Norwegian University of Life Sciences
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# Gendered living and responding to pastoral stressors in Borana, southern Ethiopia

Kjønnsbaserte perspektiver på,
og responsstrategier til, stressfaktorer i pastoralt levesett: en studie fra Borana, sørlige Etiopia

Abiyot Eliyas Anbacha

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Paper II. Anbacha, Abiyot and Kjosavik, Darley. "The dynamics of gender relations under recurrent drought conditions: a study of Borana pastoralists in southern Ethiopia." *Human Ecology*, under revision for resubmission (deadline April 15) based on reviewers' comments.

Paper III. Anbacha, Abiyot and Kjosavik, Darley. "Women and men in pastoral adaptation: Gendered livelihood diversification in Borana, southern Ethiopia." *Journal of Rural Studies*, submitted on 19 December 2018.

Paper IV. Anbacha, A. E., & Kjosavik, D. J. (2018). "Borana women's indigenous social network-marro in building household food security: Case study from Ethiopia." *Pastoralism Journal, 8:* (29). doi: https://doi.org/10.1186/s13570-018-0128-2

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ABSTRACT

This thesis examines major stressors affecting pastoral production and the impacts of these stressors on different social groups, particularly on women in Borana, southern Ethiopia. The main objective is to understand the gendered perceptions, experiences and responses to climate and non-climatic stressors. Specifically, the thesis investigates perceptions of women and men on the frequency, impacts and severity of stressors. It assesses the dynamics of gender relation under stressors, and examines gendered aspects of diversification as a response strategy to the stressors. Finally, the thesis investigates the role of women's social security networks to overcome household food shortages during crises. This study was conducted from mid-2014 up to 2015 in four pastoralist associations engaged in both pastoral and agro-pastoral production systems. The study employed household surveys, key informant interviews, group interviews, focus group discussions and field observations. The household survey covered 240 randomly selected households in the four selected pastoralist associations from Yabelo and Dire districts of Borana.

Results show that Borana pastoral livelihood is under numerous challenges, encompassing climate, environment, social, economic, governance and conflicts. Of all the stressors, this study identified climate-related stressors as the most frequent and impactful, followed by economic stressors. Further analysis revealed that women are more anxious than men about climatic and economic stressors, while men give due attention to conflict- and governance-related stressors owing to their gendered roles and responsibilities. Although stressors affect both women and men, this study confirmed that women bear a disproportionate burden of stressors impact owing to existing structural inequality between women and men in accessing basic resources, high dependence of women on natural resources availability, and their different roles in the society. Nevertheless, the study also indicated that women are not only victims but also play important roles with their male counterparts to reduce the impacts of the stressors by engaging in different livelihood activities. These pose new roles and responsibilities for both women and men which are not part of their traditional gender roles. These new roles women and men assume as a response strategy to stressors are shaking the role boundaries and contributing to change in gender relations. In addition, the women in the study area were using their indigenous social security networks (known as *marro*) to overcome the impacts of stressors, particularly food shortages, which increase during crises. In marro social networks, women often share food items, labour and cash to overcome the problem of distressed households. The roles that Borana women are playing in adaptation, both through livelihood diversification and in application of social networks, challenge the traditional discourse of victimization theory that frames women only as vulnerable groups. Instead, this thesis highlights the proactive roles women play in adapting to stressors that threaten the lives of people and their livelihoods. Women's roles must be acknowledged in designing sustainable adaptation policy and reducing poverty.

SAMMENDRAG

Denne avhandlingen undersøker stressfaktorer som påvirker pastoral produksjon og effekten av disse faktorene på ulike sosiale grupper, hovedsakelig kvinner i Borana, sørlige Etiopia. Hovedmålet med avhandlingen er å forstå kjønnede perspektiver på opplevelsen av, samt strategier mot klimarelaterte og ikke-klimarelaterte stressfaktorer som påvirker deres pastorale levesett. Avhandlingen undersøker begge kjønns oppfatninger av frekvens, påvirkning og alvorlighetsgrad av stressfaktorer. Den vurderer videre dynamikken i kjønnsrelasjonene under slike stressede situasjoner, samt kjønnsaspekter ved diversifisering som en responsstrategi. Avhandlingen analyserer i tillegg rollen kvinners sosiale nettverk (*marro*) har i å overkomme husholdningers matmangel under kriser.

Denne studien ble gjennomført i Borana i det sørlige Etiopia, i fire pastoralist-foreninger som arbeider med både pastorale og agro-pastorale produksjonssystemer, fra midten av 2014 frem til 2015. Studien inkluderte spørreundersøkelse av husholdninger, intervjuer med sentrale informanter, gruppeintervjuer, fokusgruppediskusjoner samt feltobservasjoner. Husholdningsundersøkelsen dekket 240 tilfeldig utvalgte husholdninger i de fire pastoralistforeningene fra distriktene Yabelo og Dire i Borana.

Resultatene viser at levebrød og levesett basert på pastoralisme i Borana står overfor en rekke utfordringer, som knyttes til klima og miljø, samt sosiale og økonomiske utfordringer inkludert styresett og lokale konflikter. Av alle stressfaktorene denne studien har undersøkt, ser det ut til at klimarelaterte faktorer er de mest hyppige og de med mest påvirkning, etterfulgt av økonomiske faktorer. Ytterligere analyse viste at kvinner er mer bekymret enn menn for både klimatiske og økonomiske faktorer, mens menn gir mer oppmerksomhet til faktorer knyttet til konflikt og forvaltning. Dette kan knyttes til de ulike ansvarsrollene menn og kvinner har basert på tradisjonelle kjønnsroller. Selv om stressfaktorene påvirker både kvinner og menn, bekrefter denne studien at kvinner bærer en uforholdsmessig byrde av påvirkningen disse stressfaktorene gir, på grunn av eksisterende strukturell ulikhet mellom kvinner og menn i tilgangen til grunnleggende ressurser, samt kvinners ulike roller i samfunnet. I tillegg er man avhengig av kvinnenes innsats for å ha tilgang til naturressurser i lokalsamfunnet, noe som ser ut til å ha innvirkning på dette-

Samtidig indikerer studien at kvinner ikke bare er ofre, men spiller viktige roller i samarbeid med menn ved å engasjere seg i ulike aktiviteter for å redusere effekten av stressfaktorer. Dette innebærer nye roller og ansvar som går utenfor de tradisjonelle kjønnsrollene for både kvinner og menn. Disse nye rollene kvinner og menn tar for å imøtekomme stressfaktorer, presser derfor eksisterende sosiale og strukturelle grenser, og bidrar til endringer i kjønnsrelasjoner. Kvinnene i studien benyttet i tillegg sine etnisk baserte sosiale nettverk (*marro*) for å motvirke stressfaktorene, særlig matmangel, som øker under kriser. I *marro*-nettverkene deler kvinner ofte på mat, arbeidskraft og penger for å imøtegå problemer vanskeligstilte husholdninger har. De rollene kvinner i Borana har i tilpasning, gjennom diversifisering av levebrød og bruk av *sosiale* nettverk, utfordrer den tradisjonelle offer-diskursen hvor kvinner utelukkende ses på som en utelukkende sårbar gruppe. Denne avhandlingen fremhever den proaktive rollen kvinnene spiller i tilpasningen til kritiske situasjoner som truer lokalsamfunn og lokalbefolkningers levebrød i pastorale samfunn. Kvinners roller må derfor anerkjennes i utformingen av politiske rammeverk for bærekraftige tilpasningsstrategier og fattigdomsreduksjon.

# 1. INTRODUCTION

## 1.1. Introduction and problem statement

Pastoral stressors and their impacts spread across scales leaving communities at risk (Bunce, Rosendo, & Brown, 2010) and affecting them differently (Shackleton, Cobban, & Cundill, 2014). As pointed by Ribot (2014), the way different people experience and respond to stressors is deeply rooted in their social limits and barriers. The economic status as well as socially rooted limits such as power relations, knowledge and values, influence the way people experience and respond to stressors (Adger, 1999). Other authors particularly observe that patriarchal gender relations, caste system and lack of rights impede people's ability to respond to challenges, and lie at the root of vulnerability to stressors (Ribot, 2014; Vincent, Tshakert, Barnett, Rivera-Ferre, & Woodward, 2014). Therefore, attempting to understand vulnerability and adaptation strategies to stressors in isolation from the socio-cultural experiences and responses of different social groups is nearly impossible. Indeed, with insufficient attention to socio-political dynamics including the power relations between women and men, desirable changes are unlikely to be achieved (MacGregor, 2010).

Previous studies indicate that a comprehensive understanding of the differential impacts and responses of women and men is vital for reducing vulnerability and gender gaps (Polsky, Neft, & Yarnal, 2007; Thomalla, Downing, Spanger-Siegried, Han, & Rockstrom, 2006). Unpacking the way women and men experience and respond to stressors helps researchers and policy makers to understand the root causes of vulnerability (MacGregor, 2010; Taylor, 2013) and enables the use of distinct forms of women's knowledge and skills in adaptation efforts (Ongoro & Ogara, 2012). Specifically, analysis of vulnerability and adapting capacities according to gender is useful in identifying the most impactful stressors for both women and men, and in exploring and prioritizing efforts to reduce vulnerability. As pointed out by Taylor (2013), unless attention is given to gender dimensions, policies aimed at adaptation will exacerbate the hardships of already disadvantaged women. On the other hand, covering the gendered dimensions of stressors may fail to utilize, and may even marginalize women and their institutions that are crucial for adaptation (Ongoro & Ogara, 2012). Undeniably, critical examination of gendered experiences and responses of stressors is vital to ensure better environmental management. However, this demands more local evidences. Thus, the present analysis that focus on the gendered dimension of stressors was done in the context of pastoralism in east Africa.

Pastoralism is an important livelihood for millions of people in east Africa. However, substantial evidence shows that pastoralism in the region is under numerous challenges including droughts, land fragmentation, environmental degradation, population growth and growing state influence, conflict, food insecurity, poverty and poor land reform policy (Kassahun, Snyman, & Smit, 2008; Meier, Bond, & Bond, 2007; Okello, Simon, & Nthiga, 2009). Such multifaceted stressors come with unexpected outcomes for wellbeing and livelihoods that further affect efforts for reducing vulnerability (O'Brien, Quinlan, & Ziervogel, 2009). The impacts of pastoral stressors as well as adaptation efforts are not uniformly distributed. Social norms including gender relations determine the way these pastoralists experience and respond to stressors (Ribot, 2010; Tschakert, 2012). Women respond to pastoral stressors either through livelihood diversification or total changes of gender roles (Ontita, 2007). In addition, pastoral women are managing stressors through application of their social networks (Khalif, 2010). Nevertheless, studies on gendered dimensions of vulnerability and adaptation to stressors are still at its early stage and pastoral research rarely focuses on the socio-economic dimensions of stressors.

Accordingly, the findings of this study add to the literature on the discourse of gendered experiences and responses to pastoral stressors. In particular, the study provides further evidence of women's vulnerabilities and their roles in adaptation, focusing on their participation in livelihood diversification and the role of women's institutions to overcome pastoral problems, mainly food shortages. Attention is given to women's context-specific gendered impacts, including changes in gender relations and gendered perceptions of the frequency and impacts of multiple stressors, and women's contributions in adaptation efforts (through livelihood diversification and application of their social supporting institutions). The findings of the study provide inputs for designing responsive and sustainable adaptation polices and strategies in the pastoral areas.

The researcher seeks to unpack the gendered experiences and responses to multiple stressors, with particular emphasis on Borana pastoralists in Ethiopia. Ethiopia is one of the most climate-vulnerable countries in the world (Gray & Mueller, 2012; Viste, Korecha, & Sorteberg, 2013). The country has been severely affected by famine, especially in the last three decades of the 20th century, mainly due to increasing vulnerability to extreme events related to changing climatic conditions (Berhanu & Beyene, 2015). Geographically, the lowland areas including Borana, where pastoralists largely reside, are classified as highly vulnerable to recurrent

droughts (Viste et al., 2013), exacerbated by widespread poverty and other social, economic and political shocks (Berhanu & Beyene, 2015; Viste et al., 2013).

Borana people are one of the well-known pastoral communities belonging to the Oromo ethnic group largely living in Ethiopia. They speak *Afaan Oromo*,[1] a language which belongs to the Cushitic family. Traditionally the people are known as cattle herders but they also keep sheep, goats and camels. The Borana pastoral production system depends on the availability of range resources and traditional water wells that are managed and utilized according to seasonal variability through traditional rules and regulations for access and use (Bassi & Tache, 2007). Although pastoralism in Borana was once viewed as the most effective production system, owing to its strong institutional capacity (Cossins & Upton, 1988), recent studies report a decline in the pastoral resource base and a gradual weakening of customary institutions with an increase in droughts (Tache & Oba, 2008) and other non-climatic stressors such as repeated conflicts, poverty and political marginalization (Abebe, 2016; Berhanu & Beyene, 2015). Today, the people face high stock mortality resulting from droughts and other combined stressors (Abebe, 2016; Tache & Oba, 2008). Although the impacts of the climate and non-climatic stressors are not uniformly distributed (Berhanu & Beyene, 2015), researches undertaken so far in the region rarely focus on the gendered aspects of stressors and deal instead with general poverty, droughts, vulnerability and adaptation of Borana pastoralists (see for example, Angassa & Oba, 2007; Tache & Oba, 2008; Tiki, 2010). An exception is the limited research undertaken among Waso Borana of northern Kenya (Khalif, 2010). The present study differs from previous studies undertaken among the Ethiopian Borana with respect to dealing with the gendered dimension of pastoral stressors.

### 1.2. Objectives of the thesis

The overall objective of the study on which this thesis based is to understand the way women and men perceive, experience and respond to the diverse pastoral stressors in Borana. The study has the following specific objectives:

I. To examine the gendered perceptions of the frequency and impacts of multiple stressors in Borana, southern Ethiopia.

   This aims to address questions such as: What are the major stressors impacting the livelihood and way of life in Borana? How do women and men perceive the frequency and impacts of major stressors, who are impacted more and why?

[1] *Afaan oromo* is a language that belongs to Cushitic family, spoken by the Oromo people.

II. To understand the dynamics of gender relations under the current pastoral transformation in Borana, southern Ethiopia.

This is possible through addressing questions such as: How do stressors and efforts to reduce the impacts of stressors affect existing gender relations, gender roles and behaviours?

III. To understand gendered aspects of pastoral livelihood diversification and identify the newly evolved/evolving livelihood activities and assess the participation and their gains and losses in livelihood diversification.

The third objective address questions such as: What are the main livelihood activities that evolved over time? What is the extent of participation of women and men in diversification?

IV. To identify the traditional social security network among Borana women and understand its role in responding to the impacts of stressors, particularly in improving household food security.

This is possible through addressing the questions: What are the institutions of mutual assistance among Borana women? How are these institutions organized? What is the role of the institution in improving household food security, especially during crises?

### 1.3. Organization of the thesis

This thesis is divided into two parts termed as introduction chapter and individual papers. The introduction chapter is further divided into three sections. These include an extended introduction section (with a brief introduction, problem statement followed by a presentation of the objectives of the thesis), a brief review of the relevant literature and the theoretical framework and methods used and finally the third section concludes with a summary of key findings of the study, followed by brief recommendations on future policy direction for reducing pastoral vulnerability and building adaptive capacity.

The second part of the thesis consists of four individual papers which address each of the four specific objectives of the thesis in turn. Each of these papers has its own introduction, objectives, methods, results and discussions followed by conclusions, which allows each of them to stand alone. At the same time, the papers are interconnected in their purpose of dealing with gendered experiences and responses to stressors. Of the four papers, the first two (Papers I and II) examine the gendered experiences of stressors, focusing on how women and men

perceive the frequency and impacts of pastoral stressors and how the stressors are influencing the existing gender relations. The remaining papers investigate how women and men are responding to the current pastoral changes induced by stressors. Here, the participation of women in the current pastoral livelihood diversification as well as the role of women's social network institutions in responding to stressors are addressed.

## 2. GENDERED LIVING AND RESPONDING TO PASTORAL STRESSORS – A LITERATURE REVIEW

The impact of and responses to changing climate conditions and associated multiple stressors in the context of pastoral systems is rarely addressed in pastoral research. However, better understanding of the way people experience and respond to stressors is vital for designing responsive adaptation polices and achieving sustainable development. Therefore, the thesis employs insights from the literature on vulnerability studies which help to explain how pastoralists are experiencing risks and uncertainties and using opportunities for adaptation to the impacts of stressors as part of dynamic and diversified livelihoods. In addition, the role of indigenous social security networks to overcome impacts of stressors is addressed. In general, concepts of vulnerability and adaptive capacity as well as the gendered aspects of these are discussed below.

### 2.1. Concepts of vulnerability

Vulnerability is understood differently in different literatures. Varied conceptualizations of vulnerability are rooted in the dynamic nature of the term itself. In risk- and disaster-related literature, vulnerability is defined as the adverse effect of shocks, or it is realized as a potential loss caused by certain shocks such as droughts (Burton, Robert, & White, 1978) which can be stabilized using relief and recovery strategies (Ribot, 2010). Others approach vulnerability in terms of social and economic processes that further explain differential exposure and capacities to react to shocks (Eakin & Luers, 2006). The latter way of understanding vulnerability has its roots in Sen's (1981) entitlement approach that widens the scope of vulnerability (see also Alwang, Siegel, & Jorgensen, 2001; Bohle, Downing, & Watts, 1994; Kelly & Adger, 2000). In this, vulnerability is understood as a prior condition of the system or groups determined by socio-economic and political factors (Adger, 2006). Hence, vulnerability in this context is not an outcome. Rather, it is a state of being related to existing structural inequalities among communities, households and individuals that affect people's capacity to adapt to risks (Adger, 1999; Eakin & Luers, 2006; Leichenko & O'Brien, 2002).

In addition, the pressure and release model of vulnerability tried to explain social and economic inequalities in accessing resources, distribution and historical patterns of marginalization in influencing individual or group exposure to risks and their capacity to respond (Winsner, Blaikie, Cannon, & Davis, 1994). As pointed out by Kelly and Adger (2000 p. 326), 'socially constructed vulnerability is treated as a starting point, whereas the natural sciences orientate vulnerability as an end point'. "End point" vulnerability refers to impacts of shocks while "starting point" vulnerability focuses on past damages affecting exposures and responses of the system or individuals. The structural inequality before the shocks is starting point vulnerability which affects system or individual sensitivity to shocks or stressors. Later concepts of vulnerability are described in similar terms as "outcome" and "contextual" vulnerability (O'Brien, Eriksen, Nygaard, & Schjolden, 2007). Outcome vulnerability is the projected impacts of shocks, while contextual vulnerability analysis deals with the dynamic nature of social, economic, political, institutional and technological structure and process of vulnerability. The outcome approach focuses on consequence of shocks alone, while contextual vulnerability considers the constant state of vulnerability in which shocks like drought will be one of the stressors (O'Brien et al., 2007). Contextual vulnerability is defined as the current inability of the system or group to withstand external shocks embedded in structural inequalities exist in the society (Burton, Huq, Lim, Pilifosova, & Schipper, 2002; Hopkins, 2015). Thus, stressors have always been social and vulnerability is found on the ground when hazards like droughts arrive. This is well articulated by Ribot (2010), as vulnerability does not "fall from the sky"; rather, the situation under which shocks happen matters. Therefore, vulnerability is a product of complex and dynamic interactions of social, economic and environmental factors (Turner et al., 2003). With this in mind, analysis of vulnerability requires multi-scale analysis considering the condition under which hazards are taking place – including poverty, capacity to adapt, social inequalities in accessing resources and power relations. Vulnerability of individuals or groups indicates the way they face and experience stressors, and is the driving force for adaptation (Adger, Huq, Brown, Conwaya, & Hulmea, 2003). As noted by Kelly (2000), reducing vulnerability is an effective precautionary step towards adaptation.

### 2.2. Concepts of adaptation

With the current increases in anthropogenic global changes, adaptation is becoming an important aspect of research and policy agendas at local, national and international levels (Adam, Kjosavik, & Shanmugaratnam, 2018). The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as adjustments in ecological, social or economic systems in

response to actual or expected climatic stimuli and their effects of impacts (IPCC, 2001). Other sources describe adaptation as adjustment of a system to moderate the impacts of climate and non-climatic problems, to take advantages of new opportunities or to cope with the consequences (Adger et al., 2003). Overall, the fundamental objective of adaptation is to reduce vulnerability to shocks, enhance people's livelihood and build adapting capacity (Adam et al., 2018).

Adapting capacity is the ability of individuals or groups to adjust their characteristics or behaviour in order to expand the coping range or tolerable damage from the impacts of climate and non-climatic stressors (Selvaraju, Subbiah, Baas, & Juergens, 2006). A distinction is often made between coping and adaptation. Coping refers to shorter-term and immediate responses to shocks orientated towards survival, even though degrading resources, whereas adaptation is aimed at long-term livelihood security through long-term processes (Angie Dazé & Ehrhart, 2009).

Adaptation is not a new phenomenon. Over the course of human history, societies will adapt and have been adapting to surrounding changes, including climate variability (Adger et al. 2003). For instance, pastoralists in Africa have been constantly responding to their surrounding challenges. As pointed out by Berhanu and Beyene (2015), pastoralism is a system of human-created adaptations to hostile climate and non-climatic factors of dryland ecosystems. As Adam et al. (2018) confirm adaptation is through multifaceted activities including development of improved seed varieties, diversification in livelihood activities, change in behaviour and application of social institutions. Pastoralists involve themselves in livelihood diversification to pursue non-livestock-based income-generating activities in both rural and urban areas (Hodgson, 2011; Homewood, Pippa, & Trench, 2009). In addition, the strong social support institutions among pastoralists are contributing to pastoral adaptations (Tache & Oba, 2008). These are either undertaken by individuals or by governments on behalf of society, sometimes in anticipation of change, but, again, often in response to individual events (Adger et al., 2003).

Adaptation decisions are not independent of each other; they are embedded in social processes that reflect the relationship between individuals, their networks, capabilities and social capital, and the state (Adger, 2001). The ability to adapt among different social groups is not uniform. This is influenced by attributes of social and cultural systems located in institutions, power relations, knowledge, values and belief systems of the society (Adger, 2001). Studies show that climatic and non-climatic stressors affect people differently based on their cultural, economic,

environmental and social contexts (Djoudi et al., 2016). Several studies acknowledge social differentiation including gender as determinant factors affecting the way people experience and respond to stressors (Ribot, 2010; Tschakert, 2012). Consequently, the way women and men respond to pastoral stressors is determined by existing gender relations.

## 2.3.Gendered experiences and responses to stressors

### 2.3.1. Gender as analytical category

Gender is used as a category of social differentiation in almost every society. In the present study, the gender relation indicates the power relations between women and men rather than their biological difference. It refers to differences in socially constructed roles and opportunities associated with being a man or a woman (Ongoro & Ogara, 2012). Pastoralist Forum Ethiopia (PFE) explains gender as a socially given set of qualities and expected roles, activities, responsibilities connected to being a female or a male in a given society as opposed to the fact of biological difference (PFE, 2008). In almost every culture, societies ascribe some characteristics and modes of behaviour to the female and others to the male sex, which results from the interplay of cultural and religious values and similar factors. Consequently, gender is a powerful force which causes inequalities and power asymmetries that determine the everyday life of women and men (Wilmer & Ferna´ndez-Gime'nez, 2016). In Ethiopia, in spite of the significant changes in laws and policies to amend earlier gender injustice, the norms continue reproducing in the society and affecting the everyday life of people (Mjaaland, 2018).

As highlighted by Jerneck (2018), gender roles institutionalize the way resources are accessed, distributed, and consumed, how labour is coded and divided into productive and reproductive roles, and how social practices and responsibilities are defined and fulfilled. All these affect the way rural people perceive risk, prioritize and share tasks in everyday farming, experience hardship and shape aspirations about future livelihoods which further influence adaptation process (Enarson, Evergreen, Meyreles, Domingo, & Republic, 2003). For instance, (Nelson, Kate, Terry, John, & Adrienne, 2002) argue that global climate change impacts are gendered. In addition, gender is revealing the everyday meaning of women's lives, which helps to avoid universalizing women's experiences and responses to change (McCall, 2005; O'Shaughnessy & Krogman, 2011). When a community is facing a disaster or external shocks like flood or drought, the way in which women and men face a similar situation differs (Ongoro & Ogara, 2012). Ellis (2000) contends that women face more challenges than men in caring for children and elderly people in provision of food and care in such situations. Women are suffering more from shocks partly due to existing social and economic inequality in the society (Denton,

2002). Natural disasters including drought produce specific forms of vulnerability for women and men (Arora-Jonsson, 2011). Moreover, increase in drought incidence is challenging the existing gender relations (Delaney & Shrader, 2000), which is a development that needs thorough investigation.

The impact and response of not only climatic stressors but also non-climatic stressors, is influenced by existing gender relations in the society. For instance, political marginalization has a direct effect in magnifying existing gender inequalities and perpetuating poverty and vulnerability of the people (Rahmato, 2008). He further discusses on how existing political marginalization of pastoralists has gendered implications due to existing power asymmetries in the society. Khalif (2010) reasons that poverty and food insecurity in pastoralist areas has forced women to bear a disproportionate burden of pastoral poverty and vulnerability, in terms of existing inequalities in accessing resources and opportunities. Therefore, it appears that understanding vulnerability and adaptation to climate and non-climatic stressors apart from gender is impossible.

In general, social differentiation categories like gender imply varied levels of vulnerability and capacity to adapt to both climatic and non-climatic stressors (Vincent et al., 2014). Numerous studies find social differentiation, including gender, to be a crucial determinant of vulnerability (Adger & Kelly, 1999; O'Brien et al., 2007; Ribot, 2010; Tschakert, 2012). Like vulnerability, adaptation to shocks is not gender-neutral. Indeed, the way people respond to stressors is shaped by existing power relations that determine access to resources, information and availability of opportunities (Djoudi et al., 2016; Tschakert, 2012). Disaster reduction literature provides evidence and local case studies showing gendered impacts and roles to mitigate and prevent disasters (Dankelman, 2002). Gendered elements of adaptation refer to the different ways women and men respond to or cope with the changes through their day-to-day livelihood activities (Ongoro & Ogara, 2012). This might include livelihood diversification or total changes of gender roles (Ontita, 2007). A body of evidence shows women's abilities and contributions to sustainable resource management (Agarwal, 2001, 2009). Recognizing and then integrating these contributions of women in adaptation debates will enhance and strengthen societal adaptation to shocks. In this study, the focus is on the gendered dimensions of livelihood diversification and the role of women's social networks in adaptation efforts.

Therefore, living and responding to pastoral stressors in relation to gender as an analytical category is not a choice but a must for reducing vulnerability and building adaptations. As a

result, throughout this thesis, gender is used as an analytical category to show how the impacts of pastoral stressors (climatic and non-climatic) and responses to stressors are structured by the power relations between women and men. As a result, feminist scholars have emphasized the need for contextual and systematic gender analysis, which recognizes social identities and differentiated experiences are group-based, not individual, although the groups are multiple and the boundaries may be fluid (Walby, Armstrong, & Strid, 2012).

### 2.3.2. Livelihood diversification and women

Livelihood diversification is defined as a process by which households construct a diverse portfolio of activities and assets in order to survive and improve living standard (Ellis, 2000). The livelihood diversification is possible through the deployment of diverse activities and assets. In rural areas, diversification is mainly a matter of acquiring a means of living from non-farm activities or income away from farming and livestock (Barrett et al., 2006). However, this fails to capture the diversity of income sources in pastoral areas which mainly related to livestock production. Although pastoralism is the main livelihood, today many pastoralists are diversifying their livelihoods to income-generating activities which are not livestock-based (Hodgson, 2011; Homewood et al., 2009; McPeak, Little, & Doss, 2011). In east Africa pastoral diversification has become prominent since the regional droughts of 1979–1980 and 1984 (Little, 2016). In addition, repeated conflict, increases in commercialization of livestock and their products and the growth of local and regional towns have played a significant role in the diversification of pastoral livelihoods (Little, Smith, & Cellarius, 2001).

In Ethiopia, the Abyssinian Imperial government, the Derg government and the current government have also provided opportunities for pastoral diversification, discouraging mobile pastoralism and imposing boundaries to restrict movements and resettle pastoralists (Little, 2016). Pastoralists who had lost animals due to drought or other shocks joined agricultural communities or pursued hunting and gathering activities until they could rebuild their herds (Little et al., 2001). Although in most cases they used this move as a transition back to pastoralism, some pastoralists who were unable to rebuild their herds joined these communities permanently.

Pastoral livelihood diversification is an investment in non-pastoral livelihood activities and the acquisition of different species with the aim of minimizing risks (Ellis, 2000; Little et al., 2001). Pastoral livelihood diversification is also viewed as attempts made by individuals and households to find new ways of raising income and managing and coping with risks (Ning et

al., 2014). Most of the pastoral livelihood diversification has aimed not to replace pastoralism, but to supplement it (Khalif, 2010). For instance, traditionally Borana people are mobile pastoralists and livestock is the economic mainstay and welfare of Borana people (Tache & Oba, 2008). They did not have a tradition of crop farming (Angassa & Oba, 2007). Crop farming was introduced after the Borana region was incorporated into the Ethiopian empire of Emperor Menelik II, towards the end of the 20th century (Helland, 1998). Before that time, Borana obtained all the needed agricultural commodities from the neighbouring Konso people. Later, as indicated by Helland (1998), the Borana clan started crop farming for the first time during the 1984–1985 droughts as adaptation strategy. Today many more Borana people have taken up crop farming, shifting the livelihood from pastoralism to agro-pastoralism (Angassa & Oba, 2007; Abebe, 2016).

Although diversification offers opportunities for pastoralists, if not well managed, it might create additional pressure for them (Eneyew, 2012). Little (2009) argues that some forms of diversification improve welfare whereas others can increase risks. Therefore, diversification cannot be assumed by policymakers and practitioners to be always effective in improving living standards. Livelihood diversification can occur as both voluntary and involuntary responses to crisis (Ellis, 2000). Some of the diversification activities adopted for survival are involuntary, while others voluntarily aim to improve living standards. The participation of individuals or households in livelihood diversification differs in terms of the degree of freedom of choice either to diversify or not, and the reversibility of the outcome (Ellis, 2000; Eneyew, 2012). Little et al. (2001) found climate, distance to market towns, gender, wealth and education as being important variables in determining participation in livelihood diversification.

Although men dominate most of the diversification activities in pastoral areas like Borana, women are also playing vital roles in the livelihood diversifications (Wangui, 2008). For instance, Massai women of Tanzania are engaged in activities such as selling milk, hides and herbal medicines to support their households (Smith, 2015). Similarly, women pastoralists who were evicted from the Mkomazi Game Reserve, Tanzania engaged in milk, firewood and herbal medicine selling to meet their families' daily needs (Brockington, 2001). The Rendille women of northern Kenya have been involved in different non-pastoral activities such as sale of agricultural produce, milk and labour (Fratkin & Smith, 1994). The same pattern is observed among several pastoral communities including the Borana found in southern Ethiopia and northern Kenya (Little et al., 2001).

The livelihood diversification by women challenges the pastoral gender system and has implications for rural development (Smith, 2015). Livelihood diversification activities are playing an important role in improving gender equality and empowering women through additional income earnings and improvements in general family welfare (Ellis, 1998). A study undertaken in Jamu and Kashimer revealed that participation of women in livelihood diversification contributed to women empowerment (Sudan, 2007). Similarly, increased income-earning activities of Dinka women in South Sudan has challenged customary laws and has given women power and space in their society (Chrostowsky & Long, 2013). Nevertheless, the engagement of women in livelihood diversification as a strategy to adapt to the impacts of pastoral stressors has increased women's workloads (Smith, 2015; Wangui, 2008).

### 2.3.3. Social security network in responding to stressors

Social networking and mutual assistance mechanisms are widely practised among traditional societies like pastoralists. The networks hold various purposes for the users. Substantial studies argue that social networking enables the users to share risks in the absence of formal insurance and social welfare (Aktipis, Cronk, & Aguiar, 2011; Attanasio, Barr, Cardenas, Genicot, & Meghir, 2012; Fafchamps & Gubert, 2007). Moreover, social networks reduce vulnerability (Aktipis et al., 2011) and contribute to adapting capacity (Adger, 2003; Brunie, 2009; Leonard & Pelling, 2010; Pelling & High, 2005).

In such networks, the users share different types of resources to enhance solidarity (Aktipis et al., 2011; Mauss, 1990). For instance, pastoralists share resources such as livestock, money and food in the form of gifts through their social institution (Tache & Sjaastad, 2010). The resource-sharing or the gift-giving norms establish reciprocal relationships between the recipient and the giver (Douglas, 1990). Most of the time, gifts are given with the expectation that they will be reciprocated in times of need (Aktipis et al., 2011). Norms and trust enable the participants to pursue and achieve their common objectives together (Moser, Stein, Norton, & Georgieva, 2010).

Social security networks are established between families, friends and neighbours, and far distant households (Ambrus, Mobius, & Szeidl, 2014). The intra-community relations established among defined socio-economic groups are known as bounding networks (Adger, 2003; Pelling & High, 2005), whereas the inter-community relations are known as bridging networks which exist between people of different identities but having common goals (Brunie, 2009). It is also possible to form networks depending on clan, age, gender and occupation

Bloch, Genicot, & Ray, 2008). As a result, some of the social networks in pastoral areas are gender-specific exclusively for women, and men benefit only through their wives (Oba, 2001). Some of the gender-specific networks in the pastoral society include the food-sharing culture among waso Borana women (Khalif, 2010). Specifically in food-insecure areas, mutual networks ensure household food security and improve wellbeing through sharing (Baird & Gray, 2014; Fafchamps, 1992; Borgatti, Mehra, Brass, & Labianca, 2009; Woolcock & Deepa, 2000).

Regardless of roles played by social networks, their contribution to adaptation to stressors such as drought remains unknown (Aktipis et al., 2011; Baird & Gray, 2014). For many years, such institutions were regarded as barriers to development and excluded from development planning and drought management efforts (Ambrus et al., 2014). As a result, drought management strategies in pastoral areas are unaware of such institutions. Only in recent times has the contribution of social networks started to attract the attention of researchers (Baird & Gray, 2014; Borgatti et al., 2009; Woolcock & Narayan, 2000).

## 3. A FRAMEWORK FOR UNDERSTANDING GENDERED EXPERIENCES AND RESPONSES TO STRESSORS

To begin, it is useful to consider the vulnerability context in Borana pastoralist community. A vulnerability context explained in a sustainable livelihood framework throws light on the way different social groups experience and respond to situations. Ellis believes 'vulnerability context is principally framed as exposure to multiple stresses or shocks', both climatic and non-climatic (Ellis 2000). Vulnerability context acknowledges the dynamic, heterogeneous, risk-prone contexts and environments within which agriculture and food systems are embedded (Thompson & Scoones 2009). These shocks affect people's asset status and their livelihood options (Ellis, 2000).

### 3.1. Vulnerability context

The rural livelihood, including pastoralism, is experiencing a number of interlocking stressors (Morton, 2007; Yilma et al., 2014) comprising periodic droughts, political marginalization, conflict, poverty, food insecurity and poor land policy (Bekele & Amsalu, 2012; Berhanu, Colman, & Fayissa, 2007; Leshan & Standslause, 2013; Rettberg, 2010) In considering a vulnerability context, it is vital to understand the extent to which different groups are exposed to stressors or shocks, and the sensitivity of their livelihoods to these factors. This means that the impacts of stressors are not uniformly distributed; rather, they affect people differently

according to inequality in accessing resources, social norms and role behaviours (Neumayer & Plümper, 2007). Similarly, different people respond to stressors differently (Ribot, 2014). Therefore, strengthening adaptive capacity and reducing vulnerability requires an understanding and addressing of the imbalances in the distribution of powers and resources within a society (Ericksen & Lind, 2008). In this study stressors are broadly classified as climatic and non-climatic stressors.

3.2. Climatic stressors

Pastoralists in Africa are increasingly experiencing extreme weather events, particularly unpredictable and insufficient rainfall and recurrent droughts (Bekele & Amsalu, 2012; Gray & Muller, 2012). Although it is normal for these pastoralists to face drought every eight to ten years, today the frequency, intensity and destructiveness of drought is increasing with changes in global environment. A growing concern is that anthropogenic climate change – which refers to all human activities taking place within ecological systems affecting the environment (IPCC, 2007) – magnifies pastoral droughts through increased rainfall variability and increases in temperature (Gray & Muller, 2012).

Drought-prone areas are deemed to suffer more from complex impacts of climate variability or change. In the Sahel, for instance, climate changes in temperature and rainfall patterns have reduced food availability as crops fail and animal productivity (milk, blood and meat) yields decline (Ongoro & Ogara, 2012). Previous study reports that recent increases in drought and flooding in pastoral areas as a consequence of global climate change have once again sharply exposed the layers of poverty, underdevelopment and political marginalization of pastoralists (Francis Opiyo, Oliver Wasonga, Moses Nyangito, Janpeter Schilling, & Richard Munang, 2015). Repeated drought episodes in 2000 (Angassa & Oba, 2007) and in 2006, 2008 and 2010–2011(USAID, 2011) have impoverished the inhabitants of Borana (Oba, 2001). Borana pastoralists have already lost large numbers of their livestock, which is their sole source of income (Tiki, Oba, & Tvedt, 2010). For instance, a study conducted in the zone indicates that the average livestock holding per household decreased by 37% mainly due to drought (Mohammed & Associates, 2001). The loss of animals reduces the availability of food in the short term and contributes to long-term poverty (Gray & Mueller, 2012; Niguse, 2001; Oba, 2001; Dercon, Hoddinott, Krishnan, & Woldehannna, 2008). As a result, most of the time droughts in the area are followed by famines (Helland, 1998). As observed by Tache and Oba (2008), with these increases in droughts, the ability of the Borana to handle droughts has weakened, and they face chronic food insecurity and destitution. The recurrent drought has

caused great hardship to pastoralists who have had to sell their assets, including livestock, at low prices in order to buy day-to-day household necessities (Sandford & Yohannes, 2000). Moreover, the increase in droughts has increased the energy and time demand on the pastoralists, particularly on women, contributing to their increased vulnerability.

### 3.3. Non-climatic stressors

While climate-related stressors are a serious threat to pastoralists in east Africa, they do not exist in isolation, but combine with various other stressors. Previous studies have revealed that the impacts of drought intersect in myriad ways with other non-climatic challenges to produce pastoral vulnerability (Barrett et al., 2006; Berhanu, 2011; Davies, 2010; Dercon, 2004). Other studies indicate that the impacts of drought are magnified by deep rural poverty, limited governance capacity and exposure to economic, political and health shocks (Kazianga & Udry, 2006). In Borana, drought impacts are exacerbated by existing structural problems including political marginalization, conflict, poverty and food insecurity (Tache & Sjaastad, 2010). In a similar manner, the marginalization of pastoral development in the government policies and programmes in Ethiopia has increased the vulnerability of pastoralism to droughts (Mussa, 2004). Despite the long history of poverty in Ethiopia in general and pastoral areas in particular, pastoral poverty is less emphasized in government policies. Several studies conclude that the poverty reduction strategy programme (PRSP–2000) initiated by the World Bank and IMF and drafted by the Ethiopian government in 2000 failed to adequately address pastoral poverty (PFE, 2002; Mussa, 2004; Rahmato, 2008; Eneyew, 2012). In reality, more than 56% of the pastoralists are living below the poverty line (PFE, 2009). Similarly, the general development policy of the Ethiopian government (known as Agricultural Development Led Industrialization 2000) does not adequately address the pastoral and agro-pastoral production systems, and is biased towards highland farmers (Rahmato, 2008). He further stated that the health and education policies have paid very little attention to the challenges in pastoral areas and have not taken adequate measures in providing health and education facilities to pastoralists.

Conflict is another major non-climatic problem which seriously affects the people and their livelihoods throughout the lowlands of east Africa. A study by Abbink (2011) shows that despite the increased economic growth, conflict is becoming a serious problem that endangers transformative political and socio-economic processes in Africa. Some writers have stated that conflict in pastoralist areas including Borana is purely over the use of resources, (MercyCorps, 2012; Omolo, 2010; Rahmato, 2007). This has its roots in a Malthusian perspective which argues that conflict between differing identities results from scarce resources, which forces

migration and increasing contact and competition. Although, competition over resource use is an important factor for conflicts like in Turkana (Omolo, 2010), it is not the only cause of conflict. Some of the conflicts have a past history and political motives (Tache & Oba, 2009). Conflict between Somali and Borana is an example of the common politically motivated conflict (Watson, 2001). As pointed out by Abbink (2011), the formation of administrative units along ethnic lines escalates resource conflicts in rural Ethiopia. Similar situations can be observed among Borana pastoralists (Tache & Oba, 2008). Here, disputes over the right to use grazing lands, and the basis on which those rights were established and maintained aggravate conflicts between the different groups (Feyissa, 2014; Watson, 2001). Moreover, settlement programmes in the area are not neutral and favour one group, which in turn exacerbates pastoral conflicts. Therefore, in-depth understanding of the nature of the generative factors that produce conflict is required to provide long-lasting solutions (Abbink, 2011). Apart from loss of life, conflicts restrict the movement strategy of pastoralists in search of grassland and water during droughts, which negatively affects pastoral production and drought adaptation strategies (Rahmato, 2007). Therefore, addressing pastoral conflict on a sustainable basis is a precondition for improving pastoral livelihood. Nevertheless, government and non-governmental organizations dealing with conflicts are focusing on offering "ready-made solutions" to the recurring disputes and conflicts with the objective of fixing the problem as quickly as possible (Abbink, 2011). This demands serious attention to help build resilient communities and reduce pastoral vulnerability.

Overall, the challenges to pastoral livelihood do not emanate from climate problems alone. Social, economic and political factors play vital roles in increasing pastoral poverty and vulnerability. However, studies in pastoral areas mainly focus on the impacts of climate stressors and pay less attention to the non-climatic stressors (Antwi-Agyei et al., 2017). Ignoring these in the analysis of vulnerability limits the efforts made to tackle the problem. Therefore, any attempt made to overcome pastoral problems needs to address the multiple problems affecting the people and their livelihood. For reducing vulnerability and building adapting capacity, one must understand the structural bases of power of access to assets and services (Scoones, 2009; Sugden et al., 2014). Social structures are imbued with power relations between class, religion, ethnicity or gender (Agrawal, Kononen, & Perrin, 2008; Sugden et al., 2014) which determine the way to experience and respond to both climatic and non-climatic stressors.

3.4. A framework on gendered living and responding to stressors

A simplified framework was developed for the purpose of this study (see Figure 1), which recognizes the vulnerability context, exposure to climatic and non-climatic stressors under which Borana pastoral livelihood operates, and the differential experience and response of household members, particularly women and men, This is used to understand the interactions of climatic and non-climatic stressors and the way women and men are responding to ensure survival. The vulnerability and adapting capacity of women and men to shocks vary enormously depending on their institutional links, material endowments, occupational patterns and asset portfolios, and social networks (Sugden et al., 2014) which depend on existing social norms. Indeed, previous studies have asserted that the impacts of stressors are worse for women than for men (see for example, Cannon, 2002) owing to the roles of women in the society combined with their limited access to resources and opportunities that determine their sensitivity and adapting capacity to the climatic and non-climatic stressors (Dankelman, 2002; WEDO, 2007) (WEDO- Women Environment and Development Organization). The unequal social relations between women and men determine their roles, behaviour and responsibilities in the household and community (Masika, 2002). The status and activities of women make them experience and respond to stressors differently (Dankelman, 2002).

The first level indicates the vulnerability context or shocks under which most of pastoral livelihood in Africa operates. The vulnerability context includes both the internal and external drivers affecting pastoral livelihood such as recurrent droughts, rainfall variability, economic, social and government policies, and repeated conflicts. Most of the policies in African countries do not include the condition of pastoralism, especially with regard to land tenure. This has led to the fragmentation of pastoral land that further contributes to a reduction of grazing lands. In addition, the current changes in climate like the frequent drought occurrences have been diminishing the limited dryland resources. Moreover, repeated conflicts, as well as changing trends in global markets for grain and meat impact directly on the pastoral economy. The protracted conflicts in the area have contributed to the decline in livestock holdings and increasing poverty among pastoral communities.

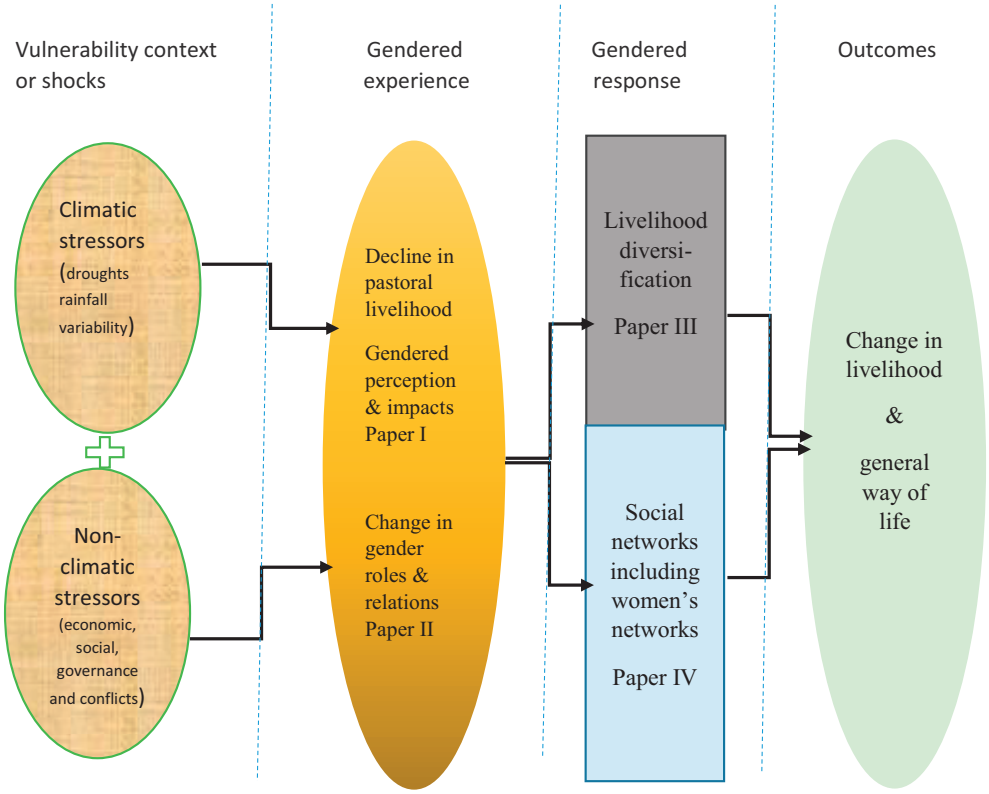


Figure 1: A framework for understanding political economy of pastoral livelihood

Source: Author's construction

The second level of this framework refers to gendered experiences and the impacts of stressors. In almost every culture, gender is one form of inequality limiting access to resources and opportunities; it determines the share of roles and responsibilities in rural households and contributes to the way shocks are perceived and experienced shocks. These further determine the way pastoral women and men perceive the frequency and impacts of stressors and also disrupt the traditional gender roles and responsibilities, contributing to changes in gender relations.

The third level in the framework shows the way women and men respond to pastoral stressors which result in changes in pastoral livelihood as well as the general way of life. Pastoralists are not passive victims of stressors; they actively respond to stressors primarily based on their gendered roles and responsibilities. They even go beyond the gender boundaries ascribed by gender norms in order to ensure survival. In traditional Borana culture, women are responsible

for activities inside their homes. However as increasingly more men have lost their traditional entitlements and have been unable to fulfil their role as breadwinners, women have become more involved in non-traditional activities. The increasing impacts of pastoral stressors have resulted in a decline of pastoral livelihoods, as pastoralists are increasingly diversifying their livelihood. Although men dominate most of the livelihood diversification activities, women are also increasingly participating. Women are engaged in non-pastoral livelihood for survival. They are not only responding to stressors through diversification but are also applying their traditional social networks for helping each other during crises to ensure survival.

Focusing on Borana pastoralists, this framework tries to capture the gendered experiences and responses to climatic and non-climatic stressors. In this thesis, gendered experiences are mainly covered in two papers addressing gendered perspectives on frequency and impacts of pastoral stressors (Paper I), and the dynamics of gender relations under pastoral changes (Paper II). Paper III explores the role of women and men in livelihood diversification as adaptation strategy. The role of women's indigenous social networks in responding to the impacts of stressors, with particular focus on household food insecurity which increases with increased pastoral stressors, is addressed in Paper IV. The papers highlight the experiences and skills of women in adaptation, which could be helpful in designing responsive adaptation policies and programmes.

## 4. STUDY AREA AND METHODOLOGY

### 4.1. A description of Borana zone

Borana people are part of the large Oromo ethnic group found in southern Ethiopia and northern Kenya. This study was undertaken in the Borana zone of southern, Ethiopia. The zone is bordered in the north by Bale zone, in the south by Kenya, in the east by a Somali region of Ethiopia, and in the west by the Southern Nations, Nationalities, and Peoples' Regional State (see Figure 2). The total area occupied by the Borana people was once 95,000 $km^2$; however, following the ethnic based subdivision of administrative boundaries in 1992, the area shrank to 65,000 $km^2$ (Abebe, 2016). According to the central statistics survey of 2008, the total population of the Borana zone was 962,489 of whom 487,024 were men and 475, 465 were women (Central Statistics Authority (CSA, 2008)).

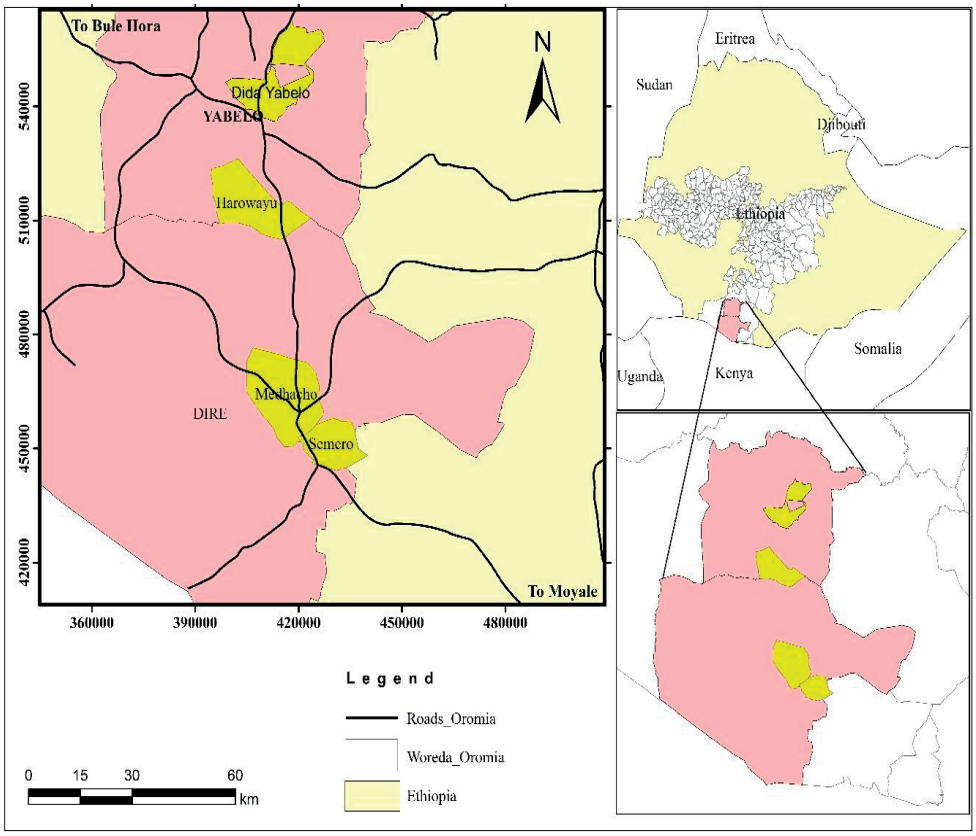


Figure 2: Map of Borana zone in Ethiopia and location of study sites

The region is characterized by arid and semi-arid environment with 600 mm average rainfall (Angassa & Oba, 2007). Erratic and unpredictable rainfall is a salient feature of Borana (Bekele & Amsalu, 2012). The zone has a bimodal rainy season namely long rain (*gana*) and short rain (*hagaya*). In good years, the long rain is expected from March to May, while short rain comes in the months of October and December. The Borana people are largely dependent on open water sources that experience high evaporation rates, frequently drying up early in the dry season. Drought is a recurrent phenomenon. In the last decade alone, the Borana faced at least five drought episodes. The impacts of drought are exacerbated by existing economic, social and political dilemmas.

The Borana people are mainly pastoralists whose livelihoods rely on natural resources, primarily on water and pasture for their livestock which are sensitive to droughts. They keep cattle, goats, sheep, camels and other animals. Livestock exports from this area contribute significantly to the country's foreign exchange earnings (unpublished report Bureau of Finance

and Economic Development (BoFED), 2011). Although pastoralism is the mainstay of Borana, many are increasingly diversifying their livelihoods as a response to the impacts of climate and non-climatic stressors (Little, 2016; Tache & Oba, 2008). In the area, crop cultivation is increasing and is becoming an alternative livelihood activity, shifting the economy from predominantly pastoralist to agro-pastoralist (Angassa & Oba, 2007).

The Borana society is a structured society governed by *gada*[2] institutions. Gada is a democratic and self-sufficient system that influences every aspect of Oromo life (Legesse, 1973; Helland, 1998). As explained by Hinew (2012), gada is the constitution of the Oromo society by which the people have administered and defended their territory, maintained and developed their economy. This system generally deals with the relations within and between the generations and is more about how the Borana people should live their lives (Legesse, 1973). Gada has different grades classified by age, showing the roles and responsibilities of different groups. The power structure of gada system has Aba gada, vices of Aba gada, Aba Seera (the memorizer of laws), Aba Dubi, (the speaker), Aba Dula (the army commander), Aba Sa'a (the economy commander) and Aba Alanga (the Judge) (Hinew, 2012). In the system, a son will take power after forty years of his father in power, and power is transferred every eight years in a very peaceful manner through election, which resembles today's elections in terms of power in democratic countries. Moreover, autocratic and corrupted leaders will be forced out of power by the process called *buqisa* (making to leave power by force), even before they finish their term.

Similar to other traditional societies, the people of Ethiopia in general and Borana in particular belong to a patriarchal society. Descent is traced through the father's line (Legesse, 1973). In Borana culture boys are classified into different age strata with five generational classes interchanging in assumption of power every eight years to lead the society(Tache & Oba 2008). The age classification prepares males for power and does not include women. This limits women's public life and their participation. As pointed out by Ebba (2006), gada discriminates against women in its administrative structure. In the culture, it is not allowed for women to participate in traditional meetings where most of the decisions are taken. Although it is hard to deny the discrimination against women in the gada culture, it may not be fair to blame this age-old institution which was restricted and unprepared to change with the changing environments.

[2] Gada is the traditional institutional arrangements that govern Oromo people. It governs every aspect of their lives on the basis participation.

Gada institution is not functional in many parts of Oromia regional state of Ethiopia (Hinew, 2012; Helland, 1998; Legesse 1973), and has not kept up with the growing concerns of modern society.

The Borana gada system also governs the distribution and control of resources at the household and community level (Legesse, 1973). Common resources such as rangelands and water points are managed and controlled by clan leaders who are usually men. Resources such as livestock are under the control of men, while women have full control over things inside their home in the traditional system (Dahl, 1979). The cultural capability of Borana women and men in commanding resources influences the way they experience and respond to pastoral stressors. In addition to mobility strategy, the Borana have a strong helping culture known as *busa-gonfa*[3] to reduce the vulnerability of poor people to droughts and other risks. Women also help each other during stress through their own social security institutions such as marro.

### 4.2. The research design

The research design for this study draws insights from critical realism and pragmatism to answer the research questions. Critical realism and pragmatism are "middle ground" philosophical paradigms that go beyond the distinctions between positivism and constructivism which separated the natural and social sciences, and quantitative and qualitative research methodologies (Morgan, 2007). Critical realism combines a realist ontology, which claims that reality exists independently of human thought, with a constructivist epistemology, which maintains that knowledge about reality is socially situated (Collier, 1994). Pragmatism arose as a philosophical tradition in the late 19th and early 20th centuries and is concerned with the practical applications of scientific knowledge to solve real-world problems. It places emphasis on what people can do with the knowledge that they produce (Creswell, 2009). Both critical realism and pragmatism provide an appropriate philosophical foundation for the multiple methods used in the thesis, which aims to provide insights on gendered living and responding to multiple stressors in Borana.

### 4.3. Methods of data collection

The researcher is personally interested in the issue of climatic change and gender. Ethiopia is highly sensitive to climate variability, particularly droughts, which are very common in the lowlands. The idea for undertaking research related to climate variability first came to the

[3] Busa-gonfa is a social security system whereby members of the same clan contribute in various ways to those badly affected by or vulnerable to natural calamities like drought, conflict and disease.

researcher's attention after a discussion with Borana colleagues in 2006 at Hawassa University in Ethiopia. The topic of the discussion was about Ethiopian pastoralists and the government policies towards pastoralists. As the discussion proceeded, the researcher's colleagues emphasized the challenges of recurrent droughts, repeated conflict and poor government policy towards pastoralism. They had witnessed the suffering of Borana people under recurrent droughts and violent conflicts. Despite all the challenges, however, the people continue to survive. This fact caught the researcher's attention and she developed an interest in studying how Borana women and men experience pastoral challenges and how they respond to these for their own survival. The researcher's familiarity with the language and culture of the Borana people assisted her in undertaking this research. In 2010 the researcher developed a synopsis, and undertook the research during her PhD studies.

Before starting data collection, the researcher requested Hawassa University to write a support letter to Borana zone officials. This letter was used as an introduction letter to the local offices to gain access to the study area and communities. In the first visit in 2014, the researcher together with research assistants who were colleagues of the researcher, and originally from Borana visited the area. The researcher and assistants were taken to the zone's administrative office where they explained the purpose of their visit and presented the university's letter of support. When the researcher expressed her interest in discussing the current issues in Borana, the officials responded with interest in the research and willingness to offer support. The researcher also visited the districts and discussed her proposed research with extension workers and community leaders.

A mixed method approach, which is common in an inter-disciplinary study (Olsen & Morgan, 2005), was adopted for this study. Mixed method approach refers to research involving collecting, analysing and interpreting qualitative and quantitative data in a single study or series of studies (Leech & Onwuegbuzie, 2009). The mixed methods approach increases confidence in results, ensures better understanding of the findings, helps readers better understand the study, improves accuracy and completeness, and informs and contributes to overall validity (McKim, 2017; Hurmerinta-Peltomaki & Nummela, 2006).) Despite all these benefits, the use of a mixed methods approach demands more resources including time, money and knowledge than using a single method approach (Bryman, 2012; McKim, 2017.

For this study, both qualitative and quantitative data were collected. The qualitative data was collected using key informant interviews, group interviews, focus group discussions and field

observations. For the quantitative data collection, household surveys were undertaken. Detailed descriptions of these methods are provided in the individual papers (I to IV) while a brief overview of each data collection technique appears below. Fieldwork commenced in mid-2014 and ended in late 2015.

#### 4.3.1. Household survey

Structured questionnaires were administered among four randomly selected pastoralist associations (PAs) in two districts (Dire and Yabelo) of the Borana zone. The PAs in the selected districts were stratified based on their predominant production systems (pastoral and agro-pastoral) based on information from their respective district offices. From each production system, two PAs were selected randomly through a lottery system, to reflect the realities in varying production systems in line with the study objectives. Data was generated on household demographic information, key stressors, ranking stressors in terms of frequency, impact and severity, historical gender roles, changes in gender relations, traditional livelihood, types of newly evolved livelihoods over time, and on participation of women in the diversification, role of women's social security network in ensuring household food security. For the survey data, a total of 240 respondents were interviewed.

In this study, Harowayu representing pastoral production and Dida Yabelo for agro-pastoralist production were selected from Yabelo. From Dire district, Madhacho for agro-pastoral and Samaro for pastoral production systems were selected respectively. In Dida Yabelo PA, residents practise pastoralism, livestock trade, retail trade and crop production in good years. In the Harowayu PA, residents are more engaged in pastoral production systems, with little competition between crop production and pastoralism. There is also an impoverished community in this area who were forced out of pastoralism due to droughts in different periods that killed their animals. Similarly, in Madhacho, there is a variety of land uses and livelihoods, including pastoralism, crop farming and trading that represents agro-pastoral production systems while in Samaro, the people are dependent on pastoral production.

In the wealth categorization, the traditional wealth ranking of Borana which depends on the number of cattle the household owns was used. Traditionally households were categorized as very poor (qole), poor (dega), middle or self-sufficient (offi-danda'a), rich (duress) and very rich (chichita) depending of the number of their cattle. This does not include the other assets of the household which could be seen as a limitation. Households that have zero to five cattle were considered as poor, those with six to ten cattle as middle income group, and those with

above ten as rich. For this study both poor and very poor households were included in one category as poor. Similarly, very rich and rich households were classified as rich while self-sufficient/middle income was kept as one category. The households in each village were categorized according to these wealth categories with the help of local community leaders and extension workers. The village leaders and the extension workers (enumerators who work and live with the community) helped to categorize households in their village in different wealth strata. Two extension workers (female and male) in each PA were selected and trained by the researcher and used as enumerators for collecting the data at household level. First, the enumerators administered sample questionnaires to pre-test them. Based on the feedback from the enumerators, the researcher and assistants made relevant revisions to the questionnaire. During the data collection, research assistants checked daily that all questions were addressed and that the required data was collected and signed after data collection to confirm correctness. The completed questionnaires were collected by the researcher every two days throughout the data collection period. Women respondents were interviewed by women field staff so as to enable them to freely respond to the questions. The average time taken per respondent was about two hours. The first household in the village for the interview was randomly selected, and then alternate households were selected. The household survey gave insight into the socio-economic backgrounds of the population using quantitative indicators, and further inquiry was made through follow-up interviews. The quantitative data was analysed using the statistical package SPSS.

#### 4.3.2. Key informant interviews

Key informant interviews were used in the study to collect data, which cannot in general be obtained using quantitative survey techniques. Qualitative methods such as key informant interviews allowed the researcher to collect information related to power, gender and inequality. These interviews also helped the researcher and assistants to triangulate the information collected from other methods. As key informants, persons recognized for their knowledge of the community were selected based on advice from experts working in pastoral development offices (livestock officers), those working in Women and Children Affairs in the selected districts (gender officers) and from community leaders as well as oral historians. In total 36 key informant interviews took place. The data generated from these interviews related to subjects such as key stressors, impacts and severity of stressors, historical gender roles and responsibilities, changes in gender relations, traditional livelihoods and changes over time, challenges of pastoral livelihood, role of women's social network in contributing to household

needs, and participation of women in livelihood diversification activities and the gains and losses of women in diversification. Information was provided based on their personal stories as well as collective experiences. Based on the willingness and consent of the informants, the information were recorded using tape recorder and notebook.

#### 4.3.3. Focus group discussion

Focus group discussions were conducted in both pastoral and agro-pastoral production systems. Focus group discussions are vital to collect qualitative data and can reduce the distance between the researcher and the researched community (Pollack, 2003). The discussion is open and unstructured and gives a broader view of the issues for the researcher. Pollack further argues focus group discussions enable different views to be expanded on and if there is a mistake, respondents easily correct each other. If some information is missed, respondents remind each other in their discussions. In the present study, focus group discussions were conducted with the aim of getting a broader view of the issues raised in household survey and key informant interviews from the discussions. It also helped to clarify historical events such as traditional livelihood, historical gender relations and subsequent changes, historical and current challenges of pastoral livelihood, and the perceptions and experiences of women and men regarding the challenges. The role of women's social institutions in the past and now and the participation of women in newly evolved pastoral livelihoods were discussed in detail.

All focus group discussions were facilitated by the researcher based on prepared checklists. During the discussions, notes were taken, summarized and presented to the participants for final comments on what they had discussed.

#### 4.3.4. Group interviews

Group interviews were used particularly when collecting data for Paper III, to understand the participation of women in each of their social security networks of marro. In group interviews, the size of the group was small compared to focus group discussions and data was collected in the form of question and answer rather than discussions. Here, women of the same marro were interviewed in groups about their participation in the network, and regarding the benefits and the role of marro in meeting their needs and ensuring household food security The time allocated for these group interviews was short in comparison to focus group discussions, because the questions focused on marro, which these women share commonly.

### 4.3.5. Observation

During fieldwork, the researcher made and recorded her own direct observations in order to collect information without asking the respondents. In observation, the information obtained relates to things happening, and is not complicated either by past behaviour or future intentions (Kothari, 2004). In this study, the current vegetation growth, land use, crops grown, animals reared, the roles women and men undertake in the society and the role of social institutions to overcome the needs of households were all observed and noted down by the researcher. These observations, particularly on the role of women in the four selected pastoralist associations were then compared to the traditional role which restricted women to household chores.

## 4.4. Data analysis and interpretation

The collected data was analysed using both qualitative and quantitative data analysis methods. For qualitative data analysis, different researchers have proposed several approaches. For instance, Kvale (1996) outlines five ways of analysing qualitative research. These are ‘’reducing the large interview texts into brief and compressed statements, categorization through which data is reduced and structured into brief statements, narrative structuring to bring out meaning, using an ad hoc electronic approach for generating data, and meaning interpretation that goes to a deeper level of interpretation to develop contextualized statements’’ (Kvale, 1996 p192). This approach to qualitative data analysis is important to guide the researcher and to make her task easier and more manageable.

The fact that qualitative interviews were undertaken by the researcher in the current study helped to reduce the problem of validity, which is a critical problem in social science. Validity refers to how much faith one can have in the causal relationships examined (Bryman, 2012). During interviews and discussions, detailed notes were taken and recorded using a tape recorder after asking for the consent of the participants. After each interview, the researcher revisited the major issues discussed with the person or groups, to clarify and make sure that their views had been understood correctly. Based on this process, a brief statement was written down. Therefore, after each interview and group discussion a certain level of analysis was inevitably done. At the end of each day, the researcher went through the collected data to link the views of different groups or individual interviews with the theoretical concepts. The first stage of analysis and interpretation was done in the field itself. This process continued throughout the fieldwork. The second stage of analysis took place away from the field. At this stage, repeated readings of field notes and listening to recorded interviews and discussions was done. The fact that people in the study area spoke in the researcher’s mother tongue Oromifa

enabled her to easily understand the recorded interviews and discussions, and reduced the possibility of meanings being lost in translation. Repeated listening also allowed the researcher to become familiar with the collected data and to relate it to existing theoretical concepts. Finally, the data was organized into different groups, which were later analysed and used in preparation of the four papers presented in this thesis. After analysis of the data, the researcher further examined theoretical literature dealing with related issues during the writing process.

For the quantitative data analysis, both Excel and SPSS programmes were used. The data collected from household surveys was entered into SPSS software version 22 and run for descriptive statistics and cross tabulation for the analysis. To capture gender differences among the variables used (sex, age, wealth status and livelihood basis), a comparison was made using chi-square and analysis of variance tests. For instance, analysis of variance was used to measure the impacts of stressors among women and men, between pastoral and agro-pastoral livelihoods, between people of different economic status and age differences. The chi-square test was used to measure how the difference between women and men and other variables is significant.

### 4.5. Ethical considerations

Research ethics refers to the moral deliberation, choices and accountability of the researcher throughout the research process (Edwards & Mauthner, 2002). This begins with the selection of the research problem, goes to data collection, data analysis and publication of the research findings. For the present study involving both interviews and group discussions, the ethical considerations were very important. First, the relevance of the research questions were evaluated in the context of current pastoral problems, particularly for pastoralist women who were the major focus of the study. In undertaking this, the researcher was guided by the principles of feminist research methods that offer guiding principles. Fonow, Cook, & Jorge, (2005) define these principles as follows: to be reflexively aware of the significance of gender, to help raise consciousness around gender, to challenge the idea that objectivity is obtainable in research, to consider the ethical implication of the research and the recognition of the potential for respondents to be exploited, and to use the research to advance women‘s empowerment (Fonow et al., 2005, p. 2213). The concern is that the research should be ethical; it should not cause harm to those being researched (Edwards & Mauthner, 2002). The researcher used these guidelines in conducting the research. During the field visits, the researcher explained the purpose of the research to all participants and explained how the findings would be used in the future. All interviews and discussions were made only after

participants provided their informed consent. To develop trust, the researcher gave an assurance of confidentiality in the use of collected data. However, most of the participants stated that they would not mind if their names were used, if needed.

### 4.6. Research challenges

Borana zone is one of the areas which attracts many researchers owing to its socio-economic condition and cultural heritage. As a result, it has been subject to a number of research studies by the government and by non-governmental research organizations. Because the communities in the area have been the objects of various research projects, they tend to have limited motivation to take part in further research activities. One of the potential perils of this situation is that respondents may suffer from "research fatigue" and lack enthusiasm or interest to participate in yet another research study. It is also possible that respondents are too experienced in answering structured questions and anticipating responses. During the data collection for the current research, some of the respondents were sceptical about the different researches undertaken in Borana. They questioned why so many researchers had come to do research in their area, and what benefits the Borana people could gain from the research: "Many people like you come and ask our problems but never come back again and no changes in our lives".

The researcher listened to, acknowledged and discussed the views of respondents with them. She explained that although it was not possible nor ethical to promise concrete outcomes from this research, the hope and intent was that the findings would feed into a wider process of change, and that the results will be publicly disseminated. After discussion, the respondents agreed to cooperate, and encouraged the researcher to travel long distances to see and study the condition of Borana in general and women in particular. They arranged a hosting family for the researcher during her fieldwork. They were pleased to meet with the researcher's supervisor and co-author during her field visit and warmly welcomed her to the Borana area. This was indeed a moving experience for both the researcher and the supervisor.

Another major challenge faced during data collection was the repeated conflict between Boran'a and Somali communities, and between Borana and Burji groups. This conflict forced the researcher and assistants to cancel their travels on three occasions. They returned to the field only when everything was once again peaceful.

### 4.7. Reflexivity

Finally, the positionality of a researcher as an "insider" who speaks the language of the participants and shares the same culture can bring limitations such as overfamiliarity, which

can influence the findings. On the other hand, it could help develop trust easily and gain access to in-depth information both formally and informally. Insider research occurs when researchers conduct research with populations of which they are also members (Kanuha, 2000). Insider researcher shares the same identity, language, and experiential base with the study participants (Asselin, 2003). In the current study, although the researcher belongs to the same ethnic group and speaks the same languages with the Borana Oromo, grew up in the western part of the country with relatively different experiences and livelihoods. The fact that the environment and daily activities of the participants were at variance with the researcher's own experience helped to open up her mind and create awareness to every detail she encountered as much as possible. At the same time, being an insider, the researcher could build a certain level of trust without much difficulty, though she had her challenges as mentioned in an earlier section. As an Oromo woman the researcher was delighted to study the culture and lifestyle of Borana women whom other Oromo groups consider to be custodians of Oromo culture. With this in mind, reflexivity was an integral part of the research process. Reflexivity calls for using varied investigative lenses, turning qualitative research writing towards oneself, through answering: What do I know and how do I know it? (Patnaik, 2013). Therefore, to justify the credibility of her findings, the researcher used reflexive processes and maintained an awareness of the influence of her history, culture, gender and professional competency on the whole research process including fieldwork, analysis, title selection and writing this thesis to the very end.

## 5. SUMMARY OF THE PAPERS

This study has investigated the gendered experiences and responses of the Borana people to different pastoral stressors. Pastoral livelihood is under increasing stress emanating from climatic and non-climatic problems. Although due attention has been given to the impacts of climatic stressors, the non-climatic stressors are less researched. Moreover, the issue of gender in the impact of and responses to pastoral stressors is largely absent from research and policy discussions. In response to this situation, the current study deals with the question how women and men perceive, experience and respond to pastoral stressors and factors influencing them. These are elaborated on in the findings of the four individual but interrelated papers that follow.

### 5.1. Gendered perspectives of climatic and non-climatic stressors (Paper I)

This paper explores numerous interlocking stressors from climatic and non-climatic factors that Borana pastoralists experience. Regardless of livelihood difference, age, gender or wealth status, all respondents perceive climatic stressors such as drought and rainfall variability as the most frequent and impactful stressor. The paper reveals that the economic stressors of food

problems and poverty are the second most impactful stressors whereas conflict and rangeland problems rated as the second more frequent following drought and rainfall variability. Of all variables, gender was found to be the most determinant factor influencing perception regarding the impact of stressors. This means that there is a significant variation between women and men's responses to stressors. Women in the study worried more about droughts, rainfall variability, water shortage, poverty, food shortage and weakening of social security whereas men gave more weight to unfavourable policies, conflict and animal deaths. This could be owing to the different roles and responsibilities women play in their society. Moreover, the study confirmed that the cultural marginalization of women in public affairs, together with inequality in accessing resources and opportunities, determines the way women and men perceive and experience the impacts of different stressors. In the Borana culture, the public life of women is very limited. They do not have a chance to be involved in the management of public affairs. Thus, the impact of governance-related marginalization in the current pastoral transformation makes no difference to them. The study also revealed that compared to their male counterparts, women are more vulnerable to the impacts of stressors in the study area, which again resulted from their traditional roles, access to basic resources and their dependency on the availability of natural resources which are sensitive to droughts.

The argument in this paper is that the power relationship between women and men is a key factor influencing the perception of frequency and impacts of stressors that must be considered in vulnerability analysis. Such analysis is vital to understanding the priority areas of women and men for adaptation investment. Moreover, the findings of this research can assist with the design of gender-orientated adaptation policies and programmes that reduce vulnerability and gender inequality. In general, any attempt to reduce the impact of stressors must take into account the way in which a historically uneven distribution of resources and existing power relations determine vulnerability to stressors.

5.2. The dynamics of gender relations under pastoral changes (Paper II)

This paper investigates how increasing climatic and non-climatic stressors result in pastoral transformation with a focus on gender relations. The changes are not only to the pastoral livelihood but also to the general way of life of the people. Specifically, the study indicates that the changes caused by an increase in drought incidents are not gender-neutral; rather, they affect gender relations in different ways. In traditional Borana culture, there is a clear demarcation between the roles of women and men such that women are responsible for indoor activities while men undertake outdoor chores. Nevertheless, increases in the impacts of

stressors hinder both women and men in fulfilling their gender roles. The study reveals how the impacts of stressors have changed men's traditional position as breadwinners in the study area. As a result, many women have been obliged to leave the hut for search of food and other resources to ensure survival. This has brought new roles and responsibilities for both women and men. As women move out to search for food, men have begun to provide care for the children and help wives in making huts, neither of which have been part of men's traditional roles.

The involvement of women in non-traditional roles has also expanded women's area of decision-making. In the past, this was limited to matters in the hut. Today, some of the work women are engaged in for survival has demanded their daily decisions. It is also clear, however, that the new roles women are assuming in current pastoral transformation have increased their workloads. Women who were busy with tedious and time-consuming traditional roles now have added responsibilities. Apart from increasing women's work burden, the new roles women and men assume while adapting to drought, are touching the core values of gender and trying to negotiate in silence, rather covertly for changes. The participation of both women and men in non-traditional roles is significantly altering role boundaries and contributing to overall changes in gender relations. With this in mind, better understanding of such dynamics is vital in order to shape adaptation polices and strategies for the amelioration of the society. Further, the participation of women in adaptation has equipped them with different knowledge and skills that can be used for an improved future. To ignore this is to miss an opportunity to improve adaptation policies.

### 5.3. Women and men in pastoral livelihood diversification (Paper III)

Pastoralism is the principal livelihood in Borana. However, increased pressure on the pastoral livelihood is limiting its potential to provide for basic needs of the users and many pastoralists have been obliged to pursue different livelihood activities. Paper III focuses on women's role in this diversification. In Borana, different livelihood activities have evolved over time along with pastoralism, to ensure survival. Therefore, diversification in the area is not replacing but is supplementing pastoralism. Owing to high magnitude of stressor impacts, some people have already become ex-pastoralists, while many engage in mixed pastoral and non-pastoral activities.

The most recently evolved livelihood diversification in Borana is still deep rooted within pastoralism, while engaging in non-pastoral livelihoods. It also includes acquiring new species

in the herd and cross-breeding. The present study demonstrates that pastoralists are increasingly diversifying their herds to include more drought-resistant animals such as camels, sheep and goats instead of only depending on cattle. Diversification within pastoralism is largely dominated by men owing to historical structural inequality in accessing livestock for women. However, in spite of the strong position of men in gaining access to live animals, currently women are playing significant roles in owning small animals like goats and sheep in Borana herds.

Through engagement in non-pastoral livelihood activities such as crop production, animal trade, petty trade, poultry farming, charcoal and firewood selling, pastoralists are expanding their livelihood possibilities. While men dominate the remunerative activities like animal trade to maintain a sound economic position in comparison to women, Borana women are nonetheless playing a considerable role in petty trade, crop production, poultry farming and sale of firewood. The participation of women in diversification brings advantages and disadvantages for the women. On one hand, participation in diversification obviously increases women's workloads, meaning that the already busy women have an additional burden of demand on their time. On the other hand, it increases women's access to income and food. For instance, the inclusion of camels in Borana herds has increased the milk availability for the household, which contributes to women's income from milk-selling. Moreover, the participation of women in livelihood diversification has had a positive impact on local adaptation. Insights from the study as highlighted in this paper can be used to challenge the dominant discourse, which defines women as merely a vulnerable group. The knowledge and skills that women have developed through time demonstrate the core and active roles women play in adaptation efforts.

### 5.4 Borana women's social network in household food security (Paper IV)

Apart from participating in livelihood diversification, Borana pastoralists are applying their traditional social security networks to manage the impacts of stressors. This paper reveals that Borana women have a strong resource-sharing institution called marro. Although marro was not originally meant for drought adaptation, today the Borana women are applying it to overcome the impacts of pastoral stressors. Marro is a social network in which all women participate, regardless of differences in production system, age and economic status. The marro relation is established at different levels. Borana women establish marro between neighbouring and distant households in separate locations. This enables households to access resources in spatially different locations for survival. The paper demonstrates that a majority of women

participate in marro occasionally, whereas a significant number of poor and aged women use it for daily survival.

In marro relations, women share various types of resources such as food items, labour and cash mainly to overcome household food shortages that increase during crises. Food items are the most commonly shared resources followed by labour. In the labour-sharing culture, women combine their activities to overcome the labour shortage. Cash is the newly introduced resource in marro following the current pastoral transformation. Women in the study share resources not only from surplus but also from their limited resources to overcome the problems in distressed households.

Marro is playing a tremendous role in improving household food shortages, which become a critical problem with increases in pastoral stressors. Regardless of the role marro plays in improving household food security, it does not receive adequate attention from policy makers and aid agencies. There are little linkages between the formal mechanisms to overcome food shortage and the marro relations. In addition, poor availability of resources to be shared and increases in the number of poor people in the face of recurrent drought is challenging the role this institution plays in building household food security. Proper attention must be given to women's social security institutions to improve adaptation capacities and reduce vulnerability.

## 5.5 Conclusions

The pastoral livelihood faces numerous challenges encompassing climate, social, economic, environment, governance and conflict-related stress. The impacts of these stressors are not uniformly distributed; rather, they affect different social groups differently based on socially rooted inequalities, including gender. Women and men experience the impact of shocks differently owing to their structural position in accessing basic resources and their traditional gender roles and responsibilities. Similarly, women and men respond to pastoral stressors based on their gendered roles. However, research rarely addresses gendered living and response to pastoral stressors. Consequently, this thesis aims to add to the existing limited knowledge by investigating the gendered perception, experience and response to pastoral stressors in Borana, southern Ethiopia.

Another result of the research described in this thesis is that the frequency, impacts and severity of stressors vary across gender, age group and economic status. Although both women and men perceived climate as the most frequent and impactful stressor in the area, women are more anxious about climate and economic stressors than men, who give more weight to conflict and

governance issues. This could be resulting from their differentiated gendered roles and responsibilities in the society. The study also found that women are more affected by the impacts of stressors influenced by existing structural inequalities in accessing resources and their gender roles in the society. Although women are more vulnerable, they also play vital roles in responding to the impacts of multiple stressors. Both women and men are increasingly engaged in alternative livelihood activities which have evolved over time as adaptation strategy. Although men dominate the diversification activities within pastoralism, particularly the remunerative ones as described in this thesis, women play tremendously important roles in non-pastoral diversification in areas such as petty trade, poultry farming and sale of firewood. The new roles women and men are assuming in Borana society for survival is shifting the role boundaries and renegotiating for changes in the traditional gender-based division of labour, which further contributes to changes in gender relations. Clearly, women are responding to pastoral stressors through participation in non-pastoral livelihood activities. However, existing inequalities in accessing resources are hindering women in taking a more active part in diversification for adaptation. This is an issue which needs to receive proper attention from policymakers and aid agencies.

In addition, through the traditional social network (marro) of helping each other, Borana women are playing a significant role in overcoming the impacts of stressors, particularly food shortage which increase during crises. Women mostly share food items and labour more frequently than cash and other resources in their marro institution to overcome the food problems of distressed households. Although marro was not originally intended to be used for drought adaptation or management of stressors, today women are using this institution to successfully overcome the impacts of droughts and hardship. This highlights the role of women's social networks in ensuring survival during crisis situations. Despite the role marro plays in reducing food shortage during crises, an increase in the impact of stressors is limiting the availability of resources shared in marro and increasing the number of poor people demanding help.

In general, the roles women are playing in adaptation through livelihood diversification and their networks is challenging the dominant discourse of vulnerability that frames women as vulnerable groups and underplay their proactive roles in adaptations. Policy direction for reducing pastoral vulnerability to stressors and enhancing adaptation capacities requires a holistic understanding of key stressors, of their impact on different social groups, and of the role each group plays in adaptation. In terms of the findings of this study, such policy direction

requires pastoral-orientated adaptation policies that meet the needs and priorities of both women and men. More specifically, the policy direction must be aimed to overcome the effects of key stressors on pastoral production, focusing on the most frequent and impactful stressors. This can be achieved through development of water sources and feed availability for livestock during increasing periods of droughts, and increasing women's access to livestock through provision of credits, expansion of alternative income-generating activities and increasing women's participation in diversification. Acknowledging and strengthening the indigenous social security institutions, including those of women, need to be important policy considerations for adaptation. Moreover, community initiatives such as investing in children's education must be backed up with appropriate policies.

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Paper I

# Gendered perspectives of climatic and non-climatic stressors in Borana, southern Ethiopia

(Accepted for publication in *Journal of Arid Environments*)

**Abstract**

Pastoralism in east Africa is experiencing numerous challenges emanating from climate and non-climatic stressors affecting the people in different ways. This study explored types of major stressors and the gendered perceptions of the impact and severity of stressors in Borana, southern Ethiopia. Data was collected from household survey, key informant interviews and focus group discussions. Challenges to pastoral livelihood were categorized in terms of climate, environment, social, economic, governance and conflict. Regardless of livelihood basis, age, gender and wealth status, all participants perceived climate stressors as the most frequent and impactful stressors, followed by economic stressors. Further analysis revealed women are more anxious about climatic and economic stressors, while men give more attention to governance and conflict-related stressors owing to their traditional responsibilities. Similarly, women bear a disproportionate burden of the impact of stressors, resulting from existing inequalities in resource endowments and the traditional labour division. Therefore, nuanced understanding of the differential impacts of stressors is vital for appropriate adaptation polices.

Keywords: multiple stressors; gender; adaptation; Borana; Ethiopia

## 1 Introduction

Over the past decades, pastoralism in Africa including Borana, has been affected by recurrent droughts (Aregu and Belete, 2007; Leshan and Standslause, 2013; Rettberg, 2010). The impact of droughts is exacerbated by existing structural problems including political marginalization, conflict, poverty and inappropriate policy that ignores the pastoral way of life (Tache and Sjaastad, 2008). Several studies have argued that climatic challenges are often filtered through the interaction of economic, social, institutional, political, cultural and technological processes (Barnett and Adger, 2007; Brklacich et al., 2010; O'Brien, 2006; Tache and Sjaastad, 2008; Taylor, 2013). Thus, drought cannot be considered as a single stressor; rather, it intersects in myriad ways with other non-climatic challenges to produce pastoral vulnerability (Barrett et al., 2006; Berhanu, 2011; Carter and Barrett, 2006; Davies, 2010; Dercon, 2004). Indeed, pastoral livelihood is under challenge emanating from multiple climatic and non-climatic stressors.

However, vulnerability studies in general seem to focus mainly on the impacts of climate stressors, and pay less attention to the non-climatic stressors (Antwi-Agyei et al., 2017). Moreover, it would seem that the differential impacts of climatic and non-climatic stressors on different social groups even more missing in vulnerability analysis (Taylor, 2013). As pointed out by Neumayer and Plümper. the impacts of stressors are not uniformly distributed (Neumayer and Plümper, 2007); existing inequalities in accessing resources, capabilities and opportunities systematically disadvantage certain groups of people, rendering them more vulnerable to the impacts of stressors (Taylor, 2013). Studies have revealed that vulnerability analysis requires holistic understanding of key stressors and their impacts on different social groups to guide appropriate adaptation policy (Eriksen and O'Brien, 2007). Understanding vulnerability to stressors and coping requires investigation of unequal power relations, including the relation between women and men in a society on the basis of local evidences (Masika, 2002; Rossi and Lambrou, 2008; Terry, 2009).

A few studies have tried to shed light on the way women perceive, face, and respond to multiple stressors. For example, Kabeer (1999) and Taylor (2013) contend that response to stressors is affected by asymmetrical power relations in terms of intra-household resource distribution (Kabeer, 1999; Taylor, 2013). Others argue that women and men perceive, experience, and respond to environmental risks in different ways (Delaney and Shrader, 2000; Neumayer and Plümper, 2007) governed by socially constructed gender division of labour that places greater

time and energy demands on women than men and contributes to women's vulnerability as compared to their male counterparts (Denton, 2002; MacGregor, 2010). In general, the social norms, role behaviours and the socio-economic status of women determine the way women are affected by stressors (Neumayer & Plümper, 2007). In this way, the downplaying of the power relations between women and men in the analysis of vulnerability tends to hide the root causes of vulnerability and further exacerbates injustice, leaving challenges unaddressed (MacGregor, 2010; Taylor, 2013). As articulated by MacGregor (2010), vulnerability analysis without a gender perspective is insufficient, partial and untenable. In addition, failure to integrate deep-rooted inequalities into the analysis of vulnerability creates an uneven explanatory paradigm that can obscure some of the central determinants of human (in)security (Taylor, 2013). Consequently, there is a major need to understand how existing deep-rooted inequality between women and men affects vulnerability to stressors, which is vital to design fair and sustainable adaptation polices and strategies.

Therefore, this study aims to explore how women and men perceive the frequency and impacts of pastoral stressors, and to show how the impacts of climatic and non-climatic stressors are structured along existing power relations between women and men in Borana, southern Ethiopia. Ethiopia's agrarian economy largely depends on both pastoralism and crop farming. Pastoralism is a livelihood for more than 12% of the country's population and makes a significant contribution to the country's national economy (Mussa, 2004). Nevertheless, pastoralists live in the least developed regions, characterized by increasing poverty and vulnerability resulting from both climate (recurrent droughts) and non-climatic challenges including poor infrastructure, lack of services and lack of external support. Experiences of rural poverty and vulnerability in Borana are highly gendered (Flintan et al., 2011; Rahmato, 2008). Although women play a vital role contributing 40–60% of labour in agricultural production including pastoralism, they suffer from unequal access to basic resources and a high work burden which contributes to their vulnerability (World-Bank, 2008). The situation of women in the country varies from region to region, placing pastoralist women as the most disadvantageous group with less access to livestock and other basic resources (Eneyew and Mengistu, 2013). Women in pastoral areas are considered poorer than other women living in the country (Mussa, 2004).

Borana people belong to the Oromo ethnic group. They are a patriarchal society where men control livestock and other basic resources, while women are responsible for the things inside the hut (Anbacha and Kjosavik, 2018). The area has been experiencing periodic drought

episodes that devastate pastoral livelihoods. The impact of drought is exacerbated by existing socio-economic conditions. Today, Borana people and their livelihoods are suffering from interlocking stressors including recurrent droughts, conflicts, inappropriate policies and economic marginalization affecting the people and their livelihoods (Abebe, 2016; Bekele and Amsalu, 2012; Desta and Coppock, 2004; Tache and Sjaastad, 2008). Although the impact of these stressors is unevenly distributed between women and men, earlier studies focus more on the general poverty experienced by the Borana people (see for example, Tache and Oba, 2008). Our study is different in that we use gender as an analytical category for assessing perceptions of the frequency and impacts of pastoral stressors. Based on empirical evidence, this study aims to investigate perceptions on the gendered impacts of existing key stressors in Borana. In addition, factors such as livelihood basis, age and wealth status are also used to explore differential impacts of stressors. More specifically, the study seeks to answer: first, questions on key stressors affecting pastoral livelihood; second, gendered perceptions of the frequency and impacts of major stressors and third, the question of gendered impacts and factors contributing to differential impacts that stressors have on women and men.

To address the issue, insights from political ecology were used. Political ecologists interrogate how vulnerability is produced and reproduced within overlapping structures of power that operate at different spatial scales (Bohle et al., 1994; Winsner et al., 1994). For this study, relational vulnerability analysis was used. Relational vulnerability refers to the way marginalized people are incorporated into economic, political and social relationships that produce their vulnerability (Taylor, 2013). In this study, gender is used as an analytical category to show how the impacts of key stressors are structured by the existing power relations between women and men. More specifically, the study focuses on the relationship between inequality in accessing resources and the power relations in affecting the perception and impacts of pastoral stressors. Borana's patriarchy plays a significant role in the way women perceive, experience, and respond to pastoral stressors. Based on the dynamics of relational vulnerability, this study investigates how the impact of historical power relations between women and men determine their vulnerability to existing climatic and non-climatic stressors. In so doing, the study offers insight on the relationship between power and vulnerability which is rarely addressed in vulnerability literatures. Moreover, the findings of this study contribute to understanding the underlying causes of vulnerability; such understanding is vital for guiding adaptation polices and strategies in pastoralist areas in general, and for Borana in particular.

## 2 Study area and methods

### 2.1 The Borana people

The Borana people are part of the Oromo ethnic group who inhabit Borana and Guji zones of Oromia Regional State, southern Ethiopia. The study was undertaken in Borana zone, which is categorized as arid and semi-arid environments with fluctuating climatic conditions and a mean annual rainfall of between 400 mm and 600 mm (Angassa and Oba, 2007). The region receives bimodal rainfall with long rain (*gana*) that falls between March and May and the short rain (*Hagaya*) between September and November which is followed by a hot dry season *(bona hagaya).*

Drought affects Borana in different periods. During the devastating droughts of 1970 and 1980 in Borana, famine and destitution further weakened their traditional coping strategies in the face of risks and uncertainties, contributing to an increase in vulnerability (Helland, 1998). Owing to recurrent droughts, the region is under chronic food insecurity (Bekele and Amsalu, 2012; Tache and Oba, 2008; Tiki and Oba, 2009). Pastoralism is the main livelihood and the people are known for their mobility strategy to overcome the effects of drought and ensure efficient utilization of dryland resources. However, increases in drought coupled with repeated conflict, poor land use policy and low infrastructure, are challenging pastoralism and its traditional adaptation mechanism (mobility).

Similar to other Ethiopians, the Borana have a patriarchal social structure. They trace descent through the male (father's) line, and are organized into age grades and generational class systems (Legesse, 1973) with five generational classes interchanging the assumption of power every eight years for leading the community during the specified term of office (Tache and Oba, 2008). The age grades and classification prepare men for assuming power, but do not include women, thus limiting their participation in administrative roles. The role women assume in Borana society is limited to activities in and around their household, whereas men control live animals (Abebe, 2016; Dahl, 1979; Legesse, 1973).

Although livestock production is the main livelihood, crop farming is increasingly undertaken following increases in droughts (Angassa and Oba, 2007), shifting the livelihood from pastoral to agro-pastoral production systems. The selection of study communities in Borana zone (see Figure 1) is informed by the current dynamics of Borana livelihood.

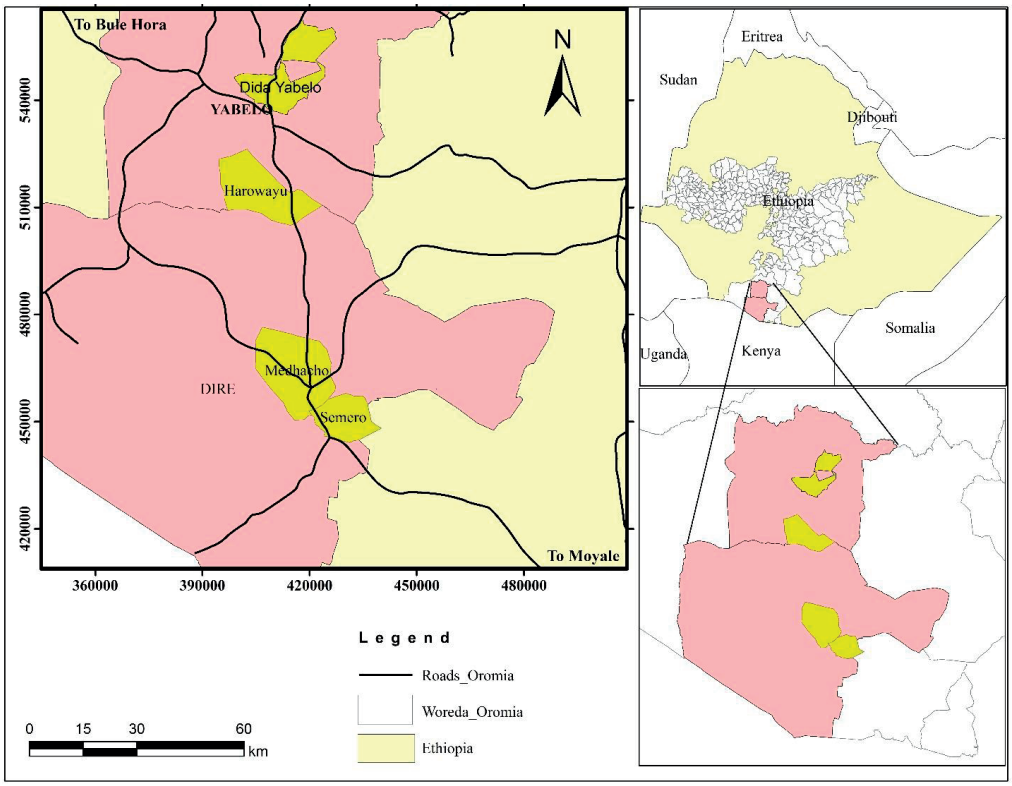

Figure 1 Map of the Borana zone

### 2.2 Data collection

In recent times, different livelihoods have come to coexist in Borana, where some communities are diversifying into agro-pastoral, and others are still predominantly pastoral. For this study, communities in both production systems were selected. Borana zone has 13 districts, from which the districts of Yabelo and Dire (15% of the total) were randomly selected. The pastoralist associations (PAs[4]) in the districts were classified as pastoral and agro-pastoral production systems, based on information from pastoral development offices of the selected districts. In the agro-pastoral communities, the people engaged in extensive crop production, petty trade, livestock trade and sale of forest products compared to communities that are predominantly pastoral. From Yabelo district, Harowayu and Dida Yabelo were selected as

[4] PA is the smallest administration unit formed after settling pastoralists

pastoralist and agro-pastoralist livelihoods respectively, whereas from Dire, Samaro as pastoral and Madacho as agro-pastoral production systems were selected.

From the four selected PAs, a total of 240 respondents, 60 from each, with an equal number of women and men were selected (see Table 1). Similarly, age and wealth status were also taken into consideration for the selection. For wealth categorization, the traditional Borana wealth ranking, based on the number of cattle the people own, was used. The system classifies people as *qole* (destitute), *deega* (poor), *offidanda* (just self-sufficient), *duresa* (rich), and *chichita* (very rich). For this particular study, qole and dega were combined as 'poor', and offidanda was unchanged as 'self-sufficient', and duresa and chichita were combined as 'rich'.

**Table 1** Characteristics of the respondents

| Respondent category | Participants | Number of respondents |
|---|---|---|
| Predominantly PAs | Harowayu | 60 |
| | Samaro | 60 |
| Agro-PAs | Dida Yabelo | 60 |
| | Madacho | 60 |
| Gender | Female | 120 |
| | Male | 120 |
| Age | Young (18–35years) | 90 |
| | Middle-aged (36–50years) | 110 |
| | Old (above 50 years) | 40 |
| Wealth status | Poor (dega and qole) | 115 |
| | Self-sufficient (middle) | 95 |
| | Rich (duresa) | 30 |
| | **Total** | **240** |

Source: Field survey (2014/15)

After selecting the respondents, interviews were conducted with respondents in their homes by trained local field staff under the supervision of the first author and assistants. The assistants checked daily that all questions were addressed and the required data was collected, and they signed the administered questionnaires to confirm correctness. The completed questionnaires were collected by the first author every two days throughout the data collection period. Women respondents were interviewed by women field staff so as to enable them to freely respond to the questions. The average time taken per respondent was about two hours. The first household in the village for the interview was randomly selected, and alternate households were selected thereafter.

For the question on key stressors, the participants were asked to list various stressors that they thought were affecting their livelihoods. They were also asked to rank the listed stressors in the order of frequency and impact using a Likert scale from very low to very high, depending on own perceptions (1 = very low, 2 = low 3 = average 4 = high, and 5 = very high). Similarly for the question on differential impacts across livelihood, gender, wealth and age, the same scaled measurements were used. In addition, perceptions of the impacts of key stressors on women were measured using scales from strongly disagree to strongly agree (1= strongly disagree, 2 = disagree 3 = neutral, 4 = agree, 5 = strongly agree).

A total of six focus group discussions, three in each production system (predominantly pastoralist and agro-pastoralist), were conducted; one was a women's group, one a men's group, and one was a mixed group in each production system. In each group, nine to twelve persons from different wealth and age groups participated and each group discussion lasted for two to three hours. The purpose of these discussions was to identify stressors affecting the livelihood of the people, and to cross-check these with issues highlighted in the survey interviews and key informant interviews. In the interviews, participants were asked to list and rank the stressors, and to discuss the impacts of stressors on different social groups: women and men, poor and rich, young and old, and people in different production systems. Factors contributing to the differential impacts were also discussed.

People participating in the key informant interviews included elders, local leaders, and people working in governmental gender offices and pastoral development offices. The key informants took part in the identification of stressors and gendered impacts of the stressors and factors contributing to differential impacts on women and men. A total of 24 key informants participated.

Data from household surveys was entered into Statistical Packages for Social Science software. The frequency and impacts of each stressor on different groups were calculated based on the respondents' perceptions. For comparison between groups (women and men, poor and rich, different age groups and livelihoods), chi-square and ANOVA tests were used. In addition, for qualitative data analysis, content analysis was used to describe and interpret data collected from focus group discussions, key informant interviews and observations.

## 3 Results and discussion

### 3.1 Major stressors in Borana

Information from all focus group discussions indicated that the Borana pastoral livelihood is under stress due to drought, rainfall variability, water shortage, rangeland constraints and expansion in bush encroachment, poverty, food insecurity, unfavourable government policy, weakening of social security networks, conflict and loss of livestock. For the purpose of analysis, these stressors were grouped into three categories: (1) climate and environment-related stressors, (2) governance and conflict-related stressors and (3) socio-economic stressors. The stressors, their classification and descriptions based on data collected from focus group discussions and key informant interviews, are presented in the following table (Table 2).

**Table 2** Qualitative descriptions of key stressors in Borana

| Category | Stressor | Description |
|---|---|---|
| Climate and environment-related stressors | Drought | Drought is becoming more frequent than ever before. In the past the rainy and dry seasons were definite; today it is hard to predict the weather. The dry seasons (adolessa and bona hagaya) are predictable whereas failure in ganna (main rainy season) is unpredictable. Today the dry months in a year are increasing which causes poor vegetation growth and drying of water wells. |
| | Rainfall variability | Rain is becoming more variable than it was in the past. Most of the time rain comes late if it comes at all and goes too early (indicated in all FGDs*). It is insufficient for vegetation growth affecting the rangelands. The low rainfall has also diminished water availability. |
| | Drying water-wells | Most of the natural and human-made water wells are drying following increases in drought and decreases in rainfall. This directly affects women who are expected to fetch water for the household. |
| | Rangeland | Rangeland is decreasing over time due to land use change. The land becomes more bare and dry as drought increases. As more land is utilized for other purposes including crop farming, the rangeland is shrinking. The type of vegetation growing currently is new and cannot be used as feed. |
| | Bush encroachment | Bush encroachment is increasing at an alarming rate, covering many parts of Borana land. It cannot be used for grazing. It is thorny and not even used for firewood. |
| | Water shortage | All the discussants stated water as the most insufficient resource in Borana. Increase in water shortage resulted from recurrent droughts which caused drying of water wells. Although the problem is urgent, it does not receive much attention from government and non-governmental organizations. The water projects initiated in the area failed before giving service, due to corruption. As a result women suffer a great deal to fetch water from distant places. The long march of women in search of water is a challenge for their health; many suffer from kidney problems. |

| | | |
|---|---|---|
| Governance and conflict-related stressors | Increase private ranch | Private ranches are increasing as never before, replacing the communal land use system. Everyone is fencing the land for private use (locally termed *kalo*) that restricts grazing. This is challenging pastoral production in the area. |
| | Unfavorable general policy | Strong government attitude towards settling pastoralists without the development of proper infrastructure. There is poor water service and road facilities, no electric power, feed problems and lack of enough health centres for both animals and humans. Without these important services, trying to settle pastoralists is impossible. Pastoralists move from place to place with the aim of finding green grass and water. |
| | Poor land policy | The land policy is not giving consideration to pastoral production systems. It totally ignores the customary land use system of the people. Following the 1992 administrative structure which is based on ethnicity, part of Borana land is included in the Somali region of Ethiopia which aggravates conflict between the two ethnic groups Borana and Somali. |
| | Conflict | Conflict is becoming more frequent, almost everywhere in the region. In the past, there was no conflict with groups like Burji, which is becoming common today without proper attention from government. The commonly used conflict resolution mechanism is not neutral; rather, it favours certain groups who aggravate more conflict in the area. In the past, women and children in both parties under conflict were protected. Today, even they are increasingly targeted. Repeated conflicts restrict mobility and decrease the human resources required for pastoral production. |
| | Poverty | Poverty in Borana is increasing at an alarming rate following the significant livestock losses from recurrent droughts. The number of poor people are increasing. In the past, the majority of the people were self-sufficient and the poor were supported by local institutions. Increase in poverty has weakened the social security of helping each other. Begging was a cultural taboo, and in the past you could not find anyone begging. However, increase in poverty has pushed some into this practice. |
| Socio-economic stressors | Weakening of social institutions | Borana people are known for their strong social institution of helping each other. Today many of these institutions are weakened as the number of poor people demanding help are increasing. Drought-induced diminishing of resources made the institutions inactive and dormant by limiting investment. Most of the resources such as milk and livestock are commercialized. People prefer to sell instead of investing in social institutions (Anbacha and Kjosavik, 2018) for a detailed study of the Borana women's social network *marro*.) |
| | Increase in food price | Food prices are increasing at an alarming rate. Many depend on purchased food. Increase in food price has a direct impact on food security of the society. |
| | Food shortage | Following recurrent droughts that cause decreases in livestock products like milk, which is the staple food, food shortage has increased. Food is becoming scarcer than it was before. Increases in drought combined with increases in food prices and weakening of the culture of helping each other are contributing to the household food shortage. As a result, many have to depend on food aid programmes. |
| | Animal death | Many lost large numbers of their animals owing to drought-related problems. If the livestock lost in Borana during different drought periods had been saved, leave alone Borana, it would have fed the whole country. In the area, there are individuals who lost up to 80 live animals (stated by FGDs in Harowayu). |

| | |
|---|---|
| Human and animal diseases | Borana is experiencing some completely new diseases, following the different catastrophic droughts. The health status of both animals and humans has been decreasing over the years. |

* FGD is focus group discussion
Source: Focus group discussions and key informant interviews

Information from qualitative interviews and group discussions listed and described the key stressors Borana pastoralists are exposed to (see Table 2). Our study shows that pastoral stressors are not isolated, rather, they interlock and have strong interactions to produce and reproduce vulnerability. For instance, increases in drought and rainfall variability aggravate rangeland problems and water shortage that further contributes to animal death, food insecurity and pastoral poverty. Similarly, repeated conflict in Borana is hindering the mobility of pastoralists to adapt to drought problems and increased rangeland problems. This is similar to previous studies stating that rural livelihoods including pastoralism are experiencing a number of interlocking stressors (Morton, 2007; Yilma et al., 2014).

### 3.2 Perceptions of frequency and impacts of stressors

Respondents' perceptions regarding the frequency of occurrence of major stressors were measured using a Likert scale. Results show that both women and men perceive climatic stressors, rainfall variability (mean 4.2) and drought (mean 4.1) as the most frequent stressors, followed by conflict, food insecurity, rangeland problems, poverty and political marginalization (Table 3). Although there is a slight difference between the perceptions of mean value for women (4.25) and men (4.02) on the frequency of drought, further analysis indicated no significant variation (Table 3). However, the perception of women and men on the frequency of rainfall variability clearly indicated significant variation at ($F(1,231) = 12.81$, $P = 0.015$). Here, mean value for women gives values close to very high frequency (4.43) compared to men. This shows that women perceive that rainfall variability is increasing more than ever before. This could be a result of their high reliance on rainfall availability in order to

perform their traditional roles. Information from focus group discussions also supports the perception that rainfall variability is increasing.

**Table 3** The difference in mean female and mean male perceptions on frequency of stressors

| Major stressors in Borana | Mean perceptions of the frequency of the stressors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sex | N | Mean | Std. deviation | df1 | df2 | F | Sig |
| Drought | Male | 119 | 4.02 | 0.651 | 1 | | | |
| | Female | 120 | 4.25 | 0.822 | | | | |
| | Missing value | 1 | | | | | | |
| | Total | 240 | 4.13 | 0.75 | | | | |
| Rainfall variability | Male | 120 | 4.04 | 0.848 | 1 | 237 | 12.812 | 0.015 |
| | Female | 120 | 4.43 | 0.806 | | | | |
| | Total | 240 | 4.23 | 0.847 | | | | |
| Conflict | Male | 120 | 3.65 | 0.876 | 1 | 237 | | |
| | Female | 119 | 3.61 | 0.874 | | | | |
| | Missing value | 1 | | | | | | |
| | Total | 240 | 3.63 | 0.874 | | | | |
| Increase in poverty | Male | 117 | 2.93 | 0.944 | 1 | 235 | 18.008 | 0.0001 |
| | Female | 120 | 3.32 | 0.97 | | | | |
| | Missing value | 3 | | | | | | |
| | Total | 240 | 3.13 | 0.975 | | | | |
| Political marginalization | Male | 117 | 2.66 | 1.092 | 1 | 230 | 69.812 | 0.0001 |
| | Female | 115 | 1.6 | 0.814 | | | | |
| | Missing value | 8 | | | | | | |
| | Total | 240 | 2.13 | 1.099 | | | | |
| Food insecurity | Male | 118 | 3.45 | 0.911 | 1 | | 15.145 | 0.0001 |
| | Female | 117 | 3.87 | 0.815 | | | | |
| | Missing value | 5 | | | | | | |
| | Total | 240 | 3.66 | 0.889 | | 235 | | |
| Rangeland problems | Male | 118 | 3.21 | 0.665 | 1 | 233 | 14.145 | 0.0001 |
| | Female | 117 | 3.55 | 0.701 | | | | |
| | Missing value | 5 | | | | | | |
| | Total | 240 | 3.38 | 0.702 | | | | |

Note: Calculated using Likert scale 1-5 (1= very low, 2= low, 3=average, 4= high, and 5= very high).

Source: survey data 2014/15

There is significant variation between the mean values for women and men in their perceptions regarding political marginalization at ($F(1,235) = 69.812$, $P = 0.000$) (Table 3). Men perceive political marginalization is increasing while women give less weight to this stressor. The difference between women and men's perceptions in this case could be related to the historical marginalization of women in political and administrative activities within and outside their community (see Anbacha & Kjosavik, unpublished manuscript, for a detailed study of transforming gender relations within the Borana). As expressed in women's focus group discussions, in traditional Borana culture there is no participation of women in administrative issues which is considered as the domain of men. However, currently women are participating in formal pastoral administration and have a reserved seat as stated in all focus group discussions.

This study shows that women and men perceive conflict as a very frequent stressor (3.6). Although experience shows that conflict is traditionally the domain of men, in this study there is no significant variation between women and men in their perceptions of conflict. This indicates that both women and men perceive in a similar way that conflict is increasing. This corresponds with the information from key informants and all focus group discussions. For instance, areas where there was no conflict at all in the past are currently suffering from repeated conflicts, as stated by women discussants. All the discussants indicated that most of the conflict resolution methods were not neutral, but rather favoured one party, further increasing conflicts between different groups.

Both women and men perceive that rangeland problems are increasing with time, as with the issues of poverty and food insecurity. Further analysis revealed a significant variation in that women stated for more frequency compared to men. Despite the fact that culturally, men are responsible for taking animals for grazing, this study suggests that women are more sensitive to rangeland problems. This could be because of the burden women currently bear in collecting and storing fodder for dry seasons.

The survey participants were also asked to rate the impacts of listed stressors on their livelihood using a Likert scale measurement that ranked the listed stressors in order of impact from very low to very high impact depending on own perceptions (1= very low, 2 = low, 3 = average, 4 = high impact, and 5 = very high impact). The mean score for each stressor was calculated and the mean values of the impacts of stressors revealed interesting results (see Figure 2).

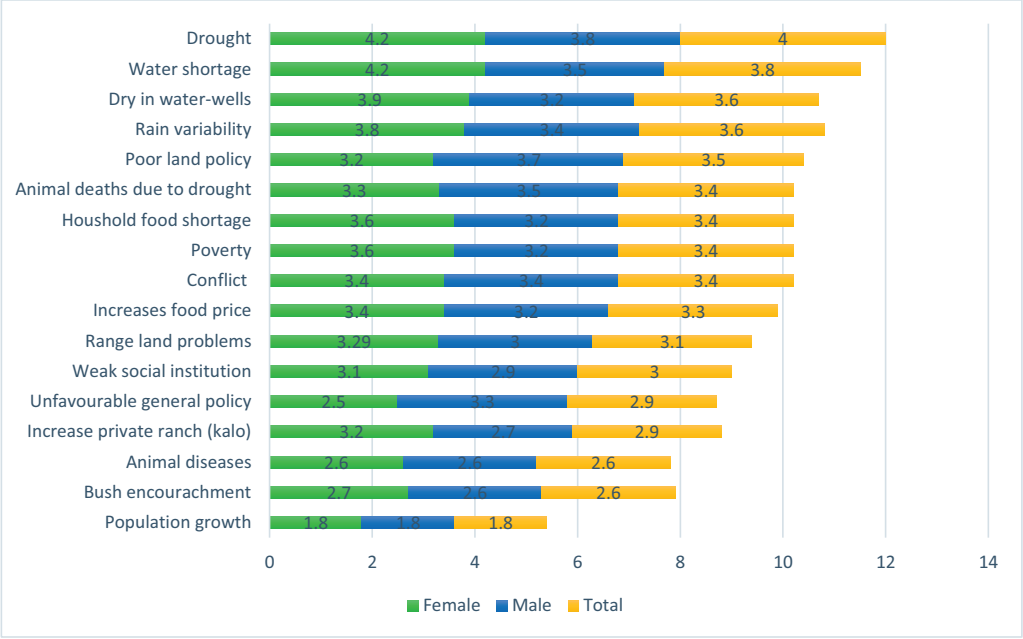


**Figure 2** Mean ratings of relative impacts of stressors

The results show that drought (4 = high) and water shortage (3.8 = high) were the most severe stressors to which women gave more emphasis than men. This shows that climate-related stressors are not only the most frequent, but also the most impactful stressors. This conclusion is similar to other findings that climate stressors are the most impactful stressors in rural developing countries (Bunce et al., 2010; Mubaya et al., 2012).

In this study, the severity of drought and water shortage was followed by rainfall variability (3.6), drying of water wells (3.6), and poor land policy (3.5) and poverty, conflict, and increases in food shortage (3.4). Scores above 3.5 show high impactful stressors while those between 3 and 3.4 are average. In contrast to results from another study which listed economic issues as the most impactful stressor (Bennett et al., 2015), our study found economic-related stressors to be the second most impactful stressors following those which were climate-related. This is corroborated by the qualitative information. In all focus group discussions and key informant interviews, the participants blamed drought for all the problems in Borana. One of our key informants, a middle-aged man in Dida Yabelo agro-pastoralist association, stated as follows:

> Borana people did not know famine before droughts. There was high production of milk in the past, we share milk and meat from our animals so that everyone got something to eat. We even fed all who came to our area. Today drought ate our generosity. Everyone comes to visit must eat and drink with us in our culture, but you can do nothing when you do not have something to give.

In general the perception of women and men on the frequency and impacts of stressors are not uniform, but rather influenced by their gendered roles and responsibilities in the society. A better understanding of their perceptions is vital to assess the needs and priorities of both women and men, which could be further used to shape adaptation investments and better use of available resources. For instance, as revealed in this study, climate problems need to be the first priority area of adaptation investment, followed by addressing economic problems to reduce pastoral vulnerability in Borana.

### 3.3 Differential impacts of stressors

Livelihood base and household characteristics such as gender, age, and economic status were used to investigate differential perceptions on the impacts of the stressors on pastoral livelihoods. Our study shows that these variables are significant predictors to determine the differential impacts of stressors. This conclusion is similar to those of previous studies which argue that individuals and groups experience impacts of stressors differently (IPCC, 2001; Leichenko and O'Brien, 2002; O'Brien et al., 2007). Among the variables, gender and livelihood bases are the most important determinant factors showing statistically significant variation in the perception of impacts of major stressors, whereas age seems to be the least determinant factor influencing perceptions of the impacts of stressors (see Table 4).

**Table 4** Perceptions of the differential impacts of multiple stressors

| No. | Major stressors | Differential impacts of stressors | | | |
|---|---|---|---|---|---|
| | | Production systems sig. | Gender sig. | Age sig. | Wealth sig. |
| 1. | Drought | 0.000* | 0.000* | | 0.000* |
| 2. | Rain variability | 0.000* | 0.000* | | 0.007* |
| 3. | Dry in water-wells | | 0.000* | | 0.004* |
| 4. | Rangeland problems | | 0.000* | | |
| 5. | Bush encroachment | | | 0.000* | |
| 6. | Water shortage | 0.004* | 0.000* | | |
| 7. | Population growth | | | | |
| 8. | Increase private ranch | | 0.000* | | |
| 9. | Unfavourable general policy | 0.000* | 0.000* | 0.014* | |
| 10. | Poor land policy | | 0.024* | 0.000* | 0.001* |
| 11. | Conflict | | | | |
| 12. | Poverty | 0.000* | 0.000* | | 0.000* |
| 13. | Weak social institution | 0.000* | 0.000* | | 0.000* |
| 14. | Increases food price | | 0.000* | | 0.000* |
| 15. | Household food shortage | 0.006* | 0.001* | | 0.000* |
| 16. | Animal deaths from drought | 0.000* | | | |
| 17. | Animal diseases | 0.000* | | 0.000* | |

Source: survey data from 2014/15

Notes: test of significance = ANOVA; significance (*) $p<0.05$

Our analysis shows significant variation between the mean value for women and the mean value for men's perceptions of the impacts of different stressors. Women perceive drought, rainfall variability, water shortage, drying of water-wells, poverty, weak social institutions, increases in food price and household food shortage as impactful stressors whereas men give more weight to rangeland problems, increases in kalo[5] (private ranching), and unfavourable policy (Table 4). It appears that women are much more concerned about issues of climate,

[5] Kalo is a piece of land fenced by individuals for private grazing.

environment and economic problems, while men give more attention to policy and governance problems affecting pastoral livelihood.

The qualitative information also supports the survey findings. For instance, women in the focus group discussions and key informant interviews prioritized climate and economic problems as the most severe problems. It would seem that the priority area of women and men are not homogeneous, but are affected by the different roles and responsibilities they bear in their society. Thus, adaptation efforts need to include the needs and priorities of both women and men. A middle-aged woman in Harowayu stated the situation as follows:

> Our problem is drought and lack of water. Drought comes with no milk, no butter and no food. Drought killed our animals and caused poverty. See the soil, dried. What do you get from dry soil? Nothing. From wet soil you get water, grass, firewood, milk and everything.

Similarly, in the wealth-based classification, results show significant variation between people of different economic status. The poor gave a high score to economic and climate issues while the rich gave more emphasis to governance. Likewise, communities in predominantly pastoral areas were more concerned about animal diseases, death of animals, issues of droughts, rainfall variability, food insecurity and poverty, whereas those in diversified livelihoods were more concerned about issues of conflict, policy, and water problems. In general, the results on differential impacts of stressors provide important pointers for designing effective and sustainable adaptation strategies.

### 3.4 Perception on the way women are impacted by stressors

Regardless of livelihood difference, age, sex and wealth status, all respondents perceived that the impacts of stressors in Borana are gendered. Around 74% of respondents ‘agree’ and ‘strongly agree’ that stressors in Borana have gender implications, while only 6% ‘disagree’ (see Table 5).

**Table 5** Impact of key stressors on women

| Particulars | Number of respondents | Percentage of respondents | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| Stressors have gender implication | 240 | 6.25% | 6.67% | 12.50% | 31.60% | 43.00% |
| Women are more impacted by drought | 240 | 6.67% | 15.83% | 5.40% | 50.35% | 21.75% |
| Women are more impacted by poverty and food insecurity | 240 | 5.83% | 12.50% | 22.50 % | 42.90% | 28.30% |
| Water and range land problem impacted women more than men | 240 | 15.80% | 21.75 | 10.00% | 28.35% | 24.10% |
| Political marginalization impacted women more than men | 240 | 22.50% | 36.37% | 21.75% | 18.00% | 1.67% |
| Conflict impacted women more than men | 240 | 20.41 % | 30.41% | 13.33% | 20.83% | 15% |

Source: survey data from 2014/15

More specifically, around 72% state 'agree' and 'strongly agree' that drought affects women more than men. Information from all focus group discussions supports the survey results, concluding that women suffer more from impacts of drought. According to the discussants, factors contributing to this include high dependence of women on natural resource availability. Their traditional gender roles and responsibilities, and lack of external support significantly affect the suffering of women from droughts. An old man from Dida Yabelo in the key informant interviews described how drought-induced diminishing of resources was affecting women more than men:

> Women are responsible for fetching water, collecting firewood and collecting grass. During dry seasons women climb mountains to get grass, and travel long distances to fetch water. A man does not fetch water or collect firewood. It is not our culture. To speak the truth, our women are suffering a lot.

However, a middle-aged man from Madacho completely disagreed with this view. He stated his opinion as follows:

> I don't agree with the view that women are more affected from impacts of droughts than men. Drought comes to all. We are all highly affected by drought. We lost our animals together, even men become very poor from increased drought. Some of us have already started to look at the hands of our wives for survival. In the past women depended on men; today they are better off.

Nevertheless, women discussants contested the view of the second man. In a women's focus group discussion in Harowayu PA, women explained along the following lines:

> The life of women under drought is very hard compared to men. With drought, 'no butter on our head',[6] no food, no water and no firewood. We are always on the road, one time in search of food, other times to search for water, grass and firewood. By the time we reach home all the household chores are waiting for us. It is our responsibility to cook the food we brought and serve everyone. Women do everything possible to ensure survival of the family even if she likes it or not. On the other hand, most of the time men keep their self-image and do not want to force themselves to undertake activities that are not part of their traditional role.

On the issue of food and poverty, around 71% 'agree' and 'strongly agree' that the problem of food shortage in Borana household is gendered. The qualitative information indicated that in Borana culture, food priority is not given to men, as is the case in many other societies in Africa. Therefore, contrary to the survey results, men's focus group discussions showed a different view. Although there is no priority in food allocation in the Borana culture, food shortage is not gender neutral. Women's focus group discussions conceded that there is no food priory for men, but priority is usually given to children, elderly and sick people. However, women, as being responsible for food allocation, give priority to others including men, and usually eat leftovers. A man in the household has his own cup to drink milk which no one else is allowed to use.

[3]In Borana culture, women almost always put butter on their heads. As per the culture, not having butter to put on a woman's head means that bad times have befallen her.

A middle-aged woman in Madacho explained this situation in the following words:

> As a woman, when your children eat and others get food you are satisfied even though you did not eat. I am always worried how to distribute what I have for all, I can eat whatever is left. Mine is not a problem at all.

The majority of the respondents perceive that the impact of conflict and political marginalization on women is low compared to men. Around 60% of women and men 'disagree' and 'strongly disagree' with the statement related to 'high impact' of conflict and political marginalization on women (see Table 5). Similarly, the elders participating in the key informant interviews stated that in the traditional Borana community, conflict was the prime responsibility of men, and women only suffered from increased work burdens as their husbands were away for warfare. In those days, conflict was highly gendered and remained as a problem for men. On the basis of the information from our survey result, it would seem that these perceptions still continue to exist among the study community.

Contrary to the survey results and elders' views, information from women's focus group discussions indicated that women are indeed suffering increasingly as a result of current conflicts. They argued that in the past, women's involvement in conflict was minimal and they were not targeted by the parties in conflict. For instance, a man could be killed or livestock could be raided, but women and their homes were never destroyed in the past. The things in the household were kept safe in the belief that everything in the house was women's property. However, the nature of conflict had changed in such a way that women were now brutally targeted, killed, harassed, and sexually abused during conflicts. According to discussants in this focus group, the situation is worse for women as they lack skills and experience to defend themselves in conflict situations when compared to men. In the Borana tradition, young men are trained by knowledgeable elders in war tactics including defence. Women do not receive any such training and are consequently at a disadvantage when defending themselves. Under such circumstances women perceive themselves as more vulnerable during conflicts, despite the views expressed in the survey results. A woman in Harowayu explained the case of the death of her sister-in-law in the following words:

> My sister-in-law was killed during conflict between Somali and the Borana. The killers were saying, 'Kill women too; they are the ones giving birth to men who fight us. Killing women reduces the number of baby boys – future fighters'.

This indeed bears testimony to the fact that the rules of warfare are changing, with increasingly adverse consequences for women.

In general, except for political marginalization and conflict, a majority of the respondents in the survey agreed that Borana women are more affected by stressors than are their male counterparts. Qualitative information indicated that the impacts of stressors on women are linked to their poor access to basic resources, high dependence on natural resource availability and their gendered roles and responsibilities within the household. Moreover, lack of external support (such as access to credit facilities) has affected the way women experience and respond to the effects of stressors as per the discussants. Women's traditional reciprocity institutions are also under stress due to lack of resources for sharing under increasing poverty conditions (Anbacha and Kjosavik, 2018). Therefore, the structured inequalities between women and men act as a critical factor influencing the way women and men experience stressors.

## 4 Conclusion

This study is a perception-based exploration of major stressors, and of the gendered perceptions of the frequency and impact of these stressors in Borana, southern Ethiopia. Our study shows that Borana pastoral livelihood faces numerous stressors categorized as climate and environment, economic and social, and governance and conflict. Regardless of differences in livelihood, age, gender and wealth status, all respondents in this study perceived that climate-related stressors including drought and rainfall variability are the most frequent and impactful stressors, followed by economic stressors such as food problems and increasing poverty. This study indicated that conflict and rangeland problems are the second most frequently cited stressors, following drought and rainfall variability.

Our study shows that the perceptions of the impacts of stressors vary depending on livelihood basis, gender and wealth status. We found that gender is the most important factor influencing perceptions of the effects of stressors, whereas age seems to be the least significant factor. We argue that the power relations between women and men is a strong factor influencing perception of frequency and impacts of stressors. In addition, wealth status, livelihood base and differences in age play important roles in the differential impacts of stressors. Women worried more about droughts, rainfall variability, water shortage, poverty, food shortage and weakening of social security. On the other hand, men give more weight to unfavourable policies, animal diseases and animal deaths. The differential impacts of stressors on women and men seem to be related to the existing social norms, resource access and role behaviours. In general, this study shows that the impact of pastoral stressors is not uniformly distributed. This indicates that vulnerability to stressors is relational, determined by power relations, economic status, livelihood bases and to some extent age differences. Therefore, a better understanding of these is vital for designing appropriate policy measures to address the priority areas of different groups with available resources. In other words, any attempt to reduce the impacts of stressors must take into account how the historically uneven distribution of resources and the power relations determine vulnerability to stressors for designing appropriate and sustainable adaptation policies and strategies in pastoral areas in general, and Borana in particular.

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# Paper II

# The Dynamics of Gender Relations under Recurrent Drought Conditions: A Study of Borana Pastoralists in Southern Ethiopia

(*Human Ecology*, under revision based on reviewers' comments)

**Abstract**

This paper investigates the dynamics of gender relations in terms of changes in gender roles and access to resources under recurrent drought conditions in Borana, southern Ethiopia. Data was collected using household surveys, focus group discussions, key informant interviews and field observations. Results show that in traditional Borana society, roles have been structured according to gender and age. Women are responsible for activities in and around their huts whereas men are in charge of outdoor activities. However, increases in droughts seem to be transforming the gender roles as women and men undertake new activities for survival. This has shaken up the role boundaries, contributing to a reorganization of gender roles and negotiations for change in gender relations. In the process, it appears that women's workload, areas of decision-making and income-earning opportunities have increased. A thorough understanding of such dynamics is vital for designing sustainable drought adaptation policies and strategies.

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**Keywords:** Gender; Gender Relation; Drought; Pastoralist; Borana

## 1. Introduction

The pastoral mode of production in east Africa has been undergoing numerous changes. Drought is one of the strongest factors affecting the evolution of the pastoral production system from predominantly mobile pastoralism to more diversified livelihoods (Wangui 2003). Southern Ethiopia, where the Borana zone is located, has experienced severe droughts in different periods. The droughts in 2000 (Angassa and Oba 2007) and in 2006, 2008 and 2010–2011 (USAID 2011) caused rapid changes in the livelihoods of pastoralists (Flint an et al. 2011; Reda 2012). The changes in this pastoral production system are not gender neutral; rather, they create new dynamics in gender relations that require the attention of researchers and policymakers. A few studies have attempted to throw light on the gendered aspects of climate change including droughts (Omolo 2010; Brody et al. 2008; Neumayer and Plümper 2007; Dankelman 2002; Denton 2002; Enarson 2000). Similarly, our study aims to contribute to the existing knowledge on gendered aspects of droughts among Borana pastoralists.

Historically, East African pastoralists including the Borana, have a production system organized around gender and age specific roles (Dahl 1979; Legesse 1973). However, the changing production system has resulted in new activities and reorganization of gender specific roles (Anbacha and Kjosavik, unpublished manuscript). As both women and men pastoralists strive for household survival under drought conditions, new divisions of roles have emerged, that place different roles and responsibilities on women and men (Eriksen and Marin 2011). In traditional pastoralist societies, women have been largely responsible for managing livestock products and ensuring food for the family, while men undertake the management of livestock (Dahl 1979; Legesse 1973). Increases in frequency and severity of droughts have altered the responsibilities of women and men in different ways (Khalif 2010; Oba 2001).

In addition to altering the traditional roles of women and men, drought is influencing individual's access to basic resources, which is in turn determined by existing gender relations. Previous studies indicate that social inequality in accessing resources determines the vulnerability and adaptation of people to climate change induced by droughts (Adger 2006; Enarson 2000; Kelly and Adger 2000). This means that the lower position of women in comparison to men in accessing resources, influences the way they experience and respond to droughts. Droughts have devastated the already limited resources women had access to, and have exacerbated gender inequality and poverty (Dankelman 2002). The depletion of natural resources owing to drought adds to the suffering of women who mainly depend on it (Haile 2008).

An in-depth understanding of gender relations at local level is therefore required for designing sustainable adaptation policies. The aim of this paper is to investigate the changes in gender relations under recurrent drought conditions in Borana, southern Ethiopia. The Borana people belong to the Oromo ethnic group who inhabit northern Kenya and southern Ethiopia. They speak *Afan Oromo*, a language belonging to the Cushitic family, and livestock production is their main livelihood. They are a well-structured society governed by *gada*: a customary institution that governs every aspect of society with social, political, economic and religious dimensions (Legesse 1973). Gada also governs existing gender relations, reinforcing well-defined boundaries of women and men's roles in the society (Ebba 2006), which are now challenged by increasing droughts. This paper investigates changes in historical gender roles, changes to women's access to resources and decision-making power, and what women gain and lose under drought conditions.

## 2. Conceptual Framework

To understand the changing relations between women and men, we draw on Agarwal's (1997) bargaining framework, which is a promising tool for analyzing the relations of power between women and men (Agarwal 1997, 2001). The bargaining approach was developed as a critique of the unitary conceptualization of the household. This approach views the household as the place where both conflict and collaboration of individuals with competing interests takes place, and also where women and men attempt to uphold and change their relative positions in the family (Agarwal 2001). The bargaining framework explains existing intra-household differences with respect to roles, needs and priorities. Gender relations are manifested in roles, responsibilities, decision-making power, access to and control of resources by women and men in their society (Agarwal 2001; Dankelman 2002).

The relations between women and men may vary in different cultural contexts. However, in almost all cultures, gender is a primary factor that determines resource endowment, roles, responsibilities, and decision-making power of individuals. According to Sen (1981), individuals' ability (power) to command goods and services is further determined by endowments (things owned by a person such as assets, labor, social networks, livestock) and by exchange entitlement mappings (exchange possibilities include production and trade). Therefore, existing access to resources or endowments and the possibility of using them, determines a person's ability to respond to shocks like droughts, which is an aspect of vulnerability that determines the individual's susceptibility to risks and uncertainties including droughts (IPCC 2001; Kelly and Adger 2000). The availability of resources and the entitlement of individuals or groups to call upon the resources, determines bargaining power (Adger et al. 2003). Although the magnitude varies in almost all cultures, women have poor access to basic resources that hinder their ability to respond to risks and uncertainties from droughts.

The bargaining approach analyzes the asymmetries constructed and contested in a society, by going through intra-household gender dynamics of roles, responsibilities, decision-making process, and resource access affecting bargaining power (Agarwal 1997). Using the framework, this study first investigates historical gender roles, followed by perceptions of drought and its impact on traditional roles, and finally, women's access to resource and decision-making power as well as their gains and losses in the transitions.

## 3. Study Site and Methods

### *3.1 Description of the Study Sites*

The Borana zone is found in southern Ethiopia (see Fig. 1) and is characterized by arid and semi-arid environments with pockets of sub-humid agro-ecology. Erratic and unpredictable rainfall and recurrent droughts are the general feature of the area (Bekele and Amsalu 2012). The zone has two rainy seasons known as long rain (*gana*) and short rain (*hagaya*); the long rain is from March to May in good years, while the short rain is in October and remains up to December. However, of late, the rain is becoming more and more variable. The area is repeatedly affected by droughts challenging the livelihood of the people (Abebe 2016; Aregu and Belete 2007; Getachew 2007; Tache and Oba 2008).

Livestock is the mainstay of Borana livelihood and the people are known as cattle herders. However, they also keep other livestock such as sheep, goats and camels (Anbacha and Kjosavik unpublished munscript). Livestock exports from the area contribute significantly to the country's foreign exchange earnings (BoFED 2011). Similarly, a large number of high quality livestock in the domestic market comes from this zone (Birhanu et al. 2015). However,

increases in droughts have been devastating pastoral livelihoods and have forced many to diversify their livelihoods, shifting from pastoral to agro-pastoral production systems (Tache and Oba 2008). Thus, the selection of the study communities was informed by the current dynamics of livelihood.

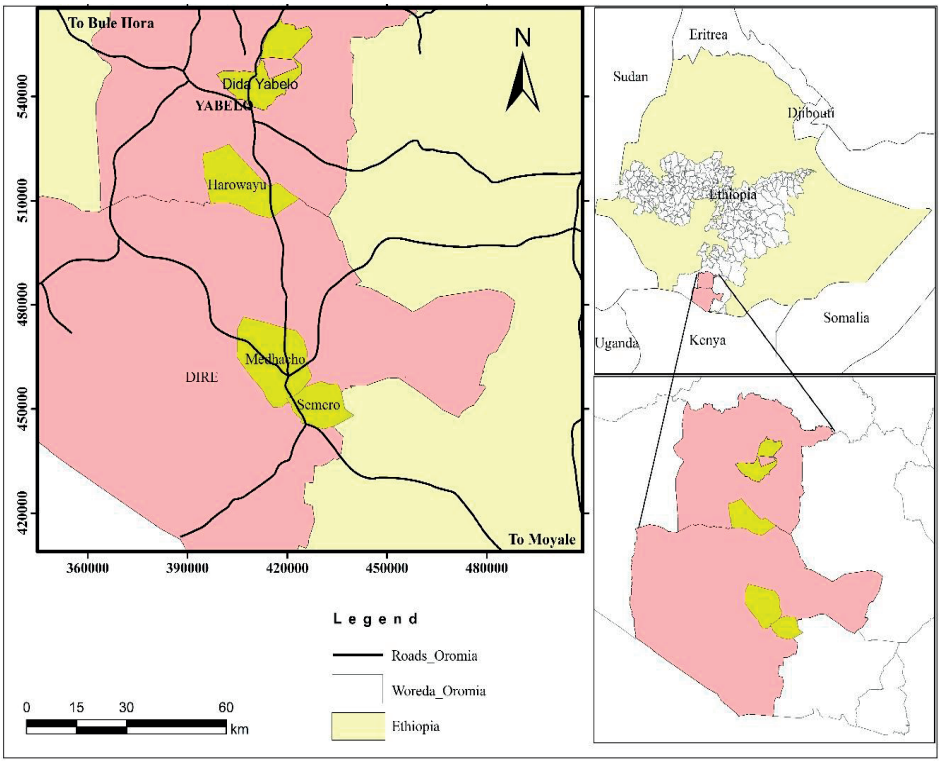


**Fig. 1** Map of Borana Zone

### *3.2 Site Selection and Data Collection*

The field research was conducted in 2014–2015. Data was collected using household survey, focus group discussions (FGDs), key informant interviews and field observations. For the study, the districts of Yabelo and Dire – consisting of communities engaged in both pastoral and agro-pastoral livelihood – were selected specifically to include both production systems in our study. Pastoralist associations (PAs), which are the smallest units of administration in each

district, were classified into pastoral and agro-pastoral production systems based on data we obtained from the pastoral development office of each district. From each production system, two PAs were randomly selected. From Yabelo district, Harowayu PA representing pastoral production systems, and Dida Yabelo PA representing agro-pastoral production systems, were selected. Similarly, from Dire district, Samaro PA representing pastoral, and Madacho PA representing agro-pastoral livelihoods, were selected. The selections were made to help determine whether changes in production systems affect the gender relations differently under recurrent droughts. From these four PAs, 240 respondents with equal numbers of women and men with different economic backgrounds and ages were selected for the household survey. For the wealth categorization, we used the traditional Borana wealth-ranking system which depends on the number of cattle the household owns, based on the information we gained from extension workers and community leaders. For detailed information on survey participants, see Table 1.

**Table 1** Characteristics of Survey Respondents

| Respondent Category | Participants | Number of People |
|---|---|---|
| Sex | Female | 120 |
| | Male | 120 |
| **Total** | | **240** |
| Production Systems | | |
| PAs | Harowayu | 60 |
| | Samaro | 60 |
| Agro-pastoralist Associations | Madacho | 60 |
| | Dida Yabelo | 60 |
| **Total** | | **240** |
| Age | Young (18–35years) | 90 |
| | Middle age (36–50years) | 110 |
| | Old (above 50 years) | 40 |
| **Total** | | **240** |
| Wealth status | Poor (*dega* and *qole*) | 115 |
| | Middle (*offi warra danda'an)* | 95 |
| | Rich (*duresa)* | 30 |
| **Total** | | **240** |

The interviews were conducted directly with respondents in their homes by enumerators. Two enumerators (female and male) who work as extension workers in each PA were recruited for the data collection. In total, eight enumerators were selected and trained by the researcher on using questions prepared. The structured and semi-structured questionnaires prepared in Afan Oromo were explained and discussed with them. The questionnaire was pre-tested and revised before the survey commenced. In the household survey, perceptions on droughts, traditional roles of women and men in Borana households, changes to these roles, and the decision-making power of women and men were addressed. Data on resource access of women and men was also collected.

For the key informant interviews, 24 pastoralists were selected based on their knowledge of traditional gender relations and evolution of changes in power relations between women and men. Key informants were selected from the information obtained from extension workers and community leaders. The selected informants were elders (ten women and six men), six leaders of formal and informal communities, and two oral historians. In addition, six experts working in three offices - Pastoral development office, Tourism and culture office, and women and children's affairs office participated. From each selected office, one expert and the department head participated in the key informant interviews. The interviews addressed historical gender roles, resource access and decision-making processes, changes in gender relations over time, factors behind the changes, and impacts of the changes on the lives of women. In addition, individual cases of particular interest were included. Five individual cases identified based on key informant interviews were followed up by open-ended questions.

For this study, six FGDs in both production systems were conducted. In each production system, three FGDs were carried out. One women's group, one men's group and one mixed group discussion was held in Harowayu representing the pastoral production system, and similar group discussions were held in Madacho representing the agro-pastoral production system. In each FGD, between nine and twelve people participated. Each FGD lasted for three to four hours. The issues addressed in FGDs were historical gender roles, evolution of gender roles over time, factors contributing to this change and their impacts on women, changes in women's decision-making power and their access to resources. Moreover, the gains and losses of women in the current pastoral transformation were also discussed.

In order to respond to the first questions on historical gender roles, the survey participants were asked to list the roles assigned to women and men traditionally. The same questions were addressed in the FGDs and key informant interviews to investigate the historical gender roles in Borana society.

The second set of questions on perception of drought manifestations with respect to temperature change, rainfall variability and vegetation growth, were also assessed using the statements "increasing", "decreasing" and "no change". The impact of droughts on the traditional gender roles, and the gains and losses of women under pastoral transition, were assessed by identifying the role of women and men in the pastoral transition compared to socially ascribed roles and responsibilities.

The third focus area of questions on resource access of women and men and their decision-making power, both in the household and community, was addressed by using questions such

as: “Who decides on what?” The informants and discussants were asked about traditional resource access and the current changes in access to resources between women and men.

The data collected was analysed using content analysis, which examines the interpretations and implications of the information forthcoming from qualitative methods such as interviews, discussions and observations. Data from household surveys was entered into SPSS software version 22 and run for simple descriptive statistics and cross tabulation for analysis. To capture gender differences, a comparison was made using chi-square tests.

## 4. Results and Discussion

### *4.1 Historical Gender Roles*

The information from all FGDs and key informant interviews confirmed that there has been a clear demarcation between women and men’s roles and responsibilities in traditional Borana society. Specifically, the FGD of men in Harowayu revealed that the roles of women and men were different, stating “*Borani hoji qodate hojeta,*” meaning that the Borana people divide roles among each other. This is also common among other neighboring pastoralists (Haile, 2008; Kahlif, 2010). The division of roles and responsibilities in Borana is embedded in the existing culture and social norms, as indicated in all FGDs. As mentioned in the introduction to this article, the traditional institution gada governs the distribution of roles and responsibilities among women and men in the society. In addition, people of different age groups have well defined roles in the system (see also Hinew 2012; Asafa Jalata 2012; Ebba 2006; Legesse 1973). Thus, in the gada system, roles are structured according to gender and age groups.

In the Borana culture, women are responsible for activities in and around homes and are considered as managers of households, as pointed out in all FGDs. These activities include cooking, hut-making and cleaning, decorating huts with handmade materials, weaving mats, milking, taking care of animals, fetching water, collecting firewood, transporting goods and most of the care work, such as taking care of children, the sick and the elderly, requiring daily decisions. This is similar to previous studies among neighboring pastoralists (Dahl 1979; Haile 2008; Kahlif 2010). The key informant elders indicated that women are not allowed to go far from the homestead, which is similar to a study undertaken in north Kenya (Khalif 2010). The restriction on women's mobility is reinforced by the Borana saying: "*nadheen mana batu nama fi mana miti*" which means that if a woman goes outside her house, she hurts the house and people. This belief had put severe restrictions on women's mobility and their ability to access resources.

Borana men are mainly responsible for tending livestock, which includes taking them to water points and green grass, as confirmed by all FGDs. This is similar to earlier findings in Borana and other neighboring pastoralist communities (Haile 2008; Khalif 2010; Abebe 2016). During the rainy season, the livestock graze around home, giving men more free time. However, during the dry season men move with their animals to distant places in search of green pasture and water sources, increasing their workload. Men are also responsible for fencing and assume the prime responsibility in war and defense, as indicated in all FGDs. Women and elderly men are not expected to take part in defense. The elderly men may give guidance and advice to those going to war, and are mainly responsible for managing public interests including settling disputes between friends and neighbors, in marriages, and finding solutions when crime is committed (see also Legesse, 1973). Elderly people are not expected to undertake manual activities unless they are very poor and have no one to help them.

The dichotomy of women and men's roles is reproduced and reinforced by different Borana sayings. For instance, there is a phrase often invoked by men: "a*ni nadheen kanan nyata qophesu, muka mure mana ijjaru,*" meaning "Am I a woman to prepare food, cut wood and make a hut?" This implies that the responsibilities of cooking, firewood collection and hut making are in the domain of women; men are ashamed of undertaking such activities, which is a cultural taboo. Women themselves seem to discourage their men from cooking, as indicated in women's FGDs. A middle-aged woman from Harawayu had a shocked expression on her face when we asked if her husband cooks for her. She shouted:

> It is not our culture! A man has his own work and it is outside, not in the house. I can cook if I got food. As a woman your kitchen is not only a place for cooking, rather also your bank where you hide resources for future calamities and other social obligations which you do not want show to your husband. Nevertheless, if you allow him to enter kitchen, he is going to see what you have. If a husband repeatedly visits the kitchen, the woman in the house puts what she has in her neighbor's house, stating that "nuti mana kessa nudeemu kana naaf ka'ii" meaning in our home my man walks, please keep this for me, and she saves with her neighbor.

From the above statement we understand that Borana women keep things they want to hide from their husbands in the kitchen. The husband has his own place to sit and sleep and he is not allowed to be in other places as indicated in women's focus group discussions. Thus, it would seem that women have their own reasons for not allowing men to cook.

In the traditional role distribution between women and men, the tasks are highly skewed in favor of men, as expressed in all FGDs. Women discussants clearly believed that the roles assigned to women are too many and routine in nature, demanding daily labor and time. This finding agrees with a study undertaken among Somali pastoralists (Haile, 2008). On the other

hand, men's roles are limited and requiring their input only as and when needed, and the tasks are not as tedious and time-consuming as those of women. Women discussants in Harowayu PA explained:

> A woman wakes up early at five in the morning before everyone. She starts her routine chores such as milking, cleaning, preparing tea, serves breakfast, assigns all to their work, and then goes for fetching water, collecting firewood, grass and others. Before she finishes her work it is already noon, the animals are back to homestead, and she milks again, prepares dinner and serves the family members. Finally, she goes to bed at eleven, almost in the middle of the night after she makes sure that everyone has gone to bed.

As a result, Borana women bear a disproportionate burden of responsibility as compared to men. Moreover, the chance of substitution of women's role or men taking over the role of women in the household is very limited, worsening the situation. Only women with female children get support from their daughters (see also Khalif, 2010) as the social norms do not allow men or male children to help their wives and mothers in household activities. However, it is relatively less strict when it comes to women undertaking men's role like tending animals, as indicated in all FGDs.

### *4.2 Perceptions of Drought and its Impact on Traditional Roles*

#### 4.2.1 Drought perception

All participants in individual interviews and FGDs were aware that Borana is repeatedly affected by droughts. This is similar to previous studies (Bekele and Amsalu 2012; Reda 2012; Tache and Oba 2008). As per the FGDs, drought in the area is manifested in increases in temperature, variable rainfall and low vegetation growth (see also Angassa and Oba 2007).

Regardless of the production system, gender, age and wealth status, all respondents understood that the temperature is increasing (see Table 2).

**Table 2** Perceptions of Changes in Temperature

| Variables | | | Temperature | | | Chi square | | |
|---|---|---|---|---|---|---|---|---|
| | | | Increasing | Decreasing | No change | Value | df. | Sig. |
| Sex | Female | 120 | 95.4% | 1.8% | 2.8% | | | |
| | Male | 120 | 92% | 1% | 7% | | | |
| | Total | 240 | | | | | | |
| Production system | Pastoral | 120 | 92.5% | 2.8% | 4.7% | | | |
| | Agro-pastoral | 120 | 94.6% | 0 | 5.4% | | | |
| | Total | 240 | | | | | | |
| Age | Young | 90 | 88% | 1.2% | 10.8% | | | |
| | Middle | 110 | 97% | 2% | 1% | 10.13 | 4 | 0.038 |
| | Old | 40 | 97% | 0 | 3% | | | |
| | Total | 240 | | | | | | |
| Wealth status | Poor | 115 | 92% | 3% | 5% | | | |
| | Self-sufficient | 95 | 95% | 0% | 5% | | | |
| | Rich | 30 | 96% | 0% | 4% | | | |
| | Total | 240 | | | | | | |

Source: survey data 2014/15

Further analysis of different groups showed insignificant variation, except between people in different age groups. With increases in age, more people perceived that temperatures have increased, while the younger people perceived fewer increases. It could be that most of the youth were born after the significant changes**.**

With reference to rainfall, the majority of survey respondents perceived that rainfall is becoming “extremely variable” and “variable” (see Table 3). None of them responded with “no change”. Although the majority of women and men perceive rainfall as extremely variable, there was significant variation. This study shows that more women than men perceive that the rain is extremely variable. This result may be a consequence of women’s high dependence on water availability to fulfill their gender roles. Similarly, information from women’s FGDs

support this finding, indicating that water is the most critical resource in these Borana conditions. A poor, old woman in Harowayu stated, "*lafti goga, waqiti qoga, bishan argachuun hamatadhuma deema jira,*" meaning the earth and sky are dry and getting water is becoming harder.

**Table 3** Perceptions of Rainfall

| Participants | | Rainfall Variability Count | Extremely Variable | Variable | Chi square Value | df | Sig. |
|---|---|---|---|---|---|---|---|
| Sex | Female | 120 | 76% | 24% | 13.937 | 2 | 0.0001 |
| | Male | 120 | 53% | 47% | | | |
| | Total | | | | | | |
| Production system | Pastoral | 120 | 77% | 23% | 15.286 | 2 | 0.0001 |
| | Agro-pastoral | 120 | 53% | 47% | | | |
| | Total | 240 | | | | | |
| Age | Young | 90 | 67% | 33% | | | |
| | Middle | 110 | 64% | 36% | | | |
| | Old | 40 | 63% | 37% | | | |
| | Total | 240 | | | | | |
| Wealth status | Poor | 115 | 72% | 28% | | | |
| | Self-sufficient | 95 | 59% | 41% | | | |
| | Rich | 30 | 57% | 43% | | | |
| | Total | 240 | | | | | |

Source: survey data 2014/15

According to the men discussants in Madacho, "Rain does not come on time. These days it comes late and goes too early," even during the main rainy season, reducing the rainy months of a year. This is very similar to a study undertaken among Somali and Afar pastoralists (Eriksen and Marin, 2011)**.**

A poor, old woman in Samaro described the conditions as follows: "The environment is getting drier, temperature hotter and the rain is becoming more variable. We are not getting enough rain even during hagaya – our main rainy season." A middle-aged man from Madacho commented: "The environment is changing, new vegetation is growing, and the weather is too dry and hot.

New diseases are happening, the soil is changing and becoming too dry. Drought is following each other."

Regardless of livelihood base, gender, age and wealth status, all respondents perceived a decrease in growth of vegetation. The information from key informants and all FGDs supports the survey findings. Our study shows that women are more sensitive than men to reduction in vegetation. Women FGDs explained, using life examples, showing how they suffered to get firewood and wood for hut-making.

As mentioned in all FGDs, increases in drought affect women's ability to perform their traditional gender roles by increasing the demands on their time and energy (see also Haile, 2008). Fetching water had become very difficult since most of the water wells dry up following increases in drought. As a result, women have to walk longer distances which takes much of their time; such trips take an average of four to five hours, and in some areas, this goes up to nine hours. Carrying water from long distances poses both health and security problems. In well-to-do families, the women may use donkeys for fetching water. All discussants in women's FGDs in both production systems revealed that many women are suffering from kidney problems. It was explained further that, on their way to collect water and firewood, women and female children are increasingly subject to attacks and harassment by men, especially during conflicts between different pastoral groups.

Likewise, collecting firewood, which is their sole source of energy, becomes increasingly difficult for Borana women when vegetation growth is low. This was confirmed in the interviews and all FGDs. In women's FGDs in particular, women stated that they are constantly on the road searching for food, water, grass and firewood. During our stay in the field, it was a

common sight to witness women carrying head loads of firewood, grass or water. This is well-articulated by Cossins and Upton (1988), who describe how every dawn of every day brings a long march for women, one time for water, and another time for firewood collection. In the past, the area was greener and had forests, as indicated by elders in the key informant interviews. However, currently, much of the vegetation that had grown earlier is no longer there, which makes women's work more difficult. At the time of our fieldwork, it was common to see bare lands, and bush encroachment. As stated by one of the elders who was a key informant in Samaro PA:

> There were different types of trees under which we used to play during our childhood. The big mountain you see over there [pointing to a mountain near where we sat] was covered by vegetation and was green. During dry season, we gathered under the mountain with our animals. The animals drank water that dripped down from the mountain. Today as you can see there is no vegetation on it [a poor old man from Samaro pastoralist association].

### *4.2.2 Gender Roles under Drought Conditions*

Except for a few activities which are still highly gendered, our study revealed that the changes in traditional gender roles have become more vivid with increases in pastoral transformation induced mainly by droughts. While all respondents in the survey indicated that cooking is still the domain of women, defense remains solely in men's domain. However, men were found to be participating in hut-making which was the sole responsibility of women in the past (refer to Table 4). This is contrary to a previous study undertaken in 1973, where it was found that hut-making was solely in women's domain (Legesse, 1973). Our study shows around 18% of male respondents and 8% of female respondents said that men are participating in hut-making jointly with their wives.

**Table 4** Responsibility in Caring, Hut-making, Fetching Water and Firewood Collection

| Roles | Variables | | Total count | Who is responsible | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Woman | Man | Both | Value | df | Sig. |
| Caring activities | **Sex** | Female | 120 | 33.90% | 23.70% | 42% | 7.726 | 2 | 0.021 |
| | | Male | 120 | 52.00% | 16% | 33.00% | | | |
| | **Production system** | Pastoral | 120 | 49% | 21% | | 6.101 | 2 | 0.04 |
| | | Agro-pastoral | 120 | 36% | 18.60% | 30% | | | |
| | **Age** | Young | 90 | 40% | 21% | 44.90% | | | |
| | | Middle | 110 | 46.30% | 19.40% | 39% | | | |
| | | Old | 40 | 40% | 17.50% | 34.30% | | | |
| | **Wealth status** | Poor | 115 | 34.80% | 23.20% | 42.50% | | | |
| | | Self-sufficient | 95 | 40.40% | 19.20% | 42% | 20.507 | 4 | 0.0001 |
| | | Rich | 30 | 80% | 10% | 10.00% | | | |
| Hut-making | **Sex** | Female | | 88.20% | 3% | 8.40% | 9.587 | 2 | 0.008 |
| | | Male | | 77.50% | 10% | 17.50% | | | |
| | **Production system** | Pastoral | 120 | 83.30% | 7.50% | 9.20% | | | |
| | | Agro-pastoral | 120 | 77.30% | 5.90% | 16.80% | | | |
| | **Age** | Young | | 78.70% | 4.50% | 16.80% | | | |
| | | Middle | | 83.60% | 6.40% | 10% | | | |
| | | Old | | 60% | 20% | 20% | | | |
| | **Wealth status** | Poor | | 86.80% | 2.60% | 10.50% | | | |
| | | Self-sufficient | | 78.90% | 7.40% | 13.70% | 14. 638 | 4 | 0.005 |
| | | Rich | | 60% | 20% | 20% | | | |
| Fetching water and firewood collection | **Sex** | Female | 120 | 72.60% | 0.00% | 27% | 6.895 | 2 | 0.032 |
| | | Male | 120 | 74% | 9% | 17% | | | |
| | **Production system** | Pastoral | 120 | 72% | 3.40% | 24% | | | |
| | | Agro-pastoral | 120 | 75% | 2% | 23% | | | |
| | **Age** | Young | | 60% | 5.60% | 34.50% | | | |
| | | Middle | | 80% | 0% | 20% | 19.235 | 4 | 0.001 |
| | | Old | | 87.50% | 2.50% | 10% | | | |
| | **Wealth status** | Poor | | 48.70% | 4.40% | 46.90% | | | |
| | | Self-sufficient | | 96.80% | 1% | 2.20% | 67.76 | 4 | 0.0001 |
| | | Rich | | 93.30% | 0.00% | 6.67% | | | |

Source: survey data 2014/15

Nevertheless, further analysis shows there is significant variation between women and men in participation in hut-making. Although the women appreciated the move to joint responsibility in hut-making, they demand more change in the future. Information from FGDs and key

informant interviews support this finding that men are helping their wives in hut-making more than ever before. This change is backed by existing changes in Borana huts following the pastoral settlement in peasant associations. Following the settlement programs the Borana people are making more and more fixed houses as compared to the movable huts they inhabited previously. Making fixed houses require more strong wood, for which women demand their husbands' labor and time to assist them.

With respect to the caring activities, women still play a predominant role (see Table 4). Further analysis revealed that all variables except age show significant variation, indicating more involvement of women than men. Similarly, firewood collection and fetching water is still largely women's responsibility, which corresponds with studies of neighboring pastoralists (Haile 2008). However, the current participation of men jointly with women shows a change in the traditional roles.

Regarding herding, results show that both women and men are actively participating (see Table 5) and that this joint participation has increased. This is supported by information from all FGDs. Thus, current pastoral changes have increased the participation of women in herding, contrary to previous studies indicating that men dominate herding activities (Legesse 1973; Dahl 1979). This is backed by the increased engagement of women currently in fodder collection. Today it is common for every Borana household to collect fodder and store in order to overcome the feed shortage during droughts (see also Anbacha and Kjosavik 2018).

**Table 5** Women and Men in Herding and Farming Activities

| Roles | Variables | | Total count | Who is responsible | | | Chi/square | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Woman | Man | Both | Value | Df | Sig. |
| Animal herding | **Sex** | Female | 120 | 8.6% | 31.9% | 59.5% | 6.928 | 2 | 0.031 |
| | | Male | 120 | 2% | 42% | 56% | | | |
| | **Production system** | Pastoral | 120 | 5% | 32% | 63% | | | |
| | | Agro-pastoral | 120 | 5% | 42% | 53% | | | |
| | **Age** | Young | 90 | 2.4% | 31.8% | 64.8% | 17.595 | 4 | 0.001 |
| | | Middle | 110 | 3% | 40% | 57% | | | |
| | | Old | 40 | 17% | 40% | 43% | | | |
| | **Wealth status** | Poor | 115 | 8.4% | 28% | 63.6% | 46.062 | 4 | 0.0001 |
| | | Self-sufficient | 95 | 2% | 30% | 68% | | | |
| | | Rich | 30 | 3% | 90% | 7% | | | |
| Farming | **Sex** | Female | 120 | 2% | 29% | 69% | 10.411 | 2 | 0.005 |
| | | Male | 120 | 12% | 21% | 67% | | | |
| | **Production system** | Pastoral | 120 | 7% | 21% | 72% | | | |
| | | Agro-pastoral | 120 | 7% | 28% | 65% | | | |
| | **Age** | Young | 90 | 5% | 26% | 72% | 13.946 | 4 | 0.007 |
| | | Middle | 110 | 6% | 24% | 70% | | | |
| | | Old | 40 | 20% | 25% | 55% | | | |
| | **Wealth status** | Poor | 115 | 21% | 15% | 64% | 71.314 | 4 | 0.0001 |
| | | Self-sufficient | 95 | 2% | 16% | 82% | | | |
| | | Rich | 30 | 3% | 17% | 80% | | | |

Source: Survey data 2014/15

Crop farming, which was not part of traditional Borana livelihood (see Anbacha and Kjosavik unpublished manuscript) is undertaken currently by many households. Qualitative information from key informant interviews and FGDs revealed that farming activities are undertaken by both women and men. The survey data shows that 69% of women and 67% of men perceive that farming activities are undertaken jointly by women and men (see Table 5). However, plowing is largely undertaken by men while women mainly do other activities such as land clearing, weeding, harvesting and transporting.

Although the majority of the respondents in the survey, regardless of livelihood base, sex, and age, stated that the herding activities were undertaken jointly by women and men, in the wealth categorization, the majority stated that more men participate in herding activities. This is similar to a previous study showing that in economically strong households, men dominate the traditional livelihood (Oba, 2001). This suggests that in rich households, the gender role is more rigid than in the poor households, where both husband and wife help each other for survival (see also Khalif, 2010).

Although men's FGDs revealed that men dominate the herding activities, the analysis of specific herding activities revealed that women are contributing more to the livestock production (see Fig. 2).

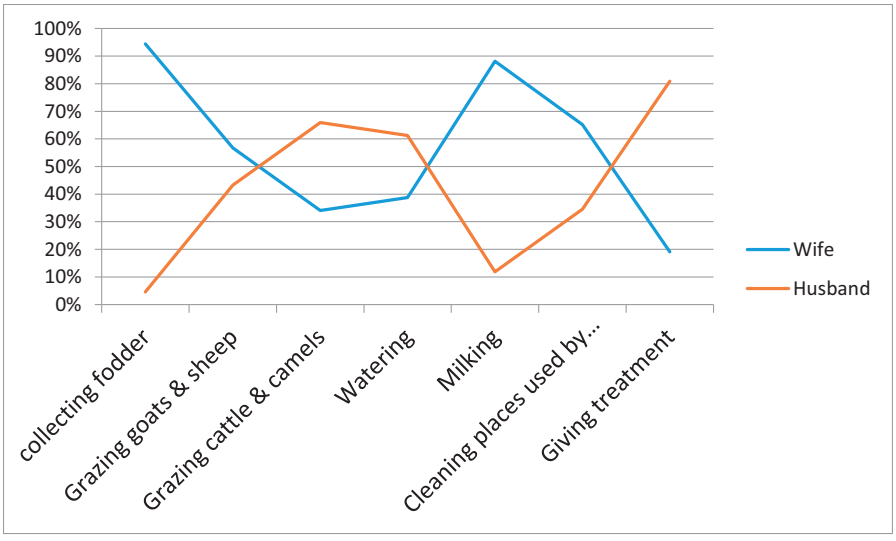


**Fig. 2** Specific Herding Activities Undertaken by Wife and Husband

**Source: Survey data 2014/15**

Activities such as fodder collection, milking, cleaning and grazing of goats and sheep are predominantly done by women, while men mainly undertake grazing of camel and cattle and administering treatments to sick animals (see Fig. 2). This finding is supported in previous studies (Tache and Oba, 2009). The increases in women's participation in herding has increased their workload, bringing about changes in traditional gender roles. For instance, fodder collection, which was not part of women's traditional role is now being increasingly performed by women with increases in drought. This is clearly an additional role for women both in pastoral and agro-pastoral production systems.

According to all FGDs and key informant interviews in both production systems, increases in drought have created serious challenges to livestock production, the main livelihood activity (see also Abebe, 2016). Borana pastoralists have already lost large numbers of their livestock to drought-induced problems, resulting in critical food shortage and a shift in the pastoral economy. Moreover, under increased drought conditions, both women and men are unable to fulfill their gender roles and responsibilities. This is similar to other pastoralists in Ethiopia (Eriksen and Marin, 2011). As Borana men are increasingly losing their traditional jobs (cattle herding) and resource entitlements, and are unable to provide food for the family, women are pushed out of homes in an effort to provide food for the household. Consequently, many women are currently engaged in activities such as petty trade, and selling of charcoal and fuel wood to support their family (see Anbacha and Kjosavik, unpublished manuscript) which has increased women's workload. As women are increasingly away from home, men have started taking care of children and helping women as indicated in all FGDs. The new responsibilities women and men are assuming are touching the core values of gender relations and are beginning to break down the traditional role boundaries in both production systems. It would

seem that women and men are negotiating covertly. One of our key informants in Madacho told us his own experience as follows:

> My wife is doing small business since we were pushed out from pastoralism due to drought in 2011 that killed our animals. When she is out of home for the business, I take care of the children. In the past, I never did such activity, my wife was at home and she was the one taking care of the kids. Today I am poor, I cannot feed the family, and I depend on her. Therefore, I must do things I can so that she can do her business [a poor middle-aged man in agro-pastoralist community].

### *4.3 Resource Access and Decision-Making Power of Women*

In Borana there is a strong sense of communal ownership and mutual help, which is evident from the interviews and FGDs. As an individual Borana, a man is not allowed to dispose of as many livestock as he wants, without the permission of the clan leaders. There is a belief that "Boran[7] resources belong to all Borana and no one has the right to abuse resources." Similarly, the clan members have an obligation to restock when an individual Borana loses livestock and becomes poor. This was spoken of in all FGDs. *Busa gonfa* is a local clan-based customary institution of helping clan members in difficult circumstances, as stated by elders in Harowayu PA (see also Anbacha and Kjosavik 2018). In this institution, the clan leaders give orders to all members to contribute livestock based on their wealth status. The collected resources are then distributed to the clan members who are in crisis. Thus, through busa gonfa, clans respond to serious economic losses by a member based on the collective rights to clan properties (see Tache and Espen, 2008).

[7] Boran is an individual Borana

In Borana culture, women and men have different access to and control over basic resources. This study indicates that men have full control of live animals and community resources, whereas women control the resources inside their huts (see Table 6). Information from all FGDs and key informants supported the survey results, which are similar to previous studies (Legesse 1973; Dahl 1979; Haile 2008).

**Table 6** Respondents' Perceptions of Access and Control

| Types of decisions | Respondents | Total count | Respondents' Perceptions of the Control of Women and Men of Resources | | | | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Women | Men | Both | Clan Leaders | Oldest Son | Total | Value | df | Sig. |
| Community issues | Female | 120 | 0 | 42 | 0 | 58 | 0 | 100 | 29.224 | 1 | 0.0001 |
| | Male | 120 | 0 | 10 | 0 | 90 | 0 | 100 | | | |
| **Total** | | **240** | | | | | | | | | |
| Range land & water | Female | 120 | 0 | 43 | 0 | 57 | 0 | 100 | 15.99 | 1 | 0.0001 |
| | Male | 120 | 0 | 19 | 0 | 81 | 0 | 100 | | | |
| **Total** | | **240** | | | | | | | | | |
| Livestock | Female | 120 | 4 | 59 | 31 | 0 | 6 | 100 | 36.02 | 3 | 0.0001 |
| | Male | 120 | 0 | 33 | 67 | 0 | 0 | 100 | | | |
| **Total** | | **240** | | | | | | | | | |
| Crop produced | Female | 120 | 32 | 28 | 40 | 0 | 0 | 100 | 11.552 | 2 | 0.003 |
| | Male | 120 | 53 | 20 | 27 | 0 | 0 | 100 | | | |
| Total | | 240 | | | | | | | | | |
| Food items | Female | 120 | 98 | 1 | 1 | 0 | 0 | 100 | | | |
| | Male | 120 | 100 | 0 | 0 | 0 | 0 | 100 | | | |
| **Total** | | **240** | | | | | | | | | |

Source: Survey data (2014/15)

This study shows that women's participation in managing community resources is very low (see Table 6). All the discussants in FGDs and informants stated that clan leaders (only men) have influential power in managing water wells, rangelands and livestock (see also Tiki et al. 2010). The discussants further explained that women are not allowed to sit with men in a *kora*[8] where most of the decisions are made. However, women can bring their issues to this meeting

[8] Kora is a traditional men's meeting in which many of the decisions governing the community are made.

with the help of male relatives, as explained by the discussants. Men's FGDs further stated that women's issues brought to a *kora* were always given priority. Nevertheless, women discussants clearly indicated that they were not happy to be represented by men in meetings. They argued: "Whenever someone else is assigned to present other person's issues, it is normal to miss some points … it is only the woman facing the problem who can really explain her issues." To overcome this problem and to air their issues, the women use traditional songs as indicated by the key informants (see also Legesse 1973).

As pointed out in all FGDs, the ongoing pastoral transformation has resulted in an increase in private ownership of resources in Borana. The right of individuals to own resources is embedded in customs and traditions that give differential access to different individuals as highlighted in the FGDs and key informant interviews. Despite the tremendous roles women play in Borana society, their access and control over resources particularly livestock is insignificant. Strong influence of gender relations in determining access to resources has been observed by other studies as well (Dankelman 2002). In the FGDs, women were very vocal in pointing out that lack of access to livestock negatively affected their bargaining power. Ownership of resources is indeed critical for wellbeing, social status and empowerment of women (Agarwal 1994) that further determine the power of individuals in the household (Kabeer 1999).

In Borana, males are expected to own resources before marriage, as indicated in all FGDs. The process of equipping males with necessary resources begins at an early age. The discussants explained that in a Borana family, all sons get a gift called *handhura* (meaning umbilical cord) at birth, while female babies are not entitled to such gifts. During handhura the male babies get live animals and clothes as gifts. In addition to handhura, the first-born son receives a large

number of animals as a gift on *Mogasa* (child naming ceremony) from his father and other relatives. The girls, however, are denied such gifts. Thus, the seeds of unequal access to resources are sown at a young age, literally starting from birth, and are cultivated and reproduced throughout their lives. An old woman in Harowayu pastoral community related her own childhood experience:

> When I was a small child, I was very active. I was taking care of animals with my brothers. My father used to say to me, "Take care of these calves; they are handhuras of your brothers." Then I used to ask my father, "Where is mine, my handhura?" Most of the time my father made me to forget my questions. He asked me to do something else so that I forget it. Since I was a small child, when my father talked about my brothers' calves I felt jealous and asked him to show mine. One day, when my father came to the field where we were with animals, I ran to him and told him, "If you do not show me my handhura, I will not let you go today." Then he realized that I was serious. My father loved me, he randomly put his hand on one calf and told me "this is yours." I started to give special care for that calf and I was so happy. Nevertheless, my father said the calf was mine in order to avoid my repeated question. The truth is that as I was a girl, no one had given me handhura. As time passed, the issue of my handhura was never mentioned and when I talk about it, everybody laughs.

Girls are not obliged to have resources for marriage; rather, they are only required to have "decent" manners, and good knowledge of cooking and taking care of huts as stated in all FGDs. Women may be given limited livestock on their own or their daughter's wedding day. However, most likely these gifts are transferred to the husband or son, or to the nearest male relative. A middle-aged woman from Harowayu PA spoke about her gifts:

> I got livestock as gifts from my father and brother on my wedding day. I took those animals with me to my husband's home. One day when I started to talk about my gifts, my husband said, "Leave alone the gifts, you are also mine. You cannot say the animals are yours", my husband stated. I was disappointed and quarreled with him. Finally he is the one who decides on the animals. He is the one who sells and slaughters. I have no say.

Similarly, women in agro-pastoral society confirmed that most of the time, the gifts women received from their parents during marriage were controlled by the husband; women have full rights only over animal products, not over live animals. The reason for not giving gifts to female children became apparent during the FGDs and qualitative interviews. In Borana, there are two different clans known as *sabo* and *gona* and many more subclans. According to the cultural regulations, marriage is possible only between the two different clans, never within the clan. On marriage, the man who marries a girl will take her to his family and clan and pay a bride price (mainly livestock) to her family. A woman inheriting livestock from her biological parents is not encouraged, as she is likely to take the animals to her husband's family on her marriage, and it would result in a transfer of resources from one clan to another clan. Transferring of resources between different clans is mostly for punishment; under normal circumstances resources are only transferred within same clan. For instance, during disputes between husband and wife, the two clans (husband's and wife's clans) meet and discuss the matter and if they believe the problem is with the husband, he will be punished by imposing a penalty to be paid in the form of animals to the wife's clan. .

The low access of women to basic resources affects the way they experience and respond to increasing droughts. Moreover, increases in droughts are depleting the limited resources women own, which widens the existing inequality between women and men. Therefore, there

is a need to pay serious attention to such aspects for building adaptive capacity and working towards gender equality.

In general, as per the FGDs, men are responsible for making strategic decisions concerning the household and the general community (see also Hassen, 2004). In the past, men had the right to sell, and to give animals to others without the consent of their wives. The assumption was that livestock disposal was the domain of men. However, even in those days, some husbands involved their wives. Clearly, individual variations on general customs have occurred in both the past and present. Our study shows that currently it is not men alone who do the disposal of livestock (see Table 6). Although more women (59%) perceive that livestock decision is under the control of men, joint decisions by husband and wife are increasing (Table 6). In this study, 67% of men and 32% of women believe that the decision on livestock disposal is jointly made by men and women. This shows that women have already started to participate in decisions concerning livestock disposal with their male counterparts, contrary to the tradition that excluded women. This could be a consequence of increased awareness of the rights of women, owing to activities of NGOs and government offices. A middle-aged woman from Harowayu PA told us how she refused her husband's livestock disposal plan:

> A year ago, my husband got up early in the morning and separated one of the cattle from the other animals. I asked him the reason. He told me that he wanted to take to market for sale. I refused and said no need to sell the animal. He replied, saying, "It is none of your businesses, it is mine." Then, I told him that "nothing you have alone, we have all together." I ran to the elders, asked them to stop him. The elders stopped him and told him to discuss with me. After discussion, we decided not to sell. In the past, you could not even ask a husband, he could do as he wished. These days we learned from government and NGOs

that it is our right to claim. If you keep quiet, men do the decisions, but if you claim, you can reverse their decisions.

This is a clear indication that when women assert themselves, and negotiate for their inclusion in decision-making in domains that had been considered exclusively male, women have the possibility to garner support from the community. Thus, through extra-household support, women can increase their bargaining power within the household.

This study indicated that women's decision-making power regarding the crops produced is much stronger than decision-making regarding livestock. Here, 53% of men and 32% of women perceived that crops produced are under the control of women, while others stated that men and women jointly decide (Table 6). Because crop production is mainly for home consumption, this gives women the power to control it.

Currently, government and NGOs working in the area are trying to increase the participation of women in decision-making. In all the PAs, there is a reserved seat for women in the formal administration. An NGO called Hunde is also organizing women in cooperatives in Harowayu PA to address their social and economic problems. Women in Harowayu confirmed that they were actively participating in decision-making. The information from the organizers revealed the active participation of women in managing their cooperatives. The active participation of women in formal PA is challenging the discrimination against having Borana women attend various community meetings.

Data on decision-making of women shows that they have low decision-making power over basic resources (Table 6). However, the qualitative information from FGDs and key informant

interviews revealed that Borana women have strong decision-making power concerning things inside their huts. For example, women have full control over food grains, milking animals up to distribution, eggs and so on. Similar findings have been reported in other parts of Oromia (Oromo land) (Debsu 2009; Jalata 2012; Kumsa 1997). Information from all FGDs from both production systems revealed that in Borana households, a man does not have the right to ask for food, milk, and meat that are already inside the hut. He is only symbolically represented as household head (see also Khalif 2010). If a husband asked for such things, he would be called *qonqana* (greedy), which is an undesirable behavior in the society. Thus, Borana women are in a privileged position when it comes to controlling what is found inside the hut. This challenges a study by Gopal and Salim (1999) which attempted a regional generalization, saying that women's bargaining power decreases as one goes from the northern to the southern part of Ethiopia. A middle-aged rich man from Madacho PA described the power his wife has in his house:

> If I am hungry, I cannot take and eat. If I am thirsty, I cannot drink a cup of milk unless my wife gives me. Even if I am not interested in what she gives me, I cannot refuse, I have to eat and drink what she offers me. If I want to invite someone for something to eat or drink, she only gives if she is interested. Otherwise, she can refuse. Even if I know she has enough food in the hut, I cannot say anything. She has full right to control food allocation. If she is not willing to give, I have to go on empty stomach without complaining.

This experience suggests that the cultural institution of Borana has equipped women with relatively strong bargaining power over things that are already in the household. Understanding such nuanced rights that Borana women have in their households, serves to avoid the generalization of gender relations and helps in designing appropriate policies in addressing gender questions.

The information from key informant interviews and all FGDs showed that women and men's decision-making power in the household and community are governed by the gada institution, which sets out the rules and regulations that govern the Borana. As argued by Agarwal, participation in decision-making is determined by rules, norms and perceptions, in addition to endowments that disadvantage certain groups of the society (Agarwal 2001).

A large percentage of both women (57%) and men (81%) in our survey perceive that decisions on rangeland use, water and other community affairs are under the control of clan leaders (Table 6). Nevertheless, 43% of women perceive that men control these resources. In addition, with increases in droughts that have caused pastoral transformation, women's areas of decision-making have increased, as pointed out in women's FGDs. Women are responsible for many of the activities undertaken during droughts both inside and outside of their huts that demand their daily decisions. Today, women need to decide on issues such as food, grasses, water, energy, business, animal use, and management that require their competence and input.

## 5. Conclusion

This paper addressed the changing gender relations under recurrent drought conditions in Borana, southern Ethiopia. The study investigated changes in gender roles, resource access and decision-making power. Results show that drought is one of the strong factors transforming pastoral livelihoods and at the same time affecting gender relations in different ways. In traditional Borana culture, there has been a clear demarcation between women and men's roles and responsibilities. Women were responsible for household chores, whereas men were responsible for outside activities, including livelihood and political matters. The recurrent and intensified drought conditions hinder both women and men's ability to fulfill their gender roles. Moreover, new roles, tasks and responsibilities have emerged for both to ensure survival. Our

study indicates that the participation of women and men in non-traditional roles has contributed to changes in gender roles and relations. Moreover, women's areas of decision-making have expanded with increases in women's roles compared to the past. The new roles women are engaged in ensure survival, and require their daily decisions. It would seem that the ongoing changes have also increased Borana women's bargaining power vis-à-vis men. As argued by Agarwal (1997), increased access and control over resources and income increase the bargaining power of women. This has evidently worked in Borana women's favor.

On the other hand, drought-induced depletion of natural resources such as water and vegetation upon which women depend to fulfill their gender roles and responsibilities, coupled with the low access of women to productive resources, affects the way women respond to droughts and contributes to widening the gender gap. Droughts increase the demand for women's time and energy to fulfill their responsibilities. In spite of the increasing work burden of women, the current changes in the roles of women and men are touching the core values of gender relations as our study shows. Women and men seem to be quietly trying to negotiate for change in gender relations. The traditional role boundaries have become blurred. Therefore, a better understanding of such ongoing changes is vital for designing responsive, and sustainable adaptation polices and strategies.

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# Paper III

Women and men in pastoral adaptation: Gendered livelihood diversification in Borana, southern Ethiopia

(Submitted to *Journal of Rural Studies*, under review)

**Abstract**

The Borana pastoralists, who are known for their cattle herding, are increasingly engaged in livelihood diversification. This has evolved over time as an adaptation strategy in the context of climate change and other stressors. This study was undertaken in Borana, southern Ethiopia, to understand women's involvement in livelihood diversification, and their gains and losses. The study employed household survey, focus group discussions, key informant interviews and field observations for data collection. Results show that traditional cattle-centred pastoralism has been transforming into more diversified livelihoods, in both pastoral and non-pastoral livelihood activities. Examples of the latter include crop production, animal trade, petty trade, poultry farming, and selling of firewood and charcoal. Although men dominate most of the diversification activities of pastoralism and are more involved in remunerative activities owing to their better economic position, women also play significant roles in petty trade, poultry farming and selling of firewood, which increases women's workload and income, and improves their decision-making power. Moreover, the proactive role played by Borana women in diversification activities highlights women's initiatives in adaptation, and challenges the dominant discourse that focuses on women's vulnerability to environmental changes. Furthermore, a better understanding of the roles women play in diversification enables the use of their knowledge and expertise in designing well-informed policies and strategies.

**Keywords**: Livelihood diversification; gender; adaptation; pastoralist; Borana

## *1. Introduction*

Historically livestock production has been an integral part of pastoral economy in the Horn of Africa. Today, however, many pastoral communities are increasingly diversifying their livelihoods in response to natural and anthropogenic disturbances (Bekele and Amsalu, 2012; Hodgson, 2011; Homewood et al., 2009; McPeak et al., 2012). It has been pointed out that drought is the most important anthropogenic disturbance causing immediate and long-term livelihood crisis in pastoral areas including Borana (Abebe, 2016; Little, 2016; Tache and Oba, 2008). This is forcing many to diversify their livelihoods (Fratkin, 2001; Fratkin and Mearns, 2003) as an adaptation strategy (Adger and Vincent, 2005; Carpenter et al., 2001; Folke, 2006; Norris et al., 2008). It would seem that livelihood diversification has contributed to pastoral survival and adaptation over time.

Nevertheless, in this context the households' ability to diversify livelihoods is determined mainly by differences in resource endowment and entitlement to livelihood capitals (Barrett et al., 2001; Ellis, 2000). Hence, poor people including women find it increasingly difficult to participate actively in the diversification process (Lay et al., 2009). Moreover, as pointed out by several authors, men control pastoral diversification (see Brockington, 2001; Wangui, 2008) owing to their better access to basic resources and opportunities (Smith , 2014). But recent studies have shown that women are also contributing by diversifying their activities in addition to homestead gardening, and that they have become more involved in activities to generate cash income (Babugura, 2010). For instance, the Maasai women of Tanzania (Smith, 2014) and women evicted from Mkomazi Game Reserve, Tanzania (Brockington, 2001) are engaged in selling milk, firewood and herbal medicine. Similar trends were observed among the Rendille women of northern Kenya who are engaged in different non-pastoral activities including wage labour, and the sale of agricultural produce and milk (Fratkin and Smith, 1994).

Nevertheless, as pointed out by Arora-Johnson (2011), the research done so far is silent on the roles women play in shaping adaptation, including their contribution in livelihood diversification. This silence is deep-rooted in the dominant discourses of vulnerability which frame women as 'victims' and 'vulnerable groups' during environmental challenges including droughts (Arora-Jonsson, 2011; Ravera et al., 2016; Tschakert and Machado, 2012). This tendency to frame women as vulnerable, rather than observing them as active agents of adaptation (Agarwal, 1992; Meinzen-Dick et al., 2014; Buechler and Hanson, 2015), made that policy discussions and research concerning the relation between gender and environmental problems to be dominated by this discourse of victimization (Djoudi et al., 2016). Indeed, the current designing of adaptation interventions depends on this partial view of women and ignores their active roles in adaptation (Leach, 1992). Although there is a widely held perception that women may have borne the brunt of recent changes (Denton, 2002; Nelson, 2011) focusing only on this might hide the active roles that women play in adaptation processes and ignore their capabilities, knowledge, and relevant skills (Djoudi and Brockhaus, 2011; Nelson, 2011; Tschakert and Machado, 2012). This simple categorizing of women as vulnerable or victims alone instead of also as active agents of adaptation fails to capture the full picture of existing dynamics (Djoudi et al., 2016).

It is evident that women bear a disproportionate amount of the burden caused by environmental problems like drought, as a result of their traditional roles and structural inequality in accessing resources (Tompkins and Adger, 2004). However, women also play increasingly proactive roles in adaptive activities (Agarwal, 2001), which include diversification (Babugura, 2010), and must be acknowledged. If a policy fails to take these dynamics into account and ignores the contribution of women, it could risk negatively the environment upon which women depend; this may have unfortunate results (Dankelman and Davidson, 1988). There is a need for alternative approaches that examine the dynamic gender differentiated experiences,

activities, rights, and responsibilities for shaping adaptation policies and research. This opens up important opportunities for development analysis and actors, and helps to ensure sustainability and equity in adaptation measures, to unpack the needs and priorities of women and men, and to make use of women's skills and knowledge in building sustainable adaptation measures which are critical in pastoral areas (Eriksen & Marin, 2015). This study uses insights from discourses beyond victimization that focuses on women's abilities and contributions to adaptation (Agarwal, 2001). This uncovers women's economic roles in enhancing adaptation and shaping sustainable uses of available resources (Agarwal, 2001, 2009).

Some scholars have indicated that women, like men, are already developing effective coping strategies (Mitchell et al., 2007). Others such as Nelson (2011), argue that women's unique knowledge and skills, which have been developed through their gender-differentiated roles and responsibilities, are needed for adaptation. We contend that a better understanding of women's contribution to adaptation would enable the use of women's knowledge and expertise in designing well-informed adaptation polices and strategies. In addition, the fact that women and men have different priorities and responses to environmental problems such as droughts (Babugura, 2010) must be acknowledged for designing responsive measures. This requires more local evidence of women's abilities, experiences, and practices.

This study seeks to unpack the adaptive capacity of Borana women with respect to their initiatives and participation in pastoral livelihood diversification under recurrent drought conditions. Borana pastoralists belong to the large Oromo ethnic group who live mainly in Ethiopia. Ethiopia in general, and pastoral areas in particular, are known for climate change induced droughts (Viste et al., 2013). The unpredictable and insufficient rainfall undermines national and local food security and contributes to water scarcity (Eriksen and Marin, 2015). Climate and non-climatic stressors are threatening pastoralism by increasing poverty and

vulnerability in Borana (Anbacha and Kjosavik, unpublished manuscript). Pastoral mobility strategies for drought adaptation and alternative livelihoods are severely constrained by repeated conflicts and loss of rangelands (Tache and Oba, 2008). On the other hand, pastoral settlement programmes backed by government policies have played a vital role in promoting pastoral diversification in Borana (Rahmato, 2008).

Traditionally, Borana pastoralists are known for cattle herding and their entire livelihood has been dependent on cattle economy. However, currently these pastoralists are increasingly diversifying their livelihoods (Tache and Oba, 2008; Abebe, 2016; Bekele and Amsalu, 2012). Although women and men are both involved in the livelihood diversification process, the gendered aspects of pastoral diversification are less researched. Previous studies mainly dealt with the general diversification in responding to pastoral poverty (see for example, Tache and Oba, 2008; Abebe, 2016). In contrast, this study focuses on the gendered aspects of livelihood diversification. Its aim is to investigate the participation of women in pastoral livelihood diversification for drought adaptation. In doing so, the study adds towards filling the existing knowledge gap on pastoral women's abilities, skills and contributions in enhancing adaptation through diversification, in spite of the existing vulnerability context. More specifically, the study examines the historical Borana livelihood, identifies the newly evolved livelihoods in the context of recurrent droughts, participation of women and men in diversification, and implications of diversification for women's workload.

## 2. Methods

### 2.1 Study communities

This study was undertaken in the Borana zone of southern Ethiopia. In 2008, the zone had a total population of 962,489 of whom 487,024 were men and 475, 465 were women (CSA, 2008). The area occupied by these people was originally 95,000 $km^2$. However, following the ethnicity based subdivision of administrative boundaries, it shrank to about 65,000 $km^2$ in 1992 (Abebe, 2016) when part of the Borana area was incorporated into the Somali region of Ethiopia. The Borana zone is characterized by arid and semi-arid environments with 600 mm average annual rainfall (Angassa and Oba, 2007). Drought is a recurrent phenomenon (Bekele and Amsalu, 2012; Helland, 1998). The area is also known for repeated conflicts, some of which are managed locally, while other conflicts result from the current ethnic-based federalism (Tache and Oba, 2008; Eriksen and Marin, 2015).

Although pastoralism is an integral part of Borana economy, many pastoralists are increasingly diversifying their livelihoods in response to surrounding changes (Little, 2016; Tache and Oba, 2008). Diversification by engaging in crop cultivation is increasingly becoming an alternative livelihood activity, shifting the economy from solely pastoralist to agro-pastoralist (Angassa and Oba, 2007). The selection of study communities, known as pastoralist associations (PAs), was informed by this dynamic.

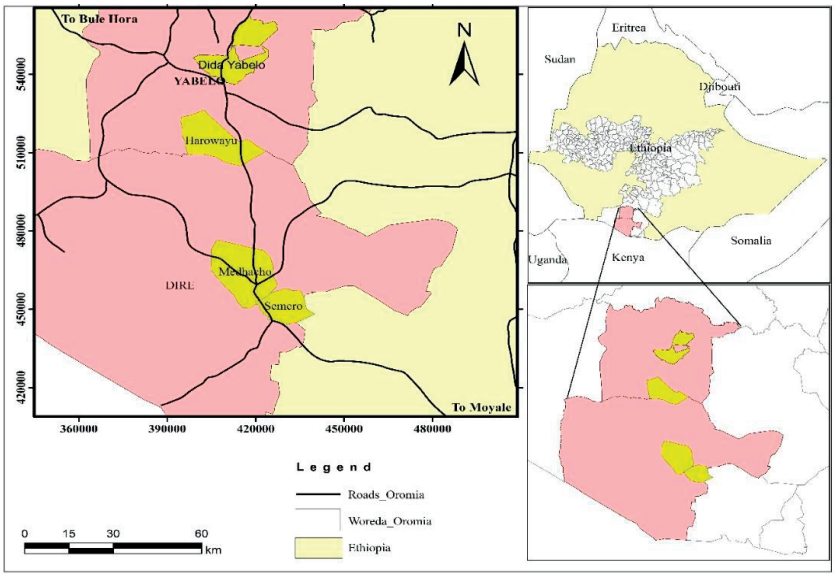


**Figure *1*: Map of Borana zone**

Source: Anbacha & Kjosavik, 2018

## *2.2 Study site selection and data collection methods*

The field research was conducted during 2014–2015. Data was collected using household survey, focus group discussions (FGDs), key informant interviews, and field observations. For the household survey, two districts Yabelo and Dire consisting of pastoral and agro-pastoral PAs were selected from the Borana zone (see Figure 1). The PAs in each selected district were categorized as pastoral and agro-pastoral based on the information from pastoral development offices. From each production system, two PAs were selected to study the gendered aspects of diversification in varying agro-ecologies. From Yabelo district, Harowayu and Dida Yabelo PAs were selected randomly for pastoral and agro-pastoral livelihoods, respectively. Similarly, in Dire district, Samaro PA was selected for pastoral and Madacho for agro-pastoral livelihoods. From each pastoralist association, 60 respondents (30 women and 30 men) were

selected for the survey. The total sample size was 240 with equal numbers of women and men. In addition, wealth was used as one variable for selecting the respondents. For wealth categorization, the traditional wealth ranking system of Borana depending on the number of cattle owned per household, was used. Fewer than five cattle counts as 'poor' (*dega*), five to ten cattle as 'self-sufficient' (*offi-danda'a*), and more than ten cattle as 'rich' (*duressa*). The categorization of households in each PA on the basis of wealth status was done by using information on wealth status from village leaders, community leaders and extension workers. Other resources were not considered in the categorization which could be a limitation. In addition, people of different age groups were included in the study to understand the differences in livelihood diversification activities between different age groups in . The interviews were conducted in the respondents' homes. The first household was selected randomly, followed by every other household. If the required variable was not available in that household, we moved directly to the next household. The general characteristics of the respondents in the survey are summarized in Table 1.

**Table 1:** Characteristics of the respondents

| Respondent category | Participants | Number of respondents |
|---|---|---|
| Predominantly PAs | Harowayu | 60 |
| | Samaro | 60 |
| Agro-PAs | Dida Yabelo | 60 |
| | Madacho | 60 |
| | **Total** | **120** |
| Gender | Female | 120 |
| | Male | 120 |
| | **Total** | **240** |
| Age | Young (18–35years) | 90 |
| | Middle-aged (36–50years) | 110 |
| | Old (above 50 years) | 40 |
| | **Total** | **240** |
| Wealth status | Poor (dega and qole) | 115 |
| | Self-sufficient (middle) | 95 |
| | Rich (duresa*)* | 30 |
| | **Total** | **240** |

Source: Field survey (2014/15)

The interviews were conducted by local field staff, who were trained by the researchers to administer the questionnaire. These field staff were extension workers in the selected PAs. In each PA, one female and one male extension worker was employed to conduct the survey. Female staff interviewed only women respondents to ensure free discussion, while male staff interviewed only male respondents. Data on historical Borana livelihood, alternative livelihoods that had evolved over time, participation of women and men in newly evolved livelihood activities, and the consequences for women in terms of what women gained and lost in the diversification process, was collected from respondents in surveys using structured and

semi-structured questions. These were first prepared in English and then translated into Afan Oromo by the first author, and edited by a local Borana researcher.

In addition, six FGDs were conducted, three in each production system (pastoral Harowayu and agro-pastoral Madacho). All the discussions were facilitated by the first author, guided by prepared checklists. FGDs were conducted separately for women and men (two FGDs for women and two for men), to allow free discussion. In addition, two FGDs were conducted for mixed groups. In each FGD, between nine and twelve individuals participated. These participants had not been included in the survey. Each discussion lasted for two to three hours covering the topics of historical livelihood, important livelihood assets, types of livelihood activities that had evolved over time, women's role and involvement in pastoral diversifications, and women's gains and losses in the diversification discussed.

The selection of key informants was done with the help of extension workers, PA leaders, and local village leaders based on informants' knowledge of the issues under discussion. The following 24 key informants were selected: twelve elderly people (women and men), six local community leaders, four pastoral association leaders, and two persons from the Women's Affairs Office and the Pastoral Development Office. The first author, using checklists, conducted all key informant interviews. The key informants were asked to describe the changes in Borana livelihoods, newly evolved livelihoods and women's and men's participation in these. The elders and community leaders also shared their life histories and experiences of the transformation of pastoral livelihoods.

In order to answer the first question concerning the historical Borana livelihood and its evolution, the selected respondents were individually asked to describe the traditional livelihood and their assets. In the key informant interviews and all FGDs, the participants were asked to list traditional livelihood activities. Next, the respondents were asked to list and

describe major diversified livelihood activities that evolved over time. The same was asked of respondents in FGDs and key informant interviews. For the third question regarding participation/involvement of women and men in the newly evolved livelihood activities, the respondents in the household surveys were simply asked to answer 'yes' if they participated and 'no' if they did not participate. For the comparison of participation according to gender, simple statistical analysis was used. Participants in the key informant interviews and FGDs were also asked about the participation of women and men in the newly evolved livelihood activities, and about factors affecting their participation. In addition, women's gains and losses as they became more involved in the new activities, were discussed. In order to answer this question in the survey, the respondents were asked to specify what women gain and lose as they participate in each diversified activity.

For the data analysis, both quantitative and qualitative methods were used. Data collected from the survey was entered into SPSS software version 22 and run for descriptive statistics for the analysis. For comparing between women and men, a chi-square test was used. In addition, for qualitative data analysis, content analysis was employed to analyse and interpret the information from key informant interviews, FGDs, and observations.

## *3. Results and discussion*

### *3.1 Traditional Borana livelihood*

All survey respondents stated that traditionally, Borana people are pastoralists known for cattle herding, which makes them different from neighbouring Somali and Gari pastoralists (Tache and Oba, 2008). Our findings show that cattle has been the principal livestock to serve as capital, upon which the economic, social, and political identity of every Borana has depended (see also Abebe, 2016). Even today, the number of cattle owned by individuals determines the

wealth status of the household, as confirmed by all the key informants. One of our key informants explained the importance of cattle as follows:

> Cattle is the source of food, cash, and pride. Cattle is part of our culture, there is no culture without cattle. Cattle is involved in all Borana cultural events. Cattle for marriage, for child naming, for reconciliation and *jila* (ceremonies). If you have no cattle, you are not at all Borana – determines your identity [an old woman from Harowayu PA].

In the traditional Borana livelihood, labour is another important asset. As indicated in all FGDs, traditional Borana livelihood depends on family labour from husband, wife, co-wives, and children. All members contribute to the livelihood based on their assigned roles and responsibilities. In the tradition, women and men have distinct roles and responsibilities in which men are responsible for the management of livestock (see also Dahl, 1987) whereas women perform various tasks essential for the maintenance of herds and are solely responsible for the use of animal products such as milk, all milk products and slaughter (see also Anbacha and Kjosavik, 2018).

Traditional Borana livelihood also depended on the availability of natural resources such as water and rangelands as indicated by the discussants. The elders stated that the strong social institutions of Borana ensured efficient use of shared water sources and rangelands, which is similar to previous studies (Tiki et al., 2010; Tache and Espen, 2008). As pointed out in the FGDs, the clan[9] leaders are responsible for the management of the natural resources. In the past, it was common to experience drought once every *gada*[10] period. During the dry seasons, the people move with their animals in search of water and green grass. This is similar to a previous study undertaken in Borana (Wario et al., 2016).

[9] Clan is the social organization by which all Borana people are organized.
[10] *Gada* is a traditional governing system of Oromo people widely practised among the Borana. In this system there is power transfer every eight years (gada period).

In addition to ecological disturbances that resulted from droughts, heavy use of rangelands in certain areas had forced pastoralists move to other areas. Always the movement was well planned, as explained by all key informants and focus group discussants. A selected group of people were sent in advance to the proposed areas to investigate resource availability and capacity of available rangelands and water resources as well as prevalence of livestock diseases. If the conditions were favourable, the elders would go and negotiate with the people in the new area. After making the agreement, the boys and men would move with the animals to the new area, leaving behind the women and the elderly. During pastoral mobility, husbands with the help of the youth move with the animals to peripheral areas, keeping the milking animals around home.

The movement of husbands with the animals meant that women had to assume the responsibilities of their husbands in addition to their gender roles. They would have to take care of milking animals and sick animals left around the home in addition to their traditional roles of cooking, cleaning, care-giving, fetching water, and collecting firewood, which increased their workload. The pastoralists often moved 40 to 45 km away with their animals (Oba, 1998). Most often, the movement would be for a short period, but a permanent move could take place in the case of prolonged drought and conflict. This would give time for the rangelands left behind to regenerate and survive. However, all focus group discussants and key informants confirmed that this mobility was severely constrained by loss of gazing lands to other pastoralists (see also Kefale, 2010; Wario et al., 2016); part of this was allocated to neighbouring pastoralists by the government (see also Tache and Oba, 2009). The resettlement programmes launched by government and repeated conflicts further restricted pastoral mobility, instead paving the way for diversification as indicated in all FGDs. Nevertheless, some were still practising the mobility strategy despite all these problems.

## *3.2 The evolution of Borana livelihoods*

In this study, all survey participants stated that the Borana livelihood had undergone changes owing to increases in droughts. Similarly, qualitative information from key informants and FGDs confirmed that the livelihood was changing as a result of increases in climate and non-climatic stressors affecting traditional livelihood (see also Anbacha and Kjosavik, unpublished manuscript). According to the discussants in all FGDs, drought-induced problems had opened doors for the introduction of non-pastoral livelihood activities. Although drought is a strong factor, the role played by government in pastoral diversification cannot be ignored. The resettlement programme launched by government promoted pastoral livelihood diversification, as pointed out by all the discussants and supported by previous findings (Rahmato, 2008). In addition, during our field work we observed trained extension workers in all PAs helping the settled pastoralists to diversify their economy. As a result, many are participating in livelihood diversification. This is vividly illustrated by the different livelihoods coexisting in Borana.

Figure 2 provides a schematic representation of the evolution of pastoral livelihoods over time in the study area. The traditional cattle-centred pastoralism evolved into cattle plus pastoralism, non-pastoral livelihood, and ex-pastoralism. Borana pastoralists are increasingly diversifying their cattle-centred pastoralism to more drought-resistant breeds of cattle, as well as other animals such as camels, sheep, and goats. Many are also currently engaged in non-pastoral livelihood activities, whereas others totally dropped out of pastoralism and have become ex-pastoralists, which is a complete transformation of the pastoral livelihood. This resulted from devastating droughts in different periods, causing the death of animals and inability to restock.

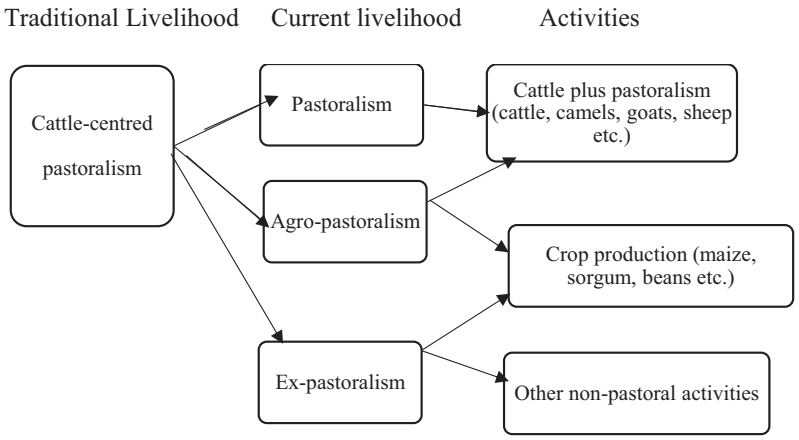


**Figure 2**: Changes in traditional Borana livelihood

Source: Authors' own construction

The ex-pastoralists in Harowayu PA stated that the drought in 2011 was so severe that it destroyed all their livestock and forced them to drop out of pastoralism entirely. These people currently undertake different non-pastoral livelihood activities like crop production, daily wage labour and depend on food aid for survival, as pointed out by all discussants. Around 30% of the poor people who participated in the survey were ex-pastoralists who had lost all their animals. As indicated in all FGDs, this change was involuntary rather than by choice. All these people blamed drought for losing their pastoralist livelihood. An ex-pastoralist who participated in the key informant interview from Harowayu articulated the situation in the following way: 'Drought not only killed my animals but also made me to lose my identity and culture. Pastoralism is our culture. Without livestock, one is no more a pastoralist.'

In general as we categorize diversification in Borana as diversification within pastoralism and also participation in non-pastoral livelihood activities. The major livelihood activities, which

evolved over time, are listed and described in Table 2 below, based on the information from all FGDs and key informant interviews.

**Table 2:** Diversified livelihoods evolved over time

| Diversification Category | Activities | Descriptions |
|---|---|---|
| Pastoralism-related diversification | Introduction of camels & increases in small stock (sheep & goats) | Camels were not part of traditional Borana herds. The people adopted camel herding from neighbouring Gari pastoralists after droughts devastated their cattle production (mentioned by all discussants). However, today the number of camels is increasing. Camel milk and meat is now part of their diet. Similarly, the number of goats and sheep in Borana herds is increasing more than ever before. This is an indication of herd diversification. Women also own these livestock. The increase of sheep and goats in the herd have improved women's access to livestock. |
| | Cross-breeding of cattle | Traditional Borana use their own cattle breed known as Borana breeds, locally termed *qoriti.* Currently the local breed is decreasing in number. People crossbreed with cattle from neighbouring communities Konso, Guji and Gabra. The new breed requires less feed, which motivates pastoralists for cross-breeding. |
| Non-pastoral diversification | Animal trade | Animal trading is also increasing over time. Economically strong people actively participate in this activity. They usually buy animals from local market, feed them well and resell for profit. |
| | Petty trade | Petty trade was not part of Borana livelihood in the past. However, with increases in pastoral change many people, particularly women, participate in petty trade. The commoditization[11] of milk and milk products improved women's participation in this activity. |
| | Crop production | Not only was crop cultivation not a Borana livelihood in the past, but it was also considered an insult and disgraceful practice to Borana culture. The customs of Borana banned crop cultivation and the gada councils would punish individual practices of crop farming. However, the devastating drought that resulted in losses of large livestock populations pushed them to crop cultivation and to bring about changes in their traditional laws *(Aada-seera*)[12]. According to the elders, crop production was officially allowed during the Boru Guyo gada period in 1985–1992. Today every household in all PAs has a small plot of land locally termed *obbru*, |

[11] In the traditional Borana culture selling of milk was not practiced. However of late, selling of milk is a common practice in the area.

[12] *Aada seera* is the customary law of Borana people.

| | | |
|---|---|---|
| | | on which they produce crops. Agro-pastoralists, however, have expanded the crop production activities compared to pastoralists. |
| | Poultry farming | Poultry farming was also taboo in Borana culture. Poultry products were not part of their diet. Later this was introduced as a survival strategy. All discussants in FGDs agreed that the settlement of pastoralists helped them to practise poultry farming. Currently many undertake poultry farming as a source of food and cash. |
| | Charcoal & firewood selling | Charcoal and firewood selling is another activity introduced following pastoral crises. This is a source of income for many poor people, particularly women. This activity has been increasing over time. |
| | Remittances | Family members migrated to town and assist by sending cash or food items to families back home. Remittances are increasing as more pastoralists are educating their children. This has increased their employment opportunities in different organizations. |
| | Child education | Children's education was not common in the past, but has been gradually increasing. The FGDs in Harowayu, especially, agreed that educating children is a good strategy for adaptation. The villagers built a school in Harowayu and hired teachers; this initiative was later expanded by the government. |

Source: Compiled by authors from FGDs, key informant interviews and field observation

## *3.3 Diversification of livelihoods: Gender dimensions*

### *3.3.1 Diversification within pastoralism*

Herd diversification is becoming a prominent strategy of adaptation to droughts in Borana (see also Tache and Oba, 2009). Our study shows that the majority of households (61.5%) own two species (small stock and cattle), and a significant percentage (23.1%) of households own more than three species such as cattle, small stock, and camels in their herds. Only 9% of households own a single species (cattle) in their herd, and 6.5% own small stock, contrary to the traditional cattle-centred pastoralism. The qualitative information from interviews and FGDs supports survey findings, stating the transformation of cattle-based pastoralism to clear diversification of species.

In addition to the herd diversification within pastoralism, cross-breeding is taking place, as pointed out by all FGDs. Participants explained that their local Borana cattle breed of dark grey colour, short horn, large body size with a long neck and dewlap, was now increasingly crossbred with other cattle. Although all FGDs agreed that, the productivity of the local Borana breed is higher and the animals have better market value, they confirmed that people were increasingly cross-breeding with other breeds from neighbouring pastoralists for the very reason that the new breed requires a relatively low amount of feed, while the Borana breed with its large body size requires considerably more feed. The new breed is able to survive, even with poor quality feed during droughts when feed availability is critical, as indicated in the key informant interviews and FGDs. This was attracting many to the practice of diversifying their local breed.

The low feed requirement of the new breed has advantages for women, as they are mainly responsible for ensuring animal feed. On the other hand, all the focus group discussants observed that the low milk productivity of the new breed had diminished household food availability and women's income from the sale of cattle milk. A woman from Samaro PA shared her experiences as follows: 'In the past, I had surplus milk from my Borana cattle, which I could sell. After my husband replaced it with this new breed, the milk is not even enough for our home consumption'.

The introduction of camels to Borana herds is also a vivid example of diversification within pastoralism. Our study confirmed that more men than women participate in camel herding (Table 3). Further analysis shows that participation in camel herding has significant variation in terms of gender and economic status.

**Table 3:** Diversification within pastoralism

| Pastoral diversification | Variables | | Total count | Participation Yes% | No% | Chi-square tests Value | df | Sig. |
|---|---|---|---|---|---|---|---|---|
| Cross-breeding | Sex | Female | 120 | 26 | 74 | 12.817 | 1 | 0.0001 |
| | | Male | 120 | 49 | 51 | | | |
| | **Total** | | **240** | | | | | |
| | Agro-pastoral | Dikale | 60 | 42 | 58 | | | |
| | | Madacho | 60 | 33 | 67 | | | |
| | Pastoral | Harowayu | 60 | 45 | 55 | | | |
| | | Samaro | 60 | 37 | 63 | | | |
| | **Total** | | **240** | | | | | |
| | Age | Young | 90 | 32 | 68 | | | |
| | | Middle-aged | 110 | 37 | 63 | | | |
| | | Old | 40 | 45 | 55 | | | |
| | **Total** | | **240** | | | | | |
| | Wealth | Poor | 115 | 30 | 70 | | | |
| | | Self-sufficient | 95 | 41 | 59 | | | |
| | | Rich | 30 | 46 | 54 | | | |
| | **Total** | | 240 | | | | | |
| Introducing camels | Sex | Female | 120 | 19 | 81 | 15.75 | 1 | 0.0001 |
| | | Male | 120 | 44 | 56 | | | |
| | **Total** | | **240** | | | | | |
| | Agro-pastoral | Dikale | 60 | 38 | 62 | | | |
| | | Madacho | 60 | 25 | 75 | | | |
| | Pastoral | Harowayu | 60 | 30 | 70 | | | |
| | | Samaro | 60 | 33 | 67 | | | |
| | **Total** | | **240** | | | | | |
| | Age | Young | 90 | 24 | 76 | | | |
| | | Middle-aged | 110 | 35 | 65 | | | |
| | | Old | 40 | 30 | 70 | | | |
| | **Total** | | **240** | | | | | |
| | Wealth | Poor | 115 | 9 | 91 | | | |
| | | Self-sufficient | 95 | 51 | 49 | 22.799 | 2 | 0.0001 |
| | | Rich | 30 | 50 | 50 | | | |
| | **Total** | | **240** | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sex | Female | 120 | 38 | 62 | 5.477 | 1 | 0.014 |
| | | Male | 120 | 53 | 47 | | | |
| | **Total** | | **240** | | | | | |
| | Agro-pastoral | Dikale | 60 | 33 | 67 | | | |
| | | Madacho | 60 | 53 | 47 | | | |
| | Pastoral | Harowayu | 60 | 52 | 48 | | | |
| | | Samaro | 60 | 43 | 57 | | | |
| Increasing goats and sheep | **Total** | | **240** | | | | | |
| | Age | Young | 90 | 44 | 56 | | | |
| | | Middle-aged | 110 | 52 | 48 | 8.14 | 2 | 0.13 |
| | | Old | 40 | 25 | 75 | | | |
| | **Total** | | **240** | | | | | |
| | Wealth | Poor | 115 | 35 | 65 | | | |
| | | Self-sufficient | 95 | 78 | 22 | 44.453 | 2 | 0.0001 |
| | | Rich | 30 | 60 | 40 | | | |
| | **Total** | | **240** | | | | | |

Source: Survey data (2014/15)

The low economic status of women and the poor limits their participation in camel herding. The introduction of camels to Borana herds has increased the milk availability of Borana households, which had been reduced due to cross-breeding of cattle (see also Boku and Tache, 2008). In the present study, we were not able to make an assessment of the relative contribution of camel's milk vis-à-vis the reduction of cattle milk caused by cross-breeding. As pointed out in women's FGDs, women are selling some of this milk which contributes to their income. Increased milk availability, which is the main source of Borana food, has a positive impact on food access, which is again the main priority area of women. This has reduced to some extent the worries of women concerning household food shortage as noted in women's FGDs.

The increases of goats and sheep in Borana herds has improved women's access to live animals, as confirmed in all FGDs. This study revealed that relatively more women are participating in herding small stock (see Table 3). Participants in women's FGDs added that currently, some women own goats and sheep from small credits they had received from NGOs. A study

undertaken in the Sahel reported that women had diversified their herds to include small ruminants (Turner, 1999).

Diversification within pastoralism is regarded as one of the most profitable activities in which almost all pastoralists were interested in taking part, as stated by all key informants and FGDs. This is an aspect of the traditional livelihood, which can easily be developed if a minimum of attention is given. However, diversification within pastoralism is mainly dominated by men, while women are attempting to become involved, with the help of government and NGOs as indicated in all women's FGDs. In other words, men usually took the prime responsibility, as mentioned in all FGDs as well as key informant interviews. In the same manner, the survey results show a high participation of men and low participation of women (Table 3). This is similar to a study undertaken in the Somali region of Ethiopia where high status activities such as animal-rearing and trading were reserved for men, and women focused on low status activities (Devereux, 2006). The marginalization of women in this activity is evident in the provocative question posed by a woman from Dida Yabelo: '*Dubartii maltu gafata?*' which means: Who is going to include women in decisions regarding animal-breeding? According to all women discussants in the focus groups, men usually make such decisions and women are excluded. However, the male key informants and the men's FGDs expressed the opinion that women are involved in animal breeding. The demanding nature of the activity in terms of capital required, hinders the participation of the poor, such as women. This means that diversification within pastoralism is strongly influenced by wealth status and gender, being dominated by men, particularly the well-to-do (Table 3). Previous studies have shown similar trends (Smith et al., 2001; Wangui, 2008).

### *3.3.2 Gendered diversification in non-pastoral livelihoods*

As we have noted above, the diversification process in non-pastoral activities is not gender neutral. Women and men generally engage in these activities based on their assigned gender roles and responsibilities. However, given that pastoralism is under severe stress, women and men undertake livelihood activities that fall outside their customary domain as well. Below, we discuss in detail women's participation in the diversified activities, and their gains and losses in each diversification activity.

**Women's participation in crop production**

Although crop farming had been considered a disgraceful activity in Borana culture (see also Tache and Oba, 2008), our study shows that it has become a prominent activity which is currently shifting the livelihood from pastoralism to agro-pastoralism. Information from key informants and all FGDs revealed that government of Ethiopia has in different periods, promoted crop production. However, the Borana began to engage in this activity rather recently as a survival mechanism from the impacts of devastating droughts, as indicated particularly in the FGDs undertaken in Harowayu PA. They started crop farming after a discussion in the *kora* (cultural meeting) and came to a consensus that it is essential to ensure survival.

Regardless of location, gender, age, and wealth status, many pastoralists are participating in crop cultivation (see Table 4). The survey results show that participation in crop farming of women (89.2%) is higher than that of men (86.7%), though the difference is not significant.

**Table 4: Participation in crop production**

| Participants | | Total count | Yes | | No | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | % | Count | % | Total % | Value | Df | Sig. |
| Sex | Female | 120 | 107 | 89.2 | 13 | 10.8 | 100 | | | |
| | Male | 120 | 104 | 86.7 | 16 | 13.3 | 100 | | | |
| | **Total** | **240** | **211** | **87.9** | **29** | **12.1** | **100** | | | |
| PA | Harowayu | 60 | 49 | 81.7 | 11 | 18.3 | 100 | 11.727 | 3 | 0.008 |
| Pastoral | Samaro | 60 | 48 | 80.0 | 12 | 20.0 | 100 | | | |
| | Madacho | 60 | 58 | 96.7 | 2 | 3.3 | 100 | | | |
| Agro-pastoral | Dida Yabelo | 60 | 56 | 93.3 | 4 | 6.7 | 100 | | | |
| | **Total** | **240** | **211** | **87.9** | **29** | **12.1** | **100** | | | |
| Age | Young | 90 | 85 | 94.4 | 5 | 5.6 | 100 | 35.351 | 2 | 0.0001 |
| | Middle-aged | 110 | 102 | 92.7 | 8 | 7.3 | 100 | | | |
| | Old | 40 | 24 | 60.0 | 16 | 40.0 | 100 | | | |
| | **Total** | **240** | **211** | **87.9** | **29** | **12.1** | **100** | | | |
| Wealth status | Poor | 115 | 103 | 89.6 | 12 | 10.4 | 100 | | | |
| | Self-sufficient | 95 | 83 | 87.4 | 12 | 12.6 | 100 | | | |
| | Rich | 30 | 25 | 83.3 | 5 | 16.7 | 100 | | | |
| | **Total** | **240** | **211** | **87.9** | **29** | **12.1** | **100** | | | |

Source: Survey data (2014/15)

Although the qualitative information from all discussants suggests that every Borana household has a small plot of land on which they produce crops, the survey data shows that 10.8% of women and 13.3% of men are not involved in crop production (Table 4). It could be that some households do not consider this small production as active engagement in crop farming. Some of those who answered 'no' are people who are elderly and hence unable to practise farming which requires physical strength; others are very poor and unable even to buy seeds, and some are not interested in farming and want to just focus on their pastoral activities. With regard to livelihood bases, agro-PAs are more involved than pastoral communities in crop production. For instance, the agro-pastoralist communities Dida Yabelo and Madacho have 93.3% and 96.7% participation in crop production respectively, as compared to the predominantly

pastoralist communities of Harowayu (81.7%) and Samaro (80.0%). Our study also indicates an inverse relationship between age and participation in crop cultivation: the higher the age, the lower the participation. This could be a reflection of the high-energy demand of the activity, and the traditional attitude to crop farming harboured by the older age group, that it is humiliating.

Contrary to the survey results, information in key informant interviews and FGDs suggested that women dominate most of the crop farming activities except ploughing, which is traditionally a male activity. In Borana tradition, women are not allowed to undertake this activity; instead, they are responsible for clearing land, planting, weeding, harvesting, transporting and storing, as pointed out in all FGDs. This shows that the bulk of the agricultural activities are undertaken by women compared to men. Moreover, according to all informants and discussants, women's tasks in crop production increase during drought periods when men have to move from place to place with their animals looking for water and greener pastures. The following statement by a middle-aged man in Madachao is representative of women's work burden in agriculture:

> My wife does the land clearing, weeding and harvesting. She also transports the crop produced by carrying it on her back. I am a man and cannot carry on my back. It is not our culture. Therefore, it is true, most of the farming activities are undertaken by women

The active participation of women in many of the crop cultivation activities has substantially increased their workloads, as indicated in all women's FGDs (see also Haile, 2008). It would seem that women who are already busy with fulfilling traditional roles have now added responsibilities as they have to bear the bulk of the burden in crop production as well. An often repeated statement in women's FGDs in Harowayu was '*Wanti hundi matuma dubarti irra*' which means everything is on the shoulders of women.

The findings in Table 4 support qualitative information that crop cultivation, especially in a good season, has improved households' food security. Women have also better decision-making power over crops produced, as pointed out in all FGDs. Moreover, crop residues used for animal feed reduced women's burden of searching for and collecting feed during the dry season. Nevertheless, crop cultivation in the face of increased rainfall variability and drought has resulted in crop failures (see also Eriksen and Marin, 2011) after consuming much of women and men's energy and time, as indicated in all FGDs. Similarly during our field work we observed several fields where crops were destroyed due to drought. See Figure 3 which shows the picture of a maize field destroyed by lack of rain. The women in the field told us that all their efforts on the maize ended in zero benefits. This is illustrated in Figure 3.

**Figure 3:** Shortage of rains on a maize field in Madacho
Source: Authors' photograph 2015

**From herding to trading: the Borana in animal trade**

The Borana pastoralists in our study area are increasingly engaging in animal trade as a livelihood activity. Mega and Dubuluki are two known animal market centres located in Dire district. From the key informant interviews and group discussions, it emerged that large numbers of animals are marketed and transported every market day. Despite seasonal

fluctuations in prices, on the whole, animal prices have been increasing, as indicated by all the discussants. Therefore, animal trade is one of the most remunerative diversification activities. However, not all pastoralists are able to engage in this activity. Both gender and wealth status play a role in who is able to undertake animal trading (see Table 5). The survey result shows that more men (35.8%) participate in animal trade compared to women (9.2%), showing significant variation at ($p < 0.0001$, $x2 = 24.47$, $df = 1$) (Table 5). This finding is similar to findings in a study undertaken in Kenya among Turkana pastoralists (Watson and Binsbergen, 2008).

**Table 5: Participation in animal trade**

| Participants | | YES | | | NO | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total count | Count | % | Count | % | Total | Value | Df | Sig. |
| Sex | Female | 120 | 11 | 9.2 | 109 | 90.8 | 100 | 24.47 | 1 | 0.0001* |
| | Male | 120 | 43 | 35.8 | 77 | 64.2 | 100 | | | |
| | **Total** | **240** | **54** | **22.5** | **186** | **77.5** | **100** | | | |
| Agro-pastoral | Dida Yabelo | 60 | 10 | 16.7 | 50 | 83.3 | 100 | 3.536 | 3 | |
| | Madacho | 60 | 17 | 28.3 | 43 | 71.7 | 100 | | | |
| Pastoral | Samaro | 60 | 11 | 18.3 | 49 | 81.7 | 100 | | | |
| | Harowayu | 60 | 16 | 26.7 | 44 | 73.3 | 100 | | | |
| | **Total** | **240** | **54** | **22.5** | **186** | **77.5** | **100** | | | |
| Age | Young | 90 | 21 | 23.3 | 69 | 76.7 | 100 | 1.59 | 2 | |
| | Middle-aged | 110 | 27 | 24.5 | 83 | 75.5 | 100 | | | |
| | Old | 40 | 6 | 15 | 34 | 85 | 100 | | | |
| | **Total** | **240** | **54** | **22.5** | **186** | **77.5** | **100** | | | |
| Wealth status | Poor | 115 | 1 | 0.9 | 114 | 99.1 | 100 | 85.83 | 2 | 0.0001* |
| | Self-sufficient | 95 | 30 | 31.6 | 65 | 68.4 | 100 | | | |
| | Rich | 30 | 23 | 76.7 | 7 | 23.3 | 100 | | | |
| | **Total** | **240** | **54** | **22.5** | **186** | **77.5** | **100** | | | |

Source: Survey data (2014/15)

Economic status is another strong determinant of participation in animal trade. This study shows a positive relation between wealth status and animal trading, in that the higher the wealth status, the higher the participation in animal trade. As pointed out in previous studies, rural

livelihood diversification depends on wealth status of the households (Brockington, 2001; Little et al., 2001). More specifically, in this study there is a significant variation in participation (at $p < 0.0001$, $x2 = 85.83$, $df = 2$) between households of different economic standing (Table 5). This shows that economically strong men dominate trade in animals, because their better economic situation gives them the capacity to invest in this profitable activity.

Similar to survey results, information from FGDs and key informant interviews reflected a low participation of women in animal trading. Participants explained that only recently a few women had started to participate in this activity using small credits they received from NGOs, to purchase sheep and goats in Harowayu PA. According to the women discussants, the low participation of women in animal trading can be traced back to the inequality between women and men's access to live animals. Ownership of live animals was vested with men, which prohibited women from owning them (Anbacha and Kjosavik, unpublished; Dahl, 1979). Lack of access to financial capital and adverse gender norms tend to exclude women from engaging in animal trading activities (see also Eriksen et al., 2005; Terry, 2009). The low participation of women in such remunerative activities has negative impacts on women's agency and economic empowerment. On the other hand, even the participation of the household in animal trade comes with added responsibility for women as it increases their workload in providing feed for these animals, as indicated in women's FGDs.

**Petty trade: women's domain?**

The survey results show that gender, age, and wealth status are important factors determining participation in petty trade (see Table 6). In our sample, 42.5% of women were engaged in petty trade whereas the figure was nearly halved (22.5%) for men (Table 6). This is similar to

results of a study undertaken among Turkana pastoralists in Kenya which indicated the domination of women in petty trade (Watson and Binsbergen, 2008).

**Table 6:** Participation in petty trade

| Participants | | Total count | Participation in Petty trade | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Yes | | No | | Total % | Chi-square | | |
| | | | Count | % | Count | % | | Value | df | Sig. |
| Sex | Female | 120 | 51 | 42.5 | 69 | 57.5 | 100 | 10.94 | 1 | 0.001* |
| | Male | 120 | 27 | 22.5 | 93 | 77.5 | 100 | | | |
| | **Total** | **240** | **78** | **32.5** | **162** | **67.5** | **100** | | | |
| Agro-pastoral | Dida Yabelo | 60 | 16 | 26.7 | 44 | 73.3 | 100 | 4.634 | 3 | |
| | Madacho | 60 | 26 | 43.3 | 34 | 56.7 | 100 | | | |
| Pastoral | Samaro | 60 | 19 | 31.7 | 41 | 68.3 | 100 | | | |
| | Harowayu | 60 | 17 | 28.3 | 43 | 71.7 | 100 | | | |
| | **Total** | **240** | **78** | **32.5** | **162** | **67.5** | **100** | | | |
| Age | Young | 90 | 24 | 26.7 | 66 | 73.3 | 100 | 13.199 | 2 | 0.001* |
| | Middle-aged | 110 | 48 | 43.6 | 62 | 56.4 | 100 | | | |
| | Old | 40 | 6 | 15.0 | 34 | 85.0 | 100 | | | |
| | **Total** | **240** | **78** | **32.5** | **162** | **67.5** | **100** | | | |
| Wealth status | Poor | 115 | 17 | 14.8 | 98 | 85.2 | 100 | 33.852 | 2 | 0.0001* |
| | Self-sufficient | 95 | 43 | 45.3 | 52 | 54.7 | 100 | | | |
| | Rich | 30 | 18 | 60.0 | 12 | 40.0 | 100 | | | |
| | **Total** | **240** | **78** | **32.5** | **162** | **67.5** | **100** | | | |

Source: Survey data (2014/15)

In terms of age, the highest percentage of participants in petty trade were middle-aged people (43.6%), followed by the youth (26.7%) and a low participation of elderly people (15%). Further analysis indicates significant variation (at $p < 0.001$, $x2 = 13.199$, $df = 2$) between different age groups (Table 6). Similarly, in the wealth category, rich people had the highest participation (60%) in petty trade, whereas it was lowest for the poor (14.8%). This could be because the rich have access to initial working capital while the poor do not.

The qualitative information from FGDs and key informant interviews support the finding that there is a relatively high participation of women in petty trade. Women have increasingly

turned to this activity as more and more men lose their cattle to droughts. This has the effect of making women co-breadwinners, posing new activities and challenges, which force women to leave their huts in search of food and other basic needs (see also Haile, 2008). This has improved women's access to cash more than ever before. Although the participation of women in petty trade has obviously increased their workload, this is gradually challenging the existing gender roles and women are negotiating for change in gender relations (see also Anbacha and Kjosavik, unpublished manuscript).

On the other hand, participation of women in petty trade is also creating gender conflicts within their households, as commented on by the women's FGD in Madacho. Women stated that men were not happy when their wives participated in petty trade. Some women were even beaten up and warned by their husbands to stop trading. However, gradually the men began to accept the situation when they realized the benefits to their households. A middle-aged woman in Harowayu PA related her experiences:

> I have a small shop. I sell sugar, salt, tealeaves and soap here in my area. When I started this business using the credit I got from Hunde [an NGO working in Harowayu], my husband was not happy. He beat me. He also warned me many times to stop. However, I refused and told him that I will stop only when I die. For me it is better to die while we still have something to eat than die from lack of food. My husband is not a bad man but he fears others who question him about his lack of control over me. After a while, I started to earn income, I bought food items and other things needed in the house. Earlier I depended on him for everything, even for salt. Today I cover most of the expenses and ensure the things we need in our house. I bought sheep and goats to add to our herd. My husband now supports and encourages me. I have some cash, which I can use for the things I need. Now it is impossible for me to stop even if things go back to normal. I encourage other women to follow my footsteps.

One of the reasons for the high participation of women in petty trade is linked to the current commercialization of milk and milk products in the area. Marketing of milk and milk products

is the domain of women, and men usually do not participate in this activity. During our field visits in the study area, we could observe that women were involved in selling milk (see Figure 4).

**Figure 4: Women selling milk**

Source: Authors' photographs December 2014

A study of Masaai women in Tanzania reported that the women are increasingly engaged in selling milk (Smith, 2015). Women use the cash generated to purchase food and other items needed in their households. Their engagement in petty trade, including selling milk, has increased their workload. However, these women are much happier than those who are not involved in trading, according to all women's FGDs. All discussants stated that households where women participate in petty trade are also adapting much more successfully to drought problems.

Poultry farming

Gender and economic status were found to be determinant factors influencing participation in poultry farming, while livelihood bases and age groups did not show significant variation (see

Table 7). The survey results showed that more women (53.3%) are involved in poultry farming than men (23.3%). Referring to Table 7, further analysis indicates that there is significant variation (at $p < 0.0001$, $x2 = 15.522$, $df = 1$).

Table 7: Participation in poultry farming

| Participants | | Total count | Yes | | No | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | % | Count | % | Total % | Value | df | Sig. |
| Sex | Female | 120 | 64 | 53.3 | 56 | 46.7 | 100 | 15.522 | 1 | 0.0001 |
| | Male | 120 | 34 | 28.3 | 86 | 71.7 | 100 | | | |
| | **Total** | **240** | **98** | **40.8** | **142** | **59.2** | **100** | | | |
| Agro-pastoral | Dida Yabelo | 60 | 24 | 40 | 36 | 60.0 | 100 | 0.887 | 3 | |
| | Madacho | 60 | 25 | 41.7 | 35 | 58.3 | 100 | | | |
| Pastoral | Samaro | 60 | 22 | 36.7 | 38 | 63.3 | 100 | | | |
| | Harowayu | 60 | 27 | 45.0 | 33 | 55 | 100 | | | |
| | **Total** | **240** | **98** | **40.8** | **142** | **59.2** | **100** | | | |
| Age | Young | 90 | 40 | 44.4 | 50 | 55.6 | 100 | 1.683 | 2 | |
| | Middle-aged | 110 | 40 | 36.4 | 70 | 63.6 | 100 | | | |
| | Old | 40 | 18 | 45.0 | 22 | 55.0 | 100 | | | |
| | **Total** | **240** | **98** | **40.8** | **142** | **59.2** | **100** | | | |
| Wealth status | Poor | 115 | 61 | 53.0 | 54 | 47.0 | 100 | 14.267 | 2 | .001 |
| | Self-sufficient | 95 | 30 | 31.6 | 65 | 68.4 | 100 | | | |
| | Rich | 30 | 7 | 23.3 | 23 | 76.7 | 100 | | | |
| | **Total** | **240** | **98** | **40.8** | **142** | **59.2** | **100** | | | |

Source: Survey data (2014/2015)

The qualitative information from key informant interviews and FGDs concurs with the survey results that more women are involved in poultry farming than men. This could be because poultry farming is undertaken around the homestead, which makes it easier for women to manage. Women's engagement in this activity has contributed to improving household food security, which is the primary concern of women. A young woman in Harowayu PA taking part in the FGD stated the following regarding participation of women in poultry production:

> In the past, we did not know anything about poultry. We never used poultry products in our food. Today we are eating it and giving to our children. This adds variety to our diets. We are getting income from selling eggs and the chicken to buy the things needed in my household. In the past, we did not know the importance of poultry.

Our study showed an inverse relation between participation in poultry farming and the wealth status of the households. Poor households participate far more than rich households (see Table 7) and the variation is statistically significant. This could be a consequence of lack of interest in such non-traditional livelihood activities by the rich. Alternatively, the low capital requirement of poultry farming has opened a door for the poor and women to participate.

**Participation in firewood and charcoal selling**

Borana pastoralists are increasingly engaged in firewood and charcoal selling as a strategy for survival, as indicated in the survey. Participation in firewood selling varies significantly (at $p < 0.0001$, $x2 = 13.566$, $df = 1$) between women and men (Table 8). Our study shows that women are actively participating in firewood selling. This is similar to the findings from a study undertaken among the neighbouring Somali pastoralists (Haile, 2008). This could be because of traditional gender-based division of labour that assigns women the task of collecting firewood. On the other hand, there is a higher participation of men than women in charcoal selling. However, the variation is not statistically significant.

**Table 8: Participation of women and men in firewood and charcoal selling**

| Respondent category | Total count | Yes % | No % | Total | Value | df | Sig. |
|---|---|---|---|---|---|---|---|
| **Sex** | | | | | | | |
| Female | 109 | 43.0 | 57.0 | 100 | | | |
| Male | 105 | 28.0 | 72.0 | 100 | 5.611[a] | 1 | 0.018 |
| Missing | 26 | | | | | | |
| Total | 240 | | | | | | |
| **Wealth** | | | | | | | |
| Poor | 82 | 57.0 | 43.0 | 100 | | | |
| Self-sufficient | 101 | 24.0 | 76.0 | 100 | 29.135[a] | 2 | 0.000 |
| Rich | 29 | 4.0 | 86.0 | 100 | | | |
| Missing | 28 | | | | | | |
| Total | 240 | | | | | | |
| **Age** | | | | | | | |
| Young | 72 | 37.5 | 62.5 | 100 | | | |
| Middle | 104 | 35.5 | 63.5 | 100 | 33.64 | 2 | 0.0001 |
| Old | 34 | 32.3 | 67.7 | 100 | | | |
| Missing | 30 | | | | | | |
| Total | 240 | | | | | | |

**Source: Survey data (2014/15)**

The participation of women in this activity has increased their workload, since the recurring droughts limit the availability of firewood. All the discussants indicated that firewood collection and selling is a labour-intensive and time-consuming activity in the face of droughts. The economic status of households and the age of the respondents are important factors in determining participation in firewood and charcoal selling. Participation of people of differing wealth indicated significant variation (at $p < 0.0001$, $x2 = 83.134$, $df = 2$) in which poor people participate more than wealthy people. Similarly, increases in age decrease participation in firewood selling. This shows an inverse relationship between wealth status, age differences and participation in this activity, whereas different production systems do not show significant variation in participation in firewood selling. Young people participate more than elderly people, probably owing to the demanding nature of the activity in the face of droughts. During

dry season, collection of firewood requires more time and energy (see also Mamo, 2007). Women who collect firewood to sell are prepared to trudge long distances and invest much time and energy in this activity as it provides them with some additional income.

It was also mentioned in the interviews and FGDs that young poor people actively participate in firewood and charcoal selling. The income from firewood and charcoal sales has helped them to buy basic necessities including food items. A woman from Harowayu stated that she is using the money from selling charcoal to buy salt, grains, and other food items needed in the household. Previous studies have reported that cash from the sale of firewood has helped dispossessed women pastoralists in Tanzania to meet their daily needs (Brockington, 2001). However, these activities bear low returns as compared to the time and efforts made, as indicated in all FGDs. Previous studies on East African pastoralists have also reported similar findings (Little et al., 2009; Little et al., 2001).

## 4. Conclusion

This paper aimed to investigate gendered dimensions of livelihood diversification as adaptation strategy in Borana, southern Ethiopia. The study was carried out in four PAs engaged in pastoral and agro-pastoral production systems. In addition to livelihood bases, gender, wealth, and age categories were used to investigate the historical Borana livelihood, alternative livelihood activities which have evolved over time, participation of women and men in the newly developed livelihood activities, and what women have gained or lost in the diversification process. The results show that cattle-centred pastoralism is the traditional livelihood of Borana people. Although pastoralism still dominates, different livelihood activities have developed over time as adaptation strategies to droughts and other stressors. The newly evolved livelihood diversification is rooted both within pastoralism itself and also involves participation in non-pastoral livelihood activities. The former is achieved through cross-breeding as well as increasing the diversity of species of livestock in Borana herds (herd diversification). Our study shows that pastoralists are increasingly diversifying their herds to include more drought-resistant varieties such as camels, sheep, and goats. Although men dominate diversification in pastoralism owing to their strong economic position in accessing live animals, women are playing a vital role in increasing the number of goats and sheep in the herd. Moreover, the increase in animal diversity is improving milk availability that contributes to food availability in the household. However, this has clearly increased women's workload in search of feed for animals.

Diversification of non-pastoral livelihood activities such as crop production, animal trade, petty trade, poultry farming, charcoal and firewood selling is increasing in the study area. Although both women and men participate in non-pastoral livelihood diversification, men dominate the more remunerative activities like animal trade, which is also linked to their better access to

livestock and capital. Nevertheless, Borana women are playing vital roles in petty trade, crop production, poultry farming, and sale of firewood and charcoal. The already overworked women in traditional roles are bearing an added work burden as they increasingly participate in these new activities, but their access to income and food has increased as a result of this diversification. The active participation of women in livelihood diversification illustrates the proactive roles that women play in adaptation, by going beyond the constraints imposed by the customary gender norms. This study highlights pastoral women's agency in adaptation practices, and challenges the discourse that frames women as mere victims and/or vulnerable groups. A better understanding of women's ability and contributions to adaptation is vital for designing gender-sensitive adaptation polices and strategies that address the needs and priorities of both women and men. It also enables the use of the knowledge and skills women have developed through their experiences in adaptation efforts.

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# Paper IV

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Pastoralism: Research, Policy and Practice

RESEARCH Open Access

# Borana women's indigenous social network-*marro* in building household food security: Case study from Ethiopia

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**Abstract**

Pastoralist societies, including Borana, are known for their strong social networks, which provide social- and livelihood-related functions. This paper explores the role of *marro* - women's social security network in accessing resources to overcome household food security in Borana, southern Ethiopia. The paper investigates types of resources shared and the role of shared resources in augmenting household food security. The study employed individual interviews, group interviews, focus group discussions and field observations to generate data among two communities engaged in pastoral and agro-pastoral production systems. Results show *marro* is a voluntary social support network between friends, neighbours and families in which all women participate, regardless of livelihood bases, economic status and age differences. The majority of women use *marro* when need arises, while a significant number of poor and elderly women depend on it for daily survival. *Marro* relations resemble both bonding and bridging networks in which resources are mobilized and shared between neighbouring and far-distant households respectively. In both bonding and bridging *marro*, women share resources such as food items, labour and cash on the basis of trust and solidarity. The primary aim of the shared resources is to overcome household food shortages that increase during drought. However, increases in drought combined with lack of proper external support are limiting the scope of *marro* in building household food security by limiting the availability of resources and increasing the number of poor people demanding help that need serious attention. The findings of this study add knowledge on the role of social security networks in improving household food security that must be taken into consideration for designing responsive and sustainable food security programmes and projects in pastoral areas in general and Borana in particular.

**Keywords:** Social network, *Marro*, Women, Food security, Borana, Ethiopia

## Introduction

People in traditional societies practise different types of informal social support institutions for survival. For example, peasants have a strong belief in the right to subsistence security which is maintained through social networks of reciprocity (Scott 1976). As communities living with livelihood uncertainties, pastoralists engage in mutual assistance through various forms of social networks (Dahl and Hjort 1979). The term 'social capital' is often used in literature to describe such social relations. Social capital encompasses social networks, norms and trust that enable members to act together to achieve shared objectives (Putnam 1993).

The literature on social capital has classified social networks derived from reciprocity into two categories: bonding social capital and bridging social capital (Putnam 2000; Woolcock 2001). Bonding is an intra-community relation among defined socioeconomic groups based on kinship and friendship, whereas bridging is an inter-community relation between people of different identities but having common aims (Brunie 2009; Pelling and High 2005; Putnam 2000). Bridging ties enable the sharing of resources and opportunities in one network with members in other networks (Granovetter 1973). Bonding creates strong, dense network structures, involves strong social norms and develops localized trust between

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members (Newman and Dale 2005). Both social bonding and bridging improve social wellbeing by establishing fundamental trust between groups (Aldrich et al. 2016) which largely represent a social insurance system against risks (Aktipis et al. 2011).

Such networks are widely practised by pastoralist and agro-pastoralist societies in East Africa. A few among many of these networks are the age-based resource distribution known as Rendille in north Kenya (Sato 1984, 1997), Mutual Help of Maasai of Tanzania (Gray and Mueller 2012; Potkanski 1999), the Stock Friend network of Turkana (Vries et al. 2006) and Kinship Support *busa-gonfa*[1] of Borana (Tache and Sjaastad 2008). The primary aim of these social security networks is to overcome household food shortage, alleviate food insecurity and smooth consumption (Aktipis et al. 2011; Stavropoulou et al. 2017). Other functions of social networks are to reduce hunger and meet other basic needs (Platteau 1991) through goods exchanged (Aktipis et al. 2011; Johnson 1999; Kazianga and Udry 2006; Stavropoulou et al. 2017). More specifically, the food-sharing culture among pastoralist women is to overcome household food shortages (Stavropoulou et al. 2017). In addition, women's networks increase their access to resources and reduce the existing gender gap (Khalif 2010). In general, the stock of social networks, including that of women, determines the degree to which vulnerability is reduced, including household food shortage, and opportunies appear in the community (Moser 1998).

Despite the significance of the social security networks in improving household food shortage and ensuring survival, they largely remained invisible in formal policy and programmes towards building food security and reducing poverty (Agrawal et al. 2009; Devereux and Getu 2013), owing partly to limited studies available on the role of the networks. However, it is impossible to understand food security and vulnerability in isolation of the cultural context of the daily experiences of women and men in building household food security (Tolossa 2009). Moreover, better understanding of the networks enables design of formal programmes on the basis of local understandings that in turn build trust and meet the needs and priorities of women and men. In the same manner, due attention can make the networks evolve that in turn builds strong communities (Moser 1998). Therefore, by focusing on Borana women's social network, this study aims to fill a knowledge gap on the role of social networks, particularly that of women, in building household food security.

Borana people are one of the well-known pastoralist groups living in southern Ethiopia and northern Kenya. They belong to the Oromo ethnic group that largely lives in Ethiopia. They speak Afan Oromo,[2] a language belonging to the Cushitic family. Borana people's culture is constructed around complex social networks that serve both social- and livelihood-related functions. The social networks help Borana to share available resources including food items and other resources to ensure survival during hard times (Oba 2001; Tache and Sjaastad 2008; Tiki et al. 2010). Some of the networks among the Borana are gender-specific; exclusively for women, like *marro* (Tache and Sjaastad 2008). However, the role of the networks, including that of women, has not got enough attention and is even ignored in formal food security programmes and other development projects operating in the Borana area. Thus, this study aims to investigate the role of *marro* - women's social security network - in accessing livelihood resources for building household food security. Particularly, the study aims to answer first, the nature and frequency of women's participation in *marro*; second, types of resources shared in *marro* and third, the role of shared resources in building household food security. For the study, both pastoral and agro-pastoral production systems were examined to understand how the bonding and the bridging networks of *marro* function to build household food security.

## Study area

The Borana Oromo ethnic group lives in northern Kenya and southern Ethiopia. This study was undertaken in the Borana zone of southern Ethiopia (Figure 1). Borana zone is generally characterized as arid and semi-arid with fluctuating climatic conditions and mean annual rainfall between 400 and 600 mm (Coppock 1994). Pastoralism is the main livelihood, and the people are generally referred as cattle herders, and also they keep sheep, goats and camels (Bassi and Tache 2007; Tiki et al. 2010).

Though the Borana system was once viewed as the most sustainable type of pastoralism, currently, it is under increased vulnerability (Desta and Coppock 2004) resulting from recurring droughts as well as socio-economic and political factors. The people are known for their strong social security networks of helping each other during hard times including droughts (Tache and Sjaastad 2008). In addition, to overcome climate and non-climate stressors, Borana pastoralists are increasingly diversifying their livelihoods (Abebe 2016; Hertkorn et al. 2015; Tache and Oba 2008). The diversified livelihoods shift the economy from pastoral towards agro-pastoral production. However, in other areas of the zone, some of the communities are still predominantly pastoralist. Thus, the selection of study communities is informed by this livelihood dynamics, to know if there is a difference on the use of *marro* in different production systems.

## Methods

We selected two pastoralist associations for this study: one predominantly pastoralist and the other agro-pastoralist.

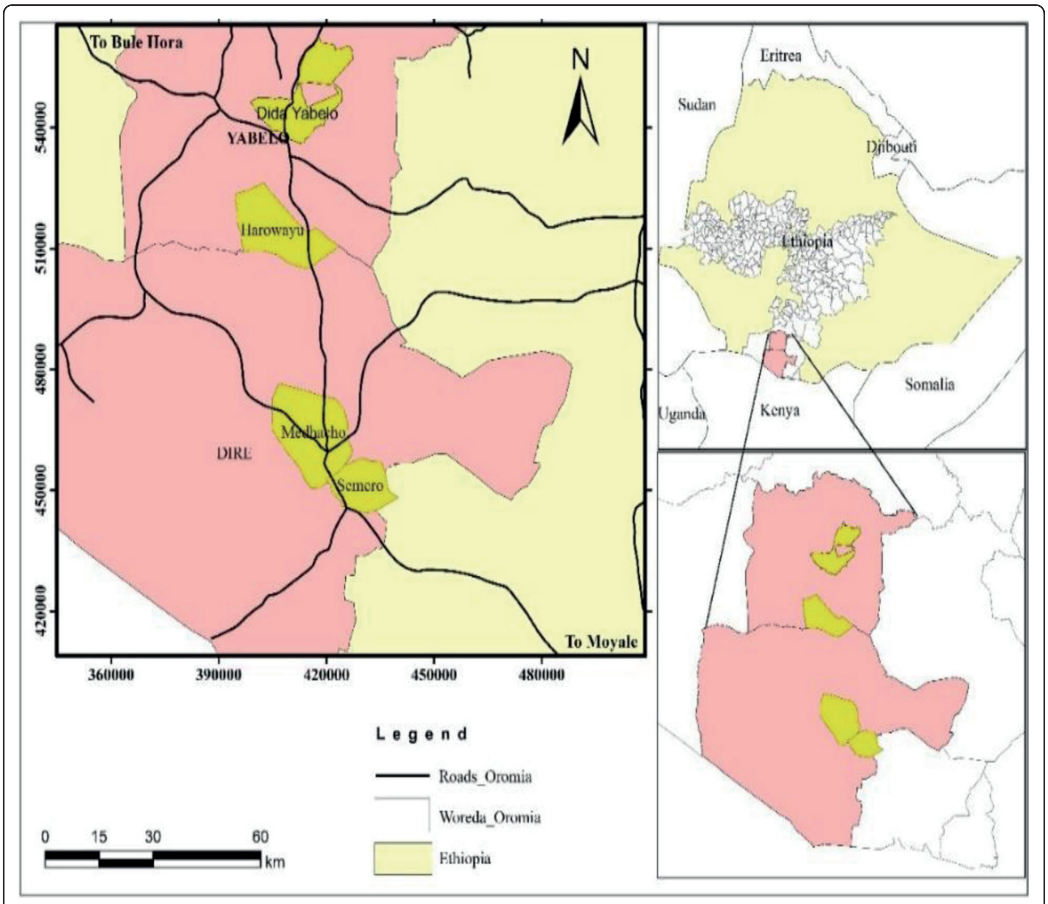


**Figure 1** Map of Borana zone. This figure indicates the location of the study area. Borana zone is basically divided into 13 districts, and each district has subdivided into pastoral and agro-pastoral communities organized as pastoralist associations (PAs)

Pastoralist associations are the smallest unit of adminstration in the area. After settling pastoralists the government had organized them into pastoral associations within districts. The agro-pastoralist livelihood is more diversified with a mix of crop production, herding activities, poultry farming, livestock trading, petty trading and sale of forest products (Anbacha and Kjosavik have an unpublished manuscript of an in-depth study of livelihood diversification of the Borana). However, this does not mean communities in the pastoral production system never participate in non-pastoral activities. For instance, every Borana household has a small plot of land up on which they produce crops.

For this study, two pastoralist associations (*Harowayu* and *Madacho* PAs) representing both production systems were selected. The Harowayu pastoralist association was selected to represent the pastoral production system. The settlement pattern of Harowayu shows households grouped into different villages and the households are close to each other. The Madacho pastoralist association was selected to represent agro-pastoral livelihoods. Communities in Madacho practise animal trade, petty trade and crop production along with pastoralism. The households are located on the main road from Addis Ababa to Moyale.

From the selected two pastoralist associations, for individual interviews, we randomly selected 64 women respondents: 32 from the pastoral and 32 from the agro-pastoral production systems. In this study, we used the traditional wealth ranking system of Borana people that depend on the number of cattle the households own. In Borana wealth ranking system, the

**Table 1** Individual interview respondents

| Respondent category | Total count |
|---|---|
| Pastoralist association | |
| Harowayu | 32 |
| Madacho | 32 |
| Total | 64 |
| Economic status | |
| Poor (*dega*) | 34 |
| Self-sufficient (*offi-danda'an*) | 20 |
| Rich (*duressa*) | 10 |
| Total | 64 |
| Age | |
| Young (18 to 35 years) | 34 |
| Middle age (36 to 50 years) | 20 |
| Old (above 50 years) | 10 |
| Total | 64 |

households that own zero to five cattle are considered as 'poor' (locally termed *dega*), from five to ten cattle considered as 'just self-sufficient' (offi-*danda'a*) and above ten are considered as 'rich' (*duressa*). Here, each group is independent of each other. The detailed information of the respondents is given below (see Table 1).

Data on women's participation in *marro*, types of resources shared and the role of shared resources in household food security were collected from both communities using individual interviews. The individual interviews were face-to-face, using a structured questionnaire with the selected women respondents. Apart from individual interviews, four group interviews with women sharing the same *marro*, and two focus group discussions, were conducted, to collect data on frequently shared resources, factors affecting participation and the importance of shared resources in building household food security. Group interviews were conducted with women in the same *marro* to understand how each of them participate and use *marro*. In the group interview, the group size was small (three to five women) and the meetings were of short duration (about an hour for each group). On the other hand, in the focus group discussions women in different *marro* participated. In each focus group discussion, nine to 12 women participated, which indicates the relatively big group size, and each session lasted for two to three hours. The focus group discussions were in the form of detailed discussions among the women on specific topics, in contrast to the group interview where data are collected in the form of question-and-answer.

In order to answer the first question on participation, the selected women were individually asked to respond to a structured questionnaire prepared in Afan Oromo. The women were asked to rate their participation in *marro* by choosing between 'daily basis', 'occasionally', and 'once in a while'. In this study, 'daily basis' was used for women who depend on *marro* for everyday survival, while 'occasionally' for those who use *marro* whenever there is a need arises, whereas 'once in a while' are for those women who use *marro* rarely - only when there are no other alternatives to meet their needs. Most of the time, these women meet their needs by themselves and request help 'once in a while'. They usually have other alternatives for meeting their needs and only use the network 'once in a while' when they do have no other means. For instance, a woman who has cash can buy things she needs rather than going to her *marro* group women. This is common among rich women. In addition, in the focus group discussions and group interviews, women were asked to define and describe *marro*. In the study, we considered sharing of resources with immediate neighbours as bonding, and across communities as bridging network.

In order to answer the second question on types of resources shared in *marro*, the women were asked during the group interviews and focus group discussions to list, categorize and describe major resources shared in both bonding and bridging *marro*. In addition, in individual interviews, the women were also asked to state the category of resources they shared most often in their relations. The third question, the role of *marro* in ensuring household food security, was answered by allowing the women to sit down in groups and discuss the primary purpose of shared resources, and the role of these resources in improving household food security and challenges of *marro*. In addition, women in individual interviews were asked to choose if shared resources have no impact, positive impact and negative impact on household food security.

The study mainly employed qualitative data analysis. Content analysis was used to analyse and interpret data from group interviews, focus group discussions and observations. Data collected from individual interviews were entered into SPSS software version 22 and run for descriptive statistics-cross tabulation for the analysis. For the comparisons between groups such as livelihood base, age and wealth status, chi-square test was used.

## Results

### *Marro* and the participation of women

Group interviews indicated that the word *marro* was derived from its Afan Oromo root word called *marru*, meaning to round or to move in a circle. This shows that *marro*'s function is to round all households in times of difficulty. The women stated that 'future is uncertain for all', in that a household with no problem today may face challenges in the future, for which the household might seek help from friends, relatives and

neighbours through *marro* relations. As per their discussion, 'giving today is akin to putting aside resources as an insurance for tomorrow's problems'. Therefore, the giver is happy to invest in the neighbour's household, for which she expects a return during her own difficulties.

All participants in individual interviews stated that *marro* is an informal institution and has no formal rules or leaders. Similarly, the qualitative information also supports this idea. Information from group interviews and focus group discussions stated that the functioning of *marro* is based on the societal value of helping each other and expressing solidarity. As determined in a study which indicated that trust was a primary feature of social networks (Ostrom and Ahn 2001), there is a fundamental trust between women in Borana. The women discussants stated that the strong belief of Borana society in interdependence. This is indicated in Borana sayings: *wanti Borani qabu kan borana hundati* meaning 'whatever an individual Borana owns belongs to all Borana'. This ensures the smooth functioning of *marro* at different levels.

As indicated in the group interviews, *marro* is established between near-distance households within a village and also between far-distant communities engaged in different production systems. The former is established between neighbouring households and has the bonding nature of a social network as an intra-community relationship. The bonding depends on the general rule of the society, stating that villagers have strong obligations to help each other. The Borana saying (stated by one informant) '*olla fi dudan dhabatu*', meaning villagers and backbone make you to stand straight, indicates the importance of villagers (bonding) in the life of the society. This relationship of *marro* enables households to access available resources within their own communities to meet household needs, particularly food requirements for survival. Bonding *marro* provides households in crisis with immediate and regular support as indicated in the qualitative information. Resources are exchanged more frequently in this relation compared to bridging *marro*. In marro relations established between neigbouring households resouces are exchanged frequently contrary to relations between far distant families.

Bridging *marro* is an inter-community relationship that links the households in different production systems, as indicated in focus group discussions. This enables households in a pastoral production system to access resources of households in agro-pastoral communities and vice versa. This is similar to the finding that bridging networks enable sharing of resources in one area with members in another area (Granovetter 1973). Compared to bonding *marro*, sharing is less frequent in this relationship; however, resources shared in bridging relations are relatively better in quantity and quality, as stated by women during discussion. This is due to the differences in livelihood portfolios between the households. In general, both bonding and bridging ties of *marro* coordinate and promote cooperation between households to achieve their objectives. This is similar to a study finding that social norms and trust enable participants in the institution to pursue and achieve their common objectives together (Moser et al. 2010). The bonding and bridging nature of *marro* between households is presented in a diagram (see Figure 2).

Regardless of livelihood basis, age or economic background, all women participate in *marro* (see Table 2). This finding is similar to the results of a study undertaken in northern Kenya among Waso Borana women (Khalif 2010). Although all women have *marro*, the rate of participation varies between women in different production systems, economic status and age groups.

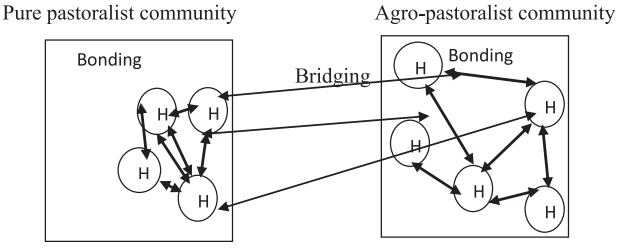


**Figure 2** A conceptual representation of *marro*. In this figure, bonding *marro* is depicted by the thick arrows showing the strong relations between neighbouring households. There are many bonding *marro* within the same village. A woman can be a member of different *marro*. She can also choose over different *marro* in her village. In *marro*, women exchange gifts of different items frequently to meet the needs of the households. The bridging *marro* links pastoral and agro-pastoral communities for sharing resources. Contrary to bonding, bridging *marro* established between communities spatially separated or in different locations. Thus, bridging *marro* relation links communities in different locations to ensure survival through sharing available resources. In this case, pastoral women establish *marro* with agro-pastoral women and share their livestock products such as milk, meat, butter and yoghurt in return for grains from agro-pastoral women that enable them to address household food deficit

**Table 2** Participation of women in *marro*

| Participants | Total count | Do you participate? | | Level of participation | | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Yes % | No % | Once in a while | Occasionally | Daily | Total % | Value | df | Sig. |
| Livelihood | | | | | | | | | | |
| Pastoralism | 32 | 100 | | 5 | 70 | 25 | 100 | | | |
| Agro-pastoralism | 32 | 100 | | 10 | 65 | 25 | 100 | | | |
| Total | 64 | 100 | | | | | | | | |
| Wealth status | | | | | | | | | | |
| Poor | 34 | 100 | | 0 | 62 | 38 | 100 | 44.418 | 4 | 0.0001 |
| Self-sufficient | 20 | 100 | | 0 | 93 | 7 | 100 | | | |
| Rich | 10 | 100 | | 30 | 60 | 10 | 100 | | | |
| Total | 64 | 100 | | | | | | | | |
| Age groups | | | | | | | | | | |
| Young | 34 | 100 | | 6 | 69 | 25 | 100 | 12.579 | 4 | 0.014 |
| Middle aged | 20 | 100 | | 12 | 69 | 19 | 100 | | | |
| Old | 10 | 100 | | 0 | 62 | 38 | 100 | | | |
| Total | 64 | 100 | | | | | | | | |

Source: Fieldwork data, 2015

However, statistical analysis revealed that there is no significant variation between women in pastoral and agro-pastoral production systems in terms of the frequency of their participation in *marro*. This study also indicates that economic status is the determinant factor for women's participation in *marro*. Within the wealthy category, the majority of women participate in *marro* occasionally. Statistical analysis on the participation of women in *marro* indicated that there is significant variation on the basis of their economic status at ($p = 0.0001$, $\chi^2 = 44.418$, df = 4). For instance, 93% of self-sufficient women participate occasionally whereas none of women in this group participate only rarely 'once in a while'.

Of all groups, a relatively high percent of women (30%) in rich households participate only 'once in a while'. This indicates there is less participation among rich women or less dependency of rich women on *marro*. This differs from a previous study, which indicated a high participation of wealthy women in their *marro* relationships (Oba 2001). The reason for this difference between these two studies lies in the way the questions were framed. In this study, the focus was on how often women are using *marro* to overcome their problems, while the previous study's focus was on how often women are helping others in the relation. Compared to other women, a significant number of poor women (38%) depend on *marro* for daily survival.

The qualitative information from all group interviews supports this finding that the economic status of women determines their dependence on *marro*, as poor women depend more on *marro* for daily survival. They establish *marro* with rich women, in which the poor women provide labour, and in return receive resources needed in their households. One of the young pastoralist informants described her own situation as follows:

> I am a very poor woman and I do not have cattle. I provide labour for my neighbours for which I get the items needed for my household's daily. I depend on this relation regularly. [A poor young woman].

Although poor women are more dependent on *marro*, usually they have less expansive *marro* networks than rich women, as indicated in group discussions. In Borana, having expansive *marro* is a sign of respect, while not having *marro* is an insult, as indicated in the discussions. Therefore, every woman wants to have strong and expansive *marro*. However, economic status combined with the generosity behaviour of the woman determines her *marro* size. The discussants further explained that women in rich households build strong and expansive *marro* by investing more resources in the relationship. Similarly, those who invest more in relationships also get more support in times of their need. The discussants strongly emphasized that investment is vital for the smooth functioning of *marro*, noting that a lack of resources makes *marro* inactive and dormant. This is similar to a previous study in Kenya (Oba 2001). One of the discussants described how her low economic situation negatively affected her *marro*:

> I had wide *marro* in the past; however, drought in 2011 that killed my cattle limited my participation

> in *marro*. Increase in household poverty prevented me from investing in my *marro*. Since then, most of the time I only receive resources more than giving to my *marro* women, that further inactivate my relation. I have already lost some of my previous *marro* women [a poor middle-aged woman pastoralist].

The discussants added that generosity (*toltu*[3]) is the other important asset which determines the expansiveness of a woman's *marro*. They stated that a rich but *hamtu*[4] woman (someone who does not want to share her resources with others) has usually limited *marro*.

Similar to women in poor households, a significant number of old women (38%) depend on *marro* for daily survival. There is a significant variation ($p = 0.014$, $\chi^2 = 12.579$, df = 4) between women of different age groups in the rate of their participation in *marro*. Information from the group interviews confirms the finding that *marro* provides regular support for old women. These women cannot go far to fetch water, collect firewood and fodder and thus depend on others' labour. The old women establish *marro* with a young woman in which the elder serves as babysitter, prepares food and cleans hut and surroundings, while her *marro* young woman goes to the market, collects firewood and fetches water as indicated in women's group discussions. She shares the items brought from outside with the old woman who provided her with help/labour. One of the informants stated her own experience as follows:

> I am an old woman and I cannot go to market, collect firewood and fodder. You see this boy [indicating a small boy sitting on her lap], I am taking care of him, he is my neighbour's son and his mother went to market. She will come with sugar and salt. This is how we live in Borana. My *marro* young women are helping me in providing things needed and I also help them in taking care of kids, clean house and provide tea when they come back from outside [an old woman from agro-pastoralist community].

In addition, the discussants mentioned that there are certain specific circumstances such as sickness, death and giving birth, in which all women need daily help from their *marro* women. As per the Borana culture, a woman soon after giving birth is entitled to rest for seven weeks (49 days). During this period, she is not allowed to exert herself in any activity including food preparation, taking care of children, going to market, collecting firewood, fetching water, washing clothes and other chores. This applies to all women irrespective of economic status, age and presence or absence of someone to help her in the household. If she has someone such as a mother-in-law or other women relatives, the burden on her *marro* decreases; otherwise, her *marro* women are responsible for all her household activities. In such circumstances, all women who have just given birth need help from their *marro* daily for a limited period. During data collection in Harowayu, we met a young woman who had given birth less than three weeks ago. She explained her dependence on *marro*:

> I gave birth and I am entitled to rest and only responsible to feed my new baby. Other kids are with my *marro* woman, she is caring for them. Others brought me water, see [pointing to a container full of water], some come with firewood and food [a young woman].

The same is true if the woman is sick and unable to do her household chores. One of the informants explained her experience as follows:

> I got bad injury on my leg three weeks ago while I was collecting firewood. Since then I am sick, and in bed. I cannot fetch water, collect firewood and go to market. For all these days, my *marro* women are providing needed goods and services for my household. Some of them bring me food, others provide labour; if I do not have them it would have been very hard for my family [a middle-aged woman].

Borana women are applying their *marro* relation in different circumstances that made the role of the institution quite complex. As indicated in the discussions, women are using *marro* in different situations including child birth, child naming ceremony, marriage, sickness and death, in addition to improving household food security to access the necessary resources for the households in different situations.

### Resources shared in *marro*

In the group interviews and focus group discussions, women listed major resources shared in bonding and bridging relations of *marro* (Table 3).

Resources shared in *marro* include milk, butter, yogurt, meat, bones, tobacco, tea leaves, sugar, salt, labour, firewood, water, grains and cash categorized as food items, labour and cash. Among these, both food items and labour are widely shared between women of different livelihoods, age groups and different wealth statuses (Table 4). This study indicated that majority of pastoral women (79%) share food items and labour in their *marro*. Resources shared in both production systems vary, although majority mainly share food items and labour.

**Table 3** Qualitative information on resources shared in *marro*

| Resource category | Resources shared | Description |
|---|---|---|
| Food | Milk, butter, yoghurt | Commonly shared in bonding and bridging, especially in bridging women in pastoral livelihood share with agro-pastoral women |
| | Meat and bones | Household slaughters animal share meat and bones. Women in the household are responsible to share these with her *marro* women. The bone sharing is very common during drought crises where well-to-do households are expected to share with poor households to ensure survival. |
| | Cooked food | Mostly shared in bonding, women share with neighbouring households in most cases. This can be given as immediate support to households. Any person coming across cooked food has full right to eat, even if not a member of the family. It is also shared within bridging *marro* rarely. |
| | Salt, sugar, tea leaves and tobacco | These are commonly shared in bonding *marro*. Neighbouring households share these resources more frequently. |
| Labour | Firewood, water | Women collect firewood for each other in *marro*. Commonly shared in bonding relation can also be shared in bridging during ceremonies. Common to bring for sick women and new mothers. |
| | Fodder | Increasingly shared than ever before. Women collect fodder in collective through *marro*, becoming very popular with increases in drought leading to animal feed shortage. |
| | Going to market | Women also combine their activities to overcome labour shortage through *marro*. A woman going to market buys the things needed by neighbouring households while the one at home undertakes household activities. |
| | Preparing food | Other important activity for which women use bonding *marro*. It is common to prepare food for households when woman in the household is sick, gave birth or has some special programmes. |
| | Hut-making | Hut-making is usually undertaken by *marro*. Hut-making in the face of drought for a single woman is very hard. That is why women use their relation to make huts for each other. |
| | Farming activities | Women are undertaking farming activities such as land-clearing, weeding, harvesting and transporting in *marro*. During drought when men move with animals, women do many of the farming activities through *marro* relation. |
| Cash | Loan | Cash loan is newly introduced resources in *marro* and increasing these days. Women give each other loans for purchase of foodstuffs or for undertaking business. Most of the loans are simple and easy to pay has no interest. |
| | Gift | Women also give to each other in their relation a cash gift. This is not in the form of a loan but as a gift from *marro* woman. |

Source: Fieldwork data, 2015

In agro-pastoral communities, more women share food and labour; however, a significant percentage also share the three varieties of resources: food, labour and cash. Similarly, based on production system, further statistical analysis portrayed a significant variation between women at ($p = 0.028$, $\chi^2 = 9.096$, $df = 3$) on resources shared in their relationships. This shows that livelihood basis is a significant factor determining the variety of resources shared in the women's relationships. As indicated in all group interviews, the more diversified the livelihood of the household, the more variety of resources shared in *marro*. The group interviews with agro-pastoralist women showed that their engagement in crop farming had increased the variety of resources shared in *marro*, in such a way that using grains from crop farming strengthens their *marro* with pastoral women. This shows diversification has increased the variety of resources women share in their institution.

In terms of economic status, the majority of rich women use a greater variety of resources in their relations, whereas nearly all (97%) of the poor share mainly labour and food items in such a way they provide labour to *marro* women for which they receive food items. Although many of the poor households generally depend on food aid for daily survival, they are investing part of the aid to activate their *marro* as indicated in the focus group discussions. It

**Table 4** Respondents sharing different resources in *marro*

| Participants | Total count | % of respondents sharing different resources | | | | | Chi-square | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Food and labour | Food and cash | Labour and cash | Food, cash and labour | Total% | Value | df | Sig. |
| Production system | | | | | | | | | |
| Pastoralist | 32 | 79 | 0 | 6 | 15 | 100 | 9.096 | 3 | 0.028 |
| Agro pastoralist | 32 | 47 | 6 | 3 | 43 | 100 | | | |
| Total | 64 | | | | | | | | |
| Economic status | | | | | | | | | |
| Poor | 34 | 97 | 0 | 0 | 3 | 100 | 42.78 | 6 | 0.0001 |
| Self-sufficient | 20 | 35 | 5 | 10 | 50 | 100 | | | |
| Rich | 10 | 0 | 0 | 10 | 90 | 100 | | | |
| Total | 64 | | | | | | | | |
| Age group | | | | | | | | | |
| Young | 34 | 76 | 3 | 9 | 12 | 100 | 16.63 | 6 | 0.011 |
| Middle aged | 20 | 35 | 5 | 0 | 60 | 100 | | | |
| Old | 10 | 70 | 0 | 0 | 30 | 100 | | | |
| Total | 64 | | | | | | | | |

Source: Fieldwork data, 2015

is true that there is no formal linkage between *marro* and food aid programmes as indicated in the qualitative information, but informally women are investing it in their *marro* relationships. Thus, this strengthens their *marro* relation by availing food items to be shared.

Information from group interviews and focus group discussions in both production systems indicated that food items are the most commonly shared resources, followed by labour. This is similar to the study finding that local networks pool foodstuffs and other resources to overcome the suffering of the people (Agrawal et al. 2009). As discussed by the women, they share food in different circumstances. Women in households where there is food shortage access the needed food through *marro*. Similarly, if a woman has a visitor or guest and she does not have food to give the guest, she sends a messenger (*ergamitu)*, usually a child, to her *marro* woman, to send sugar, tea leaves or any other foodstuff she needs for her guest. The *marro* woman gives what she has, not only from her surplus but also from limited resources, to help the woman and to maintain her good image in the eyes of the visitor. This was observed during the interviews. In one case, in the Harowayu settlement, when our interviewee had a visitor from Yabello, this gave us an opportunity to see first-hand information how *marro* applied to overcome household food shortage through sharing resources. Our interviewee did not have tea leaves and sugar in her own house to prepare tea for the guest (as was the custom in the community). She excused herself and went to her neighbour who supplied her with the required ingredients and she was then able to serve her guest. For the discussants, labour is the second most commonly shared resource. They stated that Borana women bear a disproportionate burden of household domestic roles including cooking, fetching water, collecting firewood, cleaning, hut-making, going to market and taking care of children and the sick. Moreover, increases in droughts have added to the work burden of the already busy women by extending the time needed to collect firewood and fetch water. In order to overcome the common labour shortage, even under normal circumstances, many women combine some

**Figure 3** Women making hut in *marro*. This figure is a picture taken in Harowayu pastoralist association while women in *marro* are constructing a hut or house for their *marro* woman. A woman and her *marro* cut trees and covering grasses and bring these to the location where she and her *marro* are making the hut together, with no involvement of husbands

of their work with their *marro* women. For example, a woman going to a market buys the items needed for her *marro* women, while the women at home take care of household activities, and other women go to fetch water and collect firewood that they share between needy households who helped them to save time and energy. The other major activity Borana women use *marro* for is hut-making (see Figure 3). Here, the women make huts together in order to reduce time and energy needed.

Although this study revealed the involvement of cash in *marro*, information from focus group discussions and group interviews indicated that cash was not part of the resources shared in *marro* relations in the past. The introduction of cash into current *marro* has two forms; cash is given as a gift and and as a loan, explained the discussants. If a woman approaches her *marro* woman for certain items and the requested woman also does not have the items but has some cash, she gives the cash to buy the items needed. This type of cash is not a loan; rather, it is a gift from *marro* woman. The woman who benefited from the cash is not expected to repay it; instead, she will do the same for her *marro* woman in times of need.

A study undertaken in northern Kenya poses questions concerning the moral value of introducing cash as a loan in *marro* (Khalif 2010). However, women in this study are using the cash loan from *marro* relation for different purposes, including food purchases and for business. Most of the time, the loan from *marro* does not bear interest and has no maturity period; instead, the borrower repays the loan when she gets money. If she cannot repay for a genuine reason, she has the possibility of asking for debt relief. As per the discussants, the introduction of cash in *marro* was as a result of the current pastoral transformation which has increased cash accessibility.

### Roles and challenges of *marro* in building household food security

Regardless of the livelihood basis, economic status and age differences, all individual informants confirmed that *marro* has a positive impact on ensuring household food security. Similarly, participants' group interviews and focus group discussions added that resources shared in *marro* directly or indirectly contribute to household food security improvement; according to the discussants, the primary objective of sharing resources in both bonding and bridging *marro* is to overcome household food shortages. The shared resources, particularly food items are never sold or changed to other forms, but aimed to increase food availability of distressed households.

The elderly women interviewees stated Borana pastoralists were food-secure and that the people had enough cattle to provide milk and milk products, which were staple foods of the society in the past. According to these women, milk production per cow was higher than it is currently. If two or more cows were in the milking period, they give surplus milk. The excess milk was used to feed young calves. Even in well-to-do households where there were large numbers of cows, some of the cows were not milked. In those past days, our informants told us, Borana pastoralists share food items for love and affection rather than as form of security.

In more recent times, food has become a critical problem for the Borana following several devastating droughts, as indicated in all group interviews and focus group discussions. In Borana households, women become more responsible for ensuring household food requirements as men have increasingly lost their entitlements due to droughts. In order to meet the food requirements of the household, women use *marro* to access food from near and far-distant households. Although women share food items under normal circumstances, during drought, they increasingly share what they have for survival. This is similar to a study which concluded that social capital plays critical roles during drought crises (Aldrich and Meyer 2015). In *marro*, women share limited food items available to ensure that everyone has something to eat. The discussants added that 'if food is available in one household, people in the next household never go to bed with empty stomachs'. It is indeed part of the culture to share available resources among Borana women, to survive as a community. Thus, *marro* as social capital is one of the important sharing cultures among women that helped hard-pressed households to access food. This is corroborated by a study carried out after Hurricane Katrina in USA, which found that connections across social, cultural and economic lines provides access to essential resources like food for families (Aldrich et al. 2016). It is common practice for people to use their social institutions in order to overcome difficulties. One of the poor women in the group interview explained the existing sharing philosophy as *Borani yoo nyate anis nan-nyadha*, which means 'if a Boran[5] (individual Borana) eats, I will eat' indicating in the Borana community, everyone is entitled to food without any preconditions.

Borana women understand each other's food shortages and feel a responsibility to fill the gap, sometimes even before help is requested. However, it is also the right for a hard-pressed woman to request food from her *marro* women in both bonding and bridging relations in times of need. Moreover, the culture stresses the obligations of *olla*[6] to solve the problems of neighbouring households, by mobilizing existing resources to secure survival. This strong sharing culture has kept *marro* continuing even when resources are limited, which is a good opportunity for future development of the relationship. However,

following increases in drought, as indicated in group interviews, the number of people demanding help is increasing while resources to be shared are diminishing. This threatens the potential of *marro* in ensuring household food security. Moreover, lack of adequate external support combined with increases in livestock prices and the commoditisation of milk is also limiting the risk-pooling capacity of *marro*. The milk investment in *marro* has decreased following commoditisation of milk as indicated in all focus group discussions. Similarly, the discussants revealed that following increases in the price of livestock, many prefer to sell the livestock rather than slaughtering, which effectively limits sharing of meat and bone in *marro* relationships. These actions limit the role *marro* plays in building household food security that in long run may cause erosion of *marro;* this could adversely affect women and their households. Therefore, attention must be paid to the *marro* relationsship in order to expand its risk-pooling capacity for the benefit of the women and the households they manage.

## Conclusions

This paper analysed the role of Borana women's indigenous social network, known as *marro*, in enhancing household food security. The study was carried out in two communities with different production systems, namely pastoral and agro-pastoral. In addition to livelihood, women's age and economic status were used to examine women's participation, resources shared and the role these resources have on household food security. The paper establishes that *marro* is a network in which all women participate regardless of differences in their production system, age and economic status. The majority of women participate occasionally in *marro*, whereas a significant number of poor and aged women use *marro* for daily survival.

*Marro* is established at different levels between neighbouring households and between distant households in separate locations, which are engaged in different production systems. The former *marro* has the bonding nature of a social security network that mobilizes existing resources in a village. The latter *marro*, considered as a bridging relation, is established between households in different livelihood systems to mobilize and share resources in different locations for survival. In both bonding and bridging relations, women share various types of resources categorized as food items, labour and cash. Food items are the most frequently shared in *marro,* aimed to overcome household food shortages. Although women share food items in normal circumstances, sharing increases during drought. Thus, *marro* as a social security network is playing a vital role in improving household food security. However, the low external attention given to this institution, combined with lack of resources and increased number of poor people in the area, is challenging the roles *marro* play in building household food security.

The findings of this study shed light on the roles social security networks play to overcome food shortage. These networks are vital in designing equitable and sustainable food security projects and programmes in pastoral areas in general and Borana area in particular.

## Endnotes

[1]*Busagonfa* is a clan-based institution by which Borana pastoralists respond to serious economic problems of their clan members.

[2]Afan Oromo is a language that belongs to the Cushitic family, spoken by the Oromo people.

[3]*Toltu afan oromo* word for someone who likes giving.

[4]*Hamtu* is someone who does not like giving.

[5]*Boran* is an individual in the Borana society.

[6]*Olla* is the people living in the same village or known as villagers.

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**Authors' contributions**
AEA collected the data and drafted the manuscript. DJK provided the theoretical inputs and revised the paper. All authors read and approved the manuscript.

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**Competing interests**
The authors declare that they have no competing interests.

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