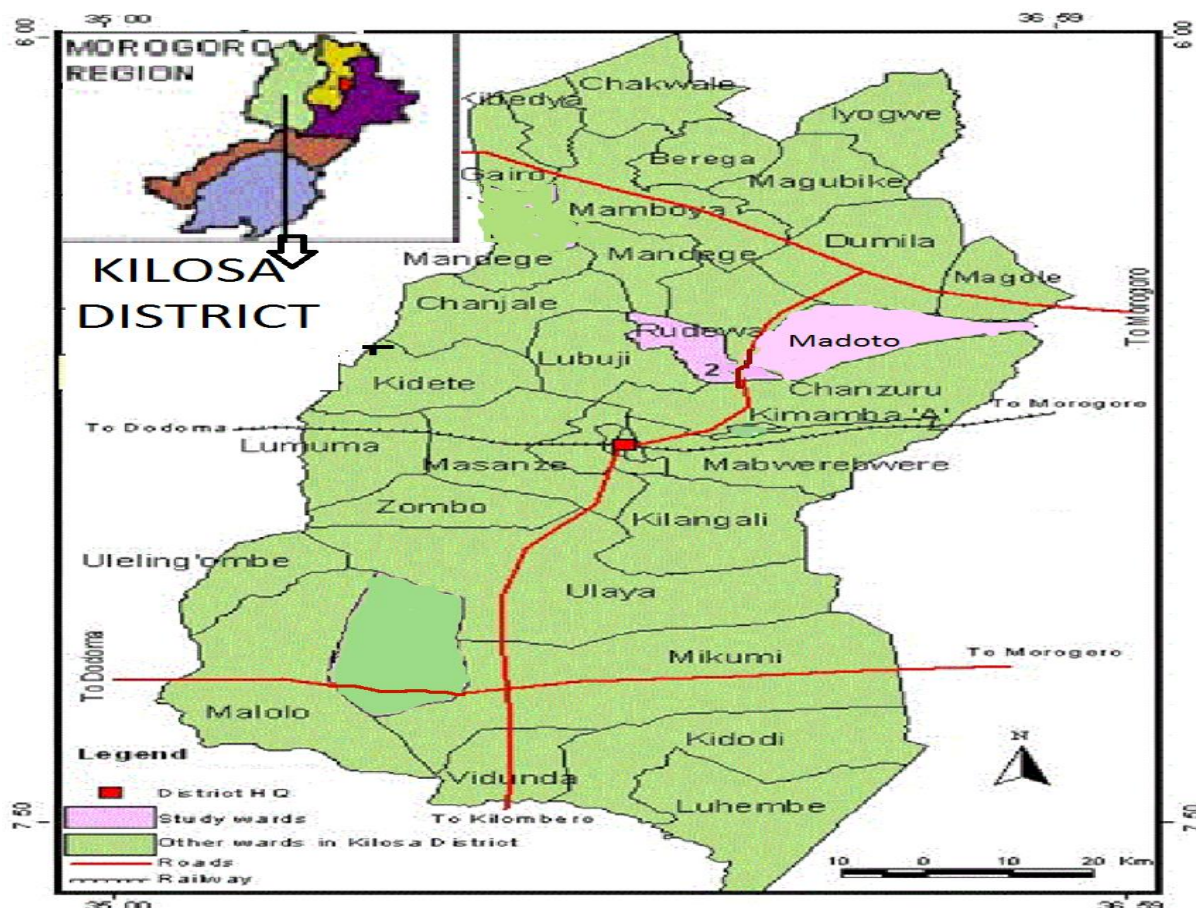


Fig. 1: The map of Kilosa District showing the study area

The study deployed cross-sectional research design with a mixed methods approach as will be described in the next paragraph. Stratified simple random sampling was used to obtain a sample of fifty (50) (25 male and 25 female) respondents from the households. However, the number of pastoralists' households in Kilosa district is smaller than non-pastoralists. The study used a relatively small sample size which obliged the researchers to use triangulation in order to enhance study reliability by limiting personal and other methodological biases as well as substantiating information obtained from different sources. Triangulation was undertaken through key informant interview, administering of questionnaires, Focus Group Discussions (FGDs) and author's observation methods in obtaining primary data. On the other



hand, the secondary data were obtained through review of secondary sources such as books, research reports and journal articles on gender relations and climate change adaptation strategies.

Primary quantitative data were analysed by using IBM SPSS Statistics computer programme, version 22, where descriptive statistics like frequencies and percentages were computed. Qualitative data were analysed using content analysis in which data were put into small themes and summarised to supplement the information obtained from the questionnaire.

All ethical procedures were adhered to. First, a research clearance was sought for and granted by the Mzumbe University authorities. This was then used to secure research permit from Morogoro regional and Kilosa district authorities before actual data collection started. All participants were recruited on the basis of voluntary participation and their identities were kept confidential. Their names and other identifiers are not mentioned anywhere in this paper.

3.0 Results and discussion

3.1 Gender division of labour, ownership of resources and decision-making

Results for the current study show that gender inequality is in such a way that women are marginalised in all the three aspects investigated including household division of labour, ownership of resources and decision-making. The respondents were subjected to question in the questionnaire demanding them to indicate whether certain activity or role is performed by female, male or both male and female. The results are as presented in Table 1.

Table 1: Household gender division of labour, resource ownership and decision-making (n=50)

Variable	Gender	
	Female	Male
Division of labour		
Milking	✓	
Selling of milk	✓	



Selling of other animal products e.g. skin	✓	
Collecting firewood	✓	
Fetching water	✓	
Food preparation	✓	
Cleaning of the surroundings	✓	
Purchasing of food	✓	✓
Caring for children, the sick and the old people	✓	
Grazing of animals		✓
Selling of animals		✓
Resource ownership		
Household income		✓
Land		✓
Cattle		✓
Kitchen ware	✓	
Motorcycle		✓
Radio		✓
Mobile phone	✓	✓
Livestock products (milk, ghee, skin, hide)	✓	✓
Decision-making		
Children's education		✓
Buying food for daily and future use		✓
Size of the herd to be kept		✓
Selling and buying animals		✓
Migration		✓
Use of land		✓
Engagement in income generating activities		✓

3.1.1 Division of labour



In the aspect of household division of labour, results in Table 1 show that women shoulder almost all the household chores. Women were found to shoulder household chores such as milking, selling of milk and other animal products, collecting firewood, fetching water, food preparation and purchasing, cleaning of the surroundings and caring for children, the sick and the old people. It can be noted that among the 11 household responsibilities identified by the pastoralists, men and boys are involved in only three of them. This finding is supported by Hartmann and Sugulle (2009) in a study conducted in Somalia which indicated that women shouldered many activities compared to men in the pastoralists' households.

Similarly, Graham, *et al.* (2016) discovered that women face constraints on their use of time, often because of the type of activities in which they can participate, work stability, local norms and beliefs that determine type of activities and roles. These findings are in line with FAO (2017) which argues that women are exposed to vulnerable situations due to the burdens they carry as caregivers, their central role in food production and generally lack of gender equality in the responsibilities.

Generally, in most rural communities around the world women are the primary collectors of fuel wood and water (UN Women, 2018; Graham, *et al.*, 2016; IPCC, 2014b). In SSA specifically, women spend more than 800 hours a year in Zambia and about 300 hours a year in Ghana and Tanzania collecting fuel-wood (Hyder, *et al.*, 2005; UN Millennium Project, 2005). Fetching water and collecting firewood from far distance away from home because of decreased availability of natural resources that may be associated with climate change impact not only make women and girls toil but also put them under potential risks of sexual violence and attack by wild animals. It is also argued by Eastin (2018) that gender inequalities in climate change vulnerability reinforce the pre-existing gender inequalities.

It has been indicated by Mhina (2004) that increased responsibilities for women at the farm holding have pushed some of them into non-farming income generating activities as a means to supplement their incomes. Consequently, women find themselves in most situations encountering increased work load in non-remunerative domestic tasks, without the accompanying transfer of entitlements that are necessary (e.g. access and control over factors of production).

3.1.2 Resource ownership



The study results show that resource ownership was gender biased where women own less resources than men. This is shown by the fact that the most valuable resources like livestock, land, household income, motorcycle and radio were owned by men while less valuable properties such as kitchen wares were owned by women but mobile phones can be owned by both men and women. This finding depicts men's domination over valuable resources which are key determinant for adopting different climate change adaptation strategies. In a related study by Abebe (2014) it was argued that women and girls do not have equal rights to access, use, and control over crucial resources because of the deeply rooted patriarchal values and beliefs.

However, it has been noted that there is increased male dominance in resource ownership which has been exacerbated by amplified commercial transactions in livestock market which have made it possible for men to disregard traditional rights accruing to women and children. Commercial transactions in livestock and livestock products not only strengthen male control over livestock, but also effectively shifting dairy product income from women's control to men's control over resource ownership (Mung'ong'o and Mwamfupe, 2003). These developments have adverse effects on the capacity of women to meet household provisioning needs. Similar findings on land ownership were reported by Meinzen-Dick, *et al.* (2010) which revealed that while land rights vary enormously across countries and cultural contexts, women are often disadvantaged in both formal and customary land titling systems. Women's land ownership and property rights impact a range of outcomes relevant to the well-being of women, their families and communities.

As argued by Habtezion (2013), the poor and other marginalised segments of society, women inclusive, are usually more vulnerable to climate change impacts because they are likely to have fewer resources. This situation makes them to have low adaptive capacities and lesser access to policy and decision-making processes although it has been claimed that increasing women's control over assets has positive effects on important development outcomes (Quisumbing, 2003) including successful adaptation to climate change. In that similar assertion Lambrou and Piana (2006) argue that the ability to adapt to climate change at the household level depends on the control over various resources, especially income but women in particular, face barriers in access to productive resources and economic opportunities (FAO, 2017).



In that sense it can be argued that there is disproportionate difficulties in practicing climate change adaptation strategies between men and women such that there is little promises for women to engage successfully in climate adaptation and mitigation strategies when they have no control over land. This implies that development policy has still not addressed the structural constraints that counteract women's access to control and ownership overland as one of the important productive resources.

This paper further revealed that men also owned other, valuable resources like motorcycle, radio, mobile phone and livestock products. The only resource owned by women alone was kitchen ware, and this could most likely be due to the fact that women are the ones responsible for buying them for food preparation and serving. According to UN Millennium Project (2005), the situation exists throughout the developing world, where women rarely control land and other productive resources. As argued by Quisumbing (2003), the tendency of men and women within households neither having the same preferences nor pooling together their resources has important implications for productivity. The inequality in resource ownership results from factors such as unequal inheritance practices, the practice of registering properties such as land and other valuable household holdings in the name of the household head (usually defined as a man), unequal access to land markets due to customary land tenure systems and gender-biased land reforms, only to mention some.

It was revealed in the present study by one of the participants in a Focus Group Discussion (FGD), a 47 years old man concerning the ownership of resources in the household, stating as follows:

In our society a man owns almost everything within the household including livestock, children and land; and can buy things like radio, bicycle, mobile phone, and motorcycle because he also has control over the household income, while a woman owns only water keeping vessels and other kitchen ware. When a woman is married in a house, she comes empty handed; hence nothing belongs to her in the household. However, nowadays a woman can own a mobile phone in rare cases, but of poor quality (low price). This is possible for a woman, especially if she sells milk. Likewise, a woman should not be given a room to make decision in the household. She should be submissive to the husband (FGD Participant, Rudewa, 20 January 2010).

Resource ownership however should not be separated from access to the same because a person cannot own a resource that cannot have access to it. Lack of ownership of



productive resources like household income, cattle and use of land renders women unable to cope with changed roles resulting from climate change impact. For instance, women cannot engage in income generating activities such as running small business due to lack of financial capital as it was revealed that the household income was owned by men. Basically, women are often less able to adapt to climate change than men because they represent the majority of low-income earners and they are often denied rights to own land and other valuable property which could be easily disposed in the market to earn income which can be capital to start small business to diversify from solely depending on livestock and farming as sources of livelihood.

3.1.3 Decision-making

The findings show that the decisions on various aspects are made by men. These aspects include decision on children's education, buying food for daily and future use, size of the herd to be maintained, selling and buying animals, migration, use of land and involvement in income generating activities. It was revealed in this study that there was gender biased decision-making; there was no joint decision-making between men and women in the household, as collective model suggests. Similar findings were reported in a study by Phan *et al.* (2019) on gender inequality and adaptive capacity in Vietnam. In that particular study the authors found that 73.3% of decisions were made by the husband alone and only 12.8% were made by both the husband and wife.

Women are often excluded from important decision and policy-making forums and institutions that govern them, which in turn make them more vulnerable to the impacts of climate change and other hazards. For instance, according to Maasai traditions during clan meetings women are not allowed to give their views in the presence of men. As argued by FAO (2017), generally, women in SSA face particular barriers in decision-making processes, one of the key factors that affect their contribution to development. They are more likely than men to be absent from decision-making, whether in the household or at community, national or international levels. This either because their contribution is not valued or because they do not have the time, confidence or resources to contribute (Habtezion, 2013; Brody, *et al.*, 2008). In line with this, Hyder, *et al.* (2005) revealed in a study conducted in Tanzania and Kenya that women might be involved in decision-making up to the community level but their views are not taken seriously. The climate debate has neither sought to



address the existing marginalisation of women nor their need to be integrated in environmental policies (Denton, 2002).

Gender inequality in decision-making exists in many other communities in the developing countries and in various aspects not even mentioned in this study. For instance, in a study on climate change, gender inequality and migration in East Africa, Abebe (2014) finds that despite various reforms, rural women in the region still struggle to participate in decision-making processes. As a result, they have a weaker ability to adapt to climate change than men. Moreover, it has been argued in UN Millennium Project (2005) that in water management in SSA and South Asia, men play a greater role in community decision-making than women do, even though women are major users of water for domestic and productive purposes. Likewise, lack of involvement of women in public decision making in South Asia is a long-standing issue as pointed out by Sultana (2014).

Lack of women's participation in most policy-making signals a gender gap in the resources devoted to address climate change impact like those related to increased uncertainties and risks in livestock and agricultural production. Women are essentially powerless in terms of decision-making although they are the most vulnerable to the impacts of climate change. It has been argued by Sultana (2014) that enabling women to take part in decision-making processes creates opportunities to reduce women's heightened vulnerabilities, thereby allowing them to better resist, cope with, and adapt to changes. Denton (2002) contends that gender mainstreaming into debates on climate change and sustainable development is happening extremely slowly, with varying degrees of success, and often as an afterthought. Also, the process is made more complex by women's lack of participation in decision-making at all levels.

3.2 Climate change adaptation strategies in pastoralist society

The paper found that the respondents in the study area used various adaptation strategies as a response to climate change impact. Respondents were drawn from pastoral societies which are generally known and expected to rely mostly on livestock keeping but controversially, instead their livelihoods depend on crop cultivation. Thus, they were dealing with both livestock and crop farming as the major means of sustaining their livelihoods.



Table 2: Climate change adaptation strategies (n=50)

Adaptation strategy	Male		Female		Total	
	No.	%	No.	%	No.	%
Crop farming	5	10	8	16	13	26
Selling animals	5	10	6	12	11	22
Migration	7	14	3	6	10	20
Shifting to new areas	6		3	6	9	18
Fencing reserve pasture	3	6	4	8	7	14
Total	26		24	48	50	100

The findings in Table 2 show that the main strategy used by the respondents in the study area to adapt to climate change was crop farming which was mentioned by 26% of the respondents. Other adaptation strategies were selling of animals mentioned by 22%, migration 20%, shifting to new area 18% and fencing reserve pasture 14% of the respondents. This indicates the real situation in pastoral community who were used to livestock keeping, but currently they practice both livestock keeping and crop farming. It was also reported that crop farming was being practiced by the poor households who have few animals, while the rich ones seem to have accumulated a diverse stock of animals such as cattle, goats and sheep.

Pastoralists' way of life as argued by Hartmann and Sugulle (2009) is however undergoing great transformation as a result of climate change, and the trend is moving towards higher vulnerability, loss of common mechanisms for coping with droughts, shrinking grazing lands, destitution and dropping off from pastoral life. Their situation is complicated by lacking diversity of pooled resources to draw from, which makes them more susceptible to climate change impacts. It has been argued by Mung'ong'o and Mwamfupe (2003) that some Maasai in Kilosa District, who are typical pastoralists, are forced to take up crop cultivation in addition to livestock keeping within their homelands when confronted with the loss of grazing land.

As indicated in Table 2 another strategy revealed in this study was selling of animals, which was mentioned by 22% of the respondents. The households used to sell old animals, sick ones, and those which have given birth twice or so. This strategy helps to reduce the herd size as well as providing income for household immediate



consumptions, such as investment in crop farming. Some pastoralists use the income as a start-up capital when migrating to town. Similar findings were reported by Yanda and Moshy (2007) that transhumance and the sale of cattle have been traditional responses to seasonal and other climatic variations among pastoralists such as the Maasai, Nyaturu and Barabaig, in northern Tanzania. However, selling of livestock as an adaptation strategy might likely make households more vulnerable to poverty in the long-run.

According to the findings in Table 2, migration was one of the strategies used to adapt to climate change as was reported by less than a quarter (20%) of the respondents. It was claimed by the respondents that migration involves poor household who do not possess the necessary assets to adapt to climate change within their locality. These include such households which do no longer have animals to sell so as to have assets to invest in new economic activities. As a result, they tend to engage in wage labour especially in security sector as security guards. Migration strategy has also been observed by Mung'ong'o and Mwamfupe (2003), in a research conducted in Morogoro and Kilosa Districts of Tanzania. The authors report that climate change has forced typical Maasai pastoralists in Kilosa district to migrate to other parts of the country while maintaining livestock keeping as their main source of livelihood while others change occupation and engage into crop cultivation or wage employment.

It was reported during FGDs that in most cases, it is men who migrate to urban areas in search for wage employment. One of the members in FGD had this to say:

In recent times droughts have become severe where almost all of our animals die due to shortage of pasture and water. We have nothing to do because our role as Maasai men is grazing our animal stocks. Instead now you find that we Maasai men decide to go to town looking for paid jobs. Unfortunately, the majority of us end up working as security guards and in hair salons. In towns, we earn very little money. However, it is better than staying idle in the rural areas (FGD Participant, Madoto, 23 January 2010).

This phenomenon has led women and young girls to shoulder the herding task for the few remaining animals, which was traditionally a men's role, resulting into increased workload for women. It was also reported elsewhere that gender differentials exist in terms of who migrates, where they migrate to, for what reason and for how long (Jolly and Reeves, 2005; Chant, 1998). According to Chant (1998), most women have little



choice in determining decisions over their own or others' migration where usually they remain back to maintain their homestead.

As the results in Table 2 indicate shifting to new areas or relocation was another climate change adaptation strategy used by the respondents in the study area. This strategy is used as a remedy to resource scarcity which normally occurs during drought. It has been reported by Paavola (2003) that, as a consequence of resource scarcity in pastoral dominated regions of Tanzania, like Shinyanga, Arusha and Dodoma; huge influx of pastoralists with large herds of livestock to Morogoro region has been observed. This, however, causes a lot of environmental degradation due to the movement of the herds of livestock. The movement thus results into soil erosion due to loosened soil surfaces triggered by on foot moving animals.

The findings in Table 2 also show that 14% of the respondents adapt to climate change by fencing reserve pasture. This is used as a traditional method of conserving the pastoralists' pasturelands and prevention of disasters associated with drought events. These disasters include death of animal, low milk production for lactating animals and low body weight that cause low income earnings from sold animals. This strategy has been used during drought to assist feeding weak stocks such as sick, young and lactating animals which cannot move longer distance for grazing. Such a method enables them to survive during the drought season and reduce deaths of weak animals. According to Yanda and Moshy (2007) fencing reserve pasture help pastoralists adapt to climate change by alleviating dry season fodder shortages. The next section will cover conclusion and recommendations.

4.0 Summary, conclusion and recommendations

Based on the findings of this study, inequality in gender relations in terms of household division of labour, ownership of resources and decision-making power exists in the study area. The pastoralists use various strategies to adapt to climate change, such as crop farming, selling of animals, migration, shifting to new areas and fencing reserve pasture. Shortage of pasture and water for grazing animals among the pastoralists in the study area has forced them to practice crop cultivation alongside livestock keeping. This paper concludes that gender inequality in household division of labour, ownership of resources and decision-making power among the pastoral households was all in favour of men. The inequality renders women more vulnerable



to the climate change impact because they are overburdened by taking up the roles which were categorised as men's role when men migrate or shift their animals to new areas in search for grazing pasture and water. Also, women are overburdened by extra workload associated with adopted climate change adaptation strategies such as involvement in crop farming which was not traditionally one of the pastoralists' economic activities. Women are also deprived of power in ownership of resources and decision making which constrain their participation in climate change adaptation and general development.

This paper suggests that, gender should be mainstreamed into climate change policies because women and men have different roles in the household and community and are therefore differently exposed to climate change impact where women are more affected due to shouldering extra workloads which were traditionally men's roles. It is important to take measures to ensure that climate change does not further impoverish women and thus exacerbate gender inequality in the society. The government should institute gender sensitive policies and strategies on household division of labour, ownership of resources and decision-making with the purpose to trim down women's vulnerability to climate change impact. Furthermore, various implementable sectoral policies should emphasise on creating gender awareness on climate change risk reduction. The policies should treat women not as vulnerable beneficiaries but as rights-holding citizens who need to be recognised for the agency, skills and experience they contribute. In general, the government needs to recognise the capacity of women and men, girls and boys, and their vital contribution in developing sustainable climate adaptation solutions. Also, the government should make sure that the law guarantees women's access to and control over land and other resources to help them definitely adapt to climate change which hence reduce the vulnerability of women livelihoods.

In the process of adapting to climate change the pastoralists have tended to switch from pastoralist to agro-pastoralists where crop farming is given high prominence which was not traditionally one of the pastoralists' economic activities. On the contrary, with increasing frequency of drought events there is no evidence that agriculture can be a viable adaptation to climate change risk reduction strategy or production alternative to pastoralism unless there is good government intervention, appropriate technology and serious implementation of policies.



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