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The Role of Women in Water Management and Conflict Resolution in Marsabit, Kenya

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Bachelor of Arts
Ohio Wesleyan University
2006

Thesis Committee Chair: Matthew Freeman, MPH, PhD

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Abstract

Background: Marsabit is a semi-arid district in northern Kenya where conflicts over scarce water sources can limit access to water. Management of sources is a potential way to mitigate these conflicts, and the involvement of women in management is recognized as important. Little evidence exists on how women can be effectively involved in management decisions or how their involvement can reduce conflict and increase access to water sources in Marsabit.

Objective: This study explores the types and nature of conflict over scarce water sources in Marsabit, Kenya, how they impact women, and the role that women play in water management and conflict resolution.

Methods: Key informant interviews (KIIs) (n=10) with local officials provided background information on water conflicts and identified specific topics to cover in focus group discussions. Focus group discussions (FGDs) (n=16) with men and women investigated community experiences of water conflict and perceptions of women in management. Unstructured observation at water points complemented information from the FGDs.

Results: Themes from the FGDs indicated that conflicts at water points occur among livestock users, among domestic users, and between livestock and domestic users. Statutory water management committees and customary leaders such as elders are involved in preventing and mitigating conflicts. Men and women perceived women to have unique knowledge that would improve water management. Cultural norms made it difficult for women to participate in decision making on the water management committees, however women were involved in water management through initiatives that increased access to domestic water.

Discussion: Community experiences with water conflict suggest that the overlapping role of statutory water management committees and customary leaders leads to confusion about the mandate of each in addressing water conflicts. It appears that women have little decision making power on water management committees in this cultural context, but women's initiatives to separate domestic water collection from livestock collection points reduced the potential for water conflicts and were culturally appropriate. Evidence from this project can be used to promote culturally appropriate ways to involve women in water management that reduce conflicts and increase access to domestic water supplies.

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Table of Contents

INTRODUCTION

Access to safe water is both a fundamental human need and a basic human right (Ray, 2007). This right entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use (Howard & Bartram, 2003). Yet nearly 1.1 billion people still lack access to safe water, leading to both direct and indirect health consequences for individuals and families (Howard & Bartram, 2003). Domestic water is used for consumption (drinking and cooking), hygiene (personal and domestic cleanliness), and productive use (animal watering, construction, and small-scale horticulture) (Howard & Bartram, 2003). Inadequate access contributes to the more than 4.4 billion cases of diarrhea each year leading to death in more than 2.2 million people, most of them in children under 5 (Black et al., 2010).

Access to domestic water can be particularly challenging in areas of physical water scarcity such as the arid/semi-arid area of northern Kenya. Most of northern Kenya is inhabited by semi-nomadic pastoralists who migrate with their livestock to follow seasonal locations of water and pasture. The water sources in the district are boreholes and seasonally available dams and pans which must be shared among the different ethnic groups as well as satisfy the demands of both livestock and domestic users. Competition for access to the water sources among these different parties can lead directly to conflict as well as contribute to general conflict in the district. Efforts aimed at addressing water management and related conflict resolutions have generally focused on community resource management techniques.

Governance of the use and allocation of water plays a key role in mitigating potential water-related conflicts. Given the demands on water by multiple stakeholders, water governance is by nature the management of conflicting interests (Ravnborg, 2004) In order to be effective, institutions charged with management of water sources must incorporate the interests of each group of users into the allocation and use of the water. In the context of developing countries, women are often primarily responsible for providing domestic water supplies for their families. Failure to incorporate their needs and priorities into management schemes can affect household domestic water supplies and therefore the health of the entire family. Although there is general consensus on the importance of including women in water management, there is less agreement on exactly what is meant by women's participation and how it improves access or control of water for women (Ray, 2007).

Millennium Water Program – Kenya

MWP-K is a consortium of NGOs in Kenya working to improve the health and well being of households and communities in drought-prone arid and semi-arid areas of Kenya. A main objective is to promote integrated water resource management at the local level focusing on the quantity and quality of drinking water. Programmatic work through MWP identified the effects of conflict over shared water resources in Kenya's Marsabit District as a growing challenge and an area of increasing concern as people lose access to their primary water source.

Problem Statement

Community water management has been identified as an appropriate method to manage limited and shared water resources and related conflicts in Marsabit Kenya, and the potential role of women in water management and water conflict resolution has been recognized as important. However, competition over water resources remains and perceptions on the role of women in water resource management and conflict resolution are still not well understood.

Purpose

The purpose was to determine if there were lessons learned that could be applied to improve programming. The objective of this study was to understand the types and nature of conflicts over scarce water sources in Marsabit, Kenya, how they impact women, and the role that women can play in water management and water conflict resolution. This study's questions included the following:

1. What are the main sources of conflict related to water use in the community and how do they influence water choice?
2. What are the effects of water source conflicts on women's access to water supplies for domestic use?
3. What efforts have been made at the community and household levels to address water conflict and how successful have they been?
4. What are community opinions on formal roles that women play in official community structures that address water management and conflict resolution?
5. What are unofficial ways that women are involved in water conflict resolution?

Significance

This project shed light on the role of women in water management by exploring the issue from the perspectives of both men and women, as well as existing local water management institutions. It contributes to an understanding how communities in Marsabit can most effectively manage limited water resources and therefore ensure access to available water resources for all users. Further it contributes valuable information to the following components of the MWP-K logical framework:

- **IR1.3 Gender.** Gender equity and social diversity is increased in Integrated Water Resource Management
- **IR1.2.1 Gender.** Number of communities mobilized to have equitable representation of gender, minorities, and disadvantaged people on water committees.
- **IR 2.3.3** Water committees play a role in mediating conflict
- **IR2.3 Natural Resource Management** Natural resources are effectively and sustainably managed.

LITERATURE REVIEW

Water and Conflict

Freshwater is integral to nearly every sector of society (Gleick, 1993). Competing claims for the allocation, use, and distribution of freshwater can create tensions among different users, which have the potential to become violent. Globally, water conflict occurs on at least three interdependent spatial levels; internationally, nationally, and locally (Gehrig & Rogers, 2009) (Wolf, Kramer, Carius, & Dabelko, 2005). Disputes arise between riparian countries over the use of trans-boundary water resources. According to the UN official count, there are 263 water basins that include the political boundaries of two or more countries. Such basins account for almost 60% of global river flow (Wolf et al., 2005). Within nations, conflict or disagreements may occur between different interest groups in relation to national policies affecting water management, for example, water use sectors, urban and rural populations, upstream and downstream users, and states or provinces, (Wolf et al., 2005) (Gehrig & Rogers, 2009). National policies may result in inadequate or contradictory regulations, generating hostilities among these various sectors (Gehrig & Rogers, 2009). At the local level, conflict occurs either as different societal sectors compete for access to particular water sources or between citizens and a state or management body (Gehrig & Rogers, 2009).

National and local conflicts have a higher potential for violence than international conflict and some authors have suggested an inverse relationship between the likelihood and intensity of violent conflict and the geographic scale of the conflict (Wolf et al., 2005) (Carius, Dabelko, & Wolf, 2004). In addition to affecting the accessibility of water for conflicting parties, conflicts over water, even at local levels, can contribute to

instability within a nation or an entire region. Therefore water may contribute to national or international disputes, regardless of whether or not it is a main cause of the overall conflict (Wolf et al., 2005).

Although particular indicators such as aridity, population growth rates, government type, and dependence on water resources for agricultural or energy needs, have been theorized to contribute to conflict over international river basins, there is little comprehensive quantitative evidence to support these suggestions. Whereas most previous conjectures were made as a result of case studies of instances of conflict in the most volatile water basins, Yoffe et al. compiled and analyzed a database of every reported instance of either conflict or cooperation between two or more nations that was related to international freshwater sources between 1948 and 1999 (Yoffe, Wolf, & Giordano, 2003). This study documented a total of 1,831 events, of which only 28 % were found to be conflictive, while 67% were cooperative. All events were related mostly to issues of water quantity, infrastructure, joint management, and hydropower. Notably, no single indicator in itself proved meaningful in predicting the likelihood for conflict over a freshwater source in an international basin (Yoffe et al., 2003).

Yoffe et al. did find relevant indicators for conflict to be a combination of extreme changes in the physical or institutional structures in a particular basin and the presence of institutional mechanisms that are able to manage this setting (Yoffe et al., 2003). Therefore, the likelihood of conflict occurring in a basin increases when there is a change such as the construction of a large dam or internationalization in the absence of international treaties, implicit agreements, or cooperative arrangements that provide institutional infrastructure with the capacity to mitigate and manage the uncertainty

associated with the change in the basin setting (Yoffe et al., 2003). Further, the authors were able to construct a framework based on the combinations of indicators that showed some association with conflict that identified the basins with the highest potential risk for conflict in the future. Most of these basins are located in southern Asia and southern Africa (Yoffe et al., 2003). The potential for conflict does not guarantee or presume that conflict will occur in the future, but rather that future work in those areas should focus specifically on the water resource needs of the area, the ability of the states to work together to address the uncertainties resulting from changing settings and the ability of the institutions to manage the uncertainties (Yoffe et al., 2003).

At any level or scale of conflict, water is very seldom the sole cause of conflict (Wolf et al., 2005). Water may be one issue intertwined with many other factors such as religion, border disputes, economic competition, or ideological disputes (Gleick, 1993). Therefore it is important to consider water in the broader context of socio-economic, institutional, political, and environmental factors that also contribute to water conflicts (Gehrig & Rogers, 2009). In the absence of a systematic overview of local level conflicts, it is difficult to make generalizations about the character of nature of local level conflicts (Ravnborg, 2004).

Carius et al. outlined three major linkages between water and conflict, regardless of scale or other influencing factors (Carius et al., 2004). The first is access to adequate water supplies. Even in places where the quantity of water is not severely limited, allocation of water among the different users and uses can become a point of contention. The second is the close connection between water and livelihood, as water is the base of agriculture it is one of the largest sources of livelihood in the world. When agriculture

livelihoods are lost, levels of both poverty and migration to urban areas in search of work increase, both of which have contributed to conflicts (Ravnborg, 2004). Third, it is not necessarily the scarcity or lack of water that leads directly to conflicts, but rather the way that the water is governed or managed that leads to conflicts over water sources (Carius et al., 2004) (Ravnborg, 2004). Water management is a function of the adequacy of institutions, administrative capacity, transparency, clarity in jurisdictions and responsibilities. Shortcomings in any of these areas can contribute to conflict over water resources.

Water Governance as Conflict Mitigation

Water governance plays an important role in preventing and mitigating conflicts over water, and water crises are often crises of governance (Ravnborg, 2004). In an attempt to improve the management of water and other natural resources, governments are increasingly turning to community and public involvement (Bruns, 2005). At the national level these efforts often involve the decentralization of water management to the lowest appropriate level such as basin or sub-basin management bodies, as is the case in Mexico, South Africa, Tanzania and Thailand (Ravnborg, 2004). Interventions often target local governments or the development of associations, councils, or boards of water users (Ravnborg, 2004). The advantage of devolution of management to the community is the recognition of the community as key stakeholders. As the water users they posses local knowledge about their water needs and consequences of change (Bruns, 2005). Community councils and associations represent a forum for this information to be considered as management decisions are made, building support for these decisions and

reducing the risk of rejection. Additionally, communities may be in a better position to resolve conflicts with fewer complications because they are the parties most concerned (Bruns, 2005).

Although there is promise and potential for participatory and community approaches, there are also limitations to community resource management. The idea of the community itself is complex, and may include different social, political and religious ideologies (Bruns, 2005). In cases where community resource management institutions have limited or unclear mandates, water-user boards can reproduce or even worsen existing inequalities in communities and as a result legitimize these relations rather than ensure that different perspectives are represented and responded to (Bruns, 2005) (Ravnborg, 2004). Available case-based knowledge suggests that groups that are generally marginalized in society are also marginalized in relation to water (Ravnborg, 2004). Potentially marginalized groups such as poorer sections of a community, ethnic minorities, women, non-elites, youth and elderly may be excluded from the community management schemes. Biased decisions that neglect to consider the needs and opinions of these groups of people may result in reinforcing societal inequalities through access to water sources (Bruns, 2005).

Previous case studies of the Ewaso Ngiro basin in Kenya have examined the role and effectiveness of Water Users Associations for water management in the area (Gichuki; Kiteme & Gikonyo, 2002; Liniger, Gikonyo, Kiteme, & Weismann, 2005; Wiesmann, Gichuki, Kitame, & Liniger, 2000). Multiple variables contributing to conflict in the basin include a transformation from historically pastoral land use to agricultural uses, high population growth rates resulting in higher demand for water and

more agricultural activity, and upstream farming activities that result in decreased flow rates leading in some years to complete drying of the riverbed downstream (Wiesmann et al., 2000). Conflicts in the basin are further complicated by ethnicity, clanism, finance, election of representative water users, failure to observe water bylaws, and imposition of values by outsiders (Gichuki). As a result, much of the conflict in the area occurs at several levels including among water beneficiaries, different user groups such as upstream and downstream users, and between water users and environmental/conservation uses (Gichuki).

Water User Associations (WUAs) deal directly with water conflict as they institute interventions related to water abstraction, means of irrigation and issuance of water permits (Kiteme & Gikonyo, 2002). While WUAs can provide an institutional basis for monitoring and accounting for water usage, transferring information about water availability, and addressing conflict resolution, the effectiveness of WUAs can be hindered when they do not have equitable representation of the various users and stakeholders in the community (Liniger et al., 2005). The complex social and political dynamics result in varying expressions of water conflict in the basin and both top-down and bottom-up approaches have missed critical aspects of the issues involved (Wiesmann et al., 2000). Key challenges that will be faced by the WUAs in the future include deviations from their primary objective of water management and conflict prevention, ensuring horizontal coordination with other WUAs, and the legal and institutional positioning of the WUAs (Kiteme & Gikonyo, 2002).

In rural areas of Sri Lanka, local authorities called the Pradshiya Sabha are responsible for water supply (Ariyabandu & Aheeyar, 2004). These organizations are

voluntary community based organizations formed to operate the water supply projects. Case studies of two villages in dry areas showed that the systems were responsive to the demands of the majority, but did not reach full coverage of the communities as this system was still unable to address the needs and demands of sub-communities and individual households. Further, because the system did not equally represent all members in the community, the poorer sections of the community were marginalized from access to domestic water (Ariyabandu & Aheeyar, 2004).

Integrated Water Resource Management (IWRM) has emerged as an approach to water management that recognizes the interconnectedness of different water uses and attempts to incorporate them into water management (Xei, 2006). The functional definition highlights that IWRM is a participatory process, which brings stakeholders together to determine how to meet society's needs for water resources without compromising the sustainability of ecosystems and the environment. It attempts to put into practice concepts from the four Dublin Principles; ecological, institutional, gender, and economic (Xei, 2006). IWRM is different from sectoral approaches because it advocates for a holistic approach in which social and environmental concerns related to water are recognized as well as the need to develop water as an economic good. The implementation of IWRM varies with context and the Global Water Partnership has created a toolbox to support the application of IWRM (Xei, 2006). The tools are grouped into three broad categories; enabling environment, institutional roles, and management instruments. Conflict resolution and the ability to manage disputes and ensure the benefits of water are shared is one component the management instruments (Xei, 2006).

Women in Water Management and Governance

Throughout the developing world, men and women usually have different and specific roles related to water activities ("Water, Sanitation and Gender Equity," 2002). Whereas men are most often concerned with water for irrigation or livestock, the provision of domestic water supplies for a family is primarily a female role ("Water, Sanitation and Gender Equity," 2002) (Ray, 2007). Domestic water includes water for the purposes of consumption (drinking and cooking), hygiene (personal and domestic cleanliness), and productive use (animal watering, construction, and small-scale horticulture) (Howard & Bartram, 2003). Therefore women are not only intrinsically linked to water collection through gender roles, but this link has profound health implications for the entire household. The provision of sufficient supplies of water to meet domestic needs is linked to the prevention of waterborne, water-washed, and water-related diseases (Ray, 2007). Given their active and established use of water and other natural resources, women are generally very knowledgeable about the quality and reliability of water sources and have a vested interest in the management of water sources (Ray, 2007) (van Wijk, do Lange, & Saunders, 1996). However, globally women have been consistently excluded from water-related decision making (Gehrig & Rogers, 2009).

The central role of women in the provision, management and safeguarding of water is one of the four Dublin Principles representing international consensus from the 1992 International Conference on Water and the Environment (Ray, 2007). Many community resource management projects have failed to include women, and therefore their knowledge and priorities, in all levels of the projects, including planning and

management (Ray, 2007). There is general agreement on the importance of the inclusion of women in water supply initiatives and the associated improvements in the quality of life for the women as well as other members of the community (Ray, 2007) (van Wijk et al., 1996). There is less consensus or evidence on exactly what is meant by women's participation and which types or components of participation actually improve access and control of water for women or their empowerment (Ray, 2007).

A randomized policy experiment in India showed that reservations for women representatives on Village Councils, the lowest level of decentralized government, resulted in differences in the policy decisions and the types of public goods provided by the local government (Chattopadhyay & Duflo, 2004). The results showed that leaders of the Village Councils tended to invest more in public goods that were most relevant to the concerns of their own gender. Men invested more often in roads and education and women more often in drinking water (Chattopadhyay & Duflo, 2004).

An evaluation of gender and community management of water infrastructure in western Kenya examined an intervention to increase female membership and leadership positions on water user associations. The intervention was successful in increasing the number of women present and in leadership positions on the committees, but this increase in participation did not change the outcomes or quality of maintenance of water infrastructure (Leino, 2007). The presumed positive benefits of women's participation in community water management are not necessarily associated with involvement or participation on management committees, rather there are further aspects to the components of this role which need to be explored.

Despite a lack of clear evidence, some important points can be highlighted in the currently available literature. First, although there is a role for women in community management, it may not be that that role has to be a central role (Ray, 2007). This highlights the need to address the specific cultural and social context as that can be highly influential on how communication and decision making in the community occurs. (Ray, 2007; van Wijk et al., 1996). For example, cultural views about the role of women may limit their ability to speak freely among men. Also, the idea of participation may be manifested in various ways, may be contextually specific and may require more critical and creative examination to identify (Ray, 2007).

In addition to the formal channels of water management, there are potential informal channels and informal institutions that play a role in water management and water conflict (Meinzen-Dick & Zwarteveen, 1998). In Nepal, women intervened in a conflict between upstream and downstream users about canal maintenance. In one village in India, women removed canal obstructions and regulated canal flow, ultimately reducing water theft from other village residents (Meinzen-Dick & Zwarteveen, 1998). Although anecdotal, these accounts highlight the non-formal, and perhaps less recognized, ways that women are involved in water management. Further exploration of these could provide a potential way to identify unnoticed determinants of organizational performance as well as help to identify ways to make water user organizations more equitable (Meinzen-Dick & Zwarteveen, 1998).

Marsabit, Kenya

Marsabit District is an arid/semi-arid area in northern Kenya with an estimated population of about 125,000 people. Major ethnic groups that historically have lived in this area include the Gabra, Borana, Rendille and Samburu (Haro, Doyo, & McPeak, 2005). Water access is challenging in this area, and a Millennium Water Program, Kenya (MWP-K) baseline assessment determined that only 28.0% of households in Marsabit District use a safe water source within one kilometer of their home in the rainy season; this number drops to 21.0% in the dry season. The average daily quantity of water collected per person in this area is 9.8 liters (median 8) (Greene, Freeman, & Rush, 2010). This is less than half of the minimum recommended 20 liters per capita per day outlined by the SPHERE standards (Howard & Bartram, 2003). Most of the water sources in the district are boreholes and seasonally available dams and pans. These scarce water sources must be shared among the different ethnic groups as well as satisfy both livestock and domestic demands.

The region has experienced escalating cycles of insecurity and violence for which the underlying causes are extremely complex, dynamic and change over time (Haro et al., 2005). Contributing factors include, but are not limited to, boundaries, politics, historic ethnic conflicts, and inconsistencies between traditional and modern land tenure and resources management systems (Wiesmann et al., 2000). In the past 15 years, there has been increased emphasis on community-centered natural resources management (Haro et al., 2005). Within the context of the insecurity in the district as well as the multiple users exerting claims on water and other natural resources, effective management of these

resources will certainly include the ability to address conflicts arising from each of these claims. Much of the effort that has been directed towards community management has focused on the development of Environmental Management Committees, Water Management Committees, and Peace Committees, all of which are by nature or mandate conflict mitigation institutions (Haro et al., 2005). Other main actors involved in conflict mitigation and peace agreements include the Government of Kenya, non-governmental organizations, and community elders. One recent product of long-term peace-building negotiations between several groups was the Maikona Declaration in 2009. This declaration documents a set of rules to govern major sources of conflict such as livestock theft and natural resource sharing. The document was based on traditional laws and peace-building processes between the Gabra and Borana people (Wilson & Scott-Villers, 2009).

Recent work on customary approaches to peace-building in northern Kenya led by the Borana and Gabra elders through the Pastoralist Shade Initiative has suggested that community conflict resolution techniques can be effective but still face challenges and have not reached their full potential. The role of women in local conflict resolution and peace-building efforts is also an important aspect of the issue, yet it is not well understood and is often underrated (Scott-Villiers et al., 2011). The Kenyan government identifies that as an important challenge needing more exploration in the mainstreaming of gender issues in conflict management with a focus on empowerment of women towards long-term conflict mitigation and peace-making (GoK, 2009).

The environmental, social, and political conditions in Marsabit have contributed to local level conflicts related to water. Previous work has identified effective

management and governance of water as an important path in mitigating and preventing conflicts related to water. However, it is also critical that each of the user groups in a society is able to voice its views and opinions in order for water management to be truly effective. Women in particular represent a marginalized section of society with difficulty voicing their views. It is yet unclear exactly what components of women's participation in official structures that address community resource management increase their participation in water-related decision making. Further, there is evidence that women are involved in water management through informal mechanisms or community institutions as well.

MANUSCRIPT

ABSTRACT

Background: Marsabit is a semi-arid district in northern Kenya where conflicts over scarce water sources can limit access to water. Management of sources is a potential way to mitigate these conflicts, and the involvement of women in management is recognized as important. Little evidence exists on how women can be effectively involved in management decisions or how their involvement can reduce conflict and increase access to water sources in Marsabit.

Objective: This study explores the types and nature of conflict over scarce water sources in Marsabit, Kenya, how they impact women, and the role that women play in water management and conflict resolution.

Methods: Key informant interviews (KIIs) (n=10) with local officials provided background information on water conflicts and identified specific topics to cover in focus group discussions. Focus group discussions (FGDs) (n=16) with men and women investigated community experiences of water conflict and perceptions of women in management.

Results: Themes from the FGDs indicated that conflicts at water points occur among livestock users, among domestic users, and between livestock and domestic users. Statutory water management committees and customary leaders such as elders are involved in preventing and mitigating conflicts. Men and women perceived women to have unique knowledge that would improve water management. Cultural norms made it difficult for women to participate in decision making on the water management committees, however women were involved in water management through initiatives that increased access to domestic water.

Discussion: Community experiences with water conflict suggest that the overlapping role of statutory water management committees and customary leaders leads to confusion about the mandate of each in addressing water conflicts. It appears that women have little decision making power on water management committees in this cultural context, but women's initiatives to separate domestic water collection from livestock collection points reduced the potential for water conflicts and were culturally appropriate. Evidence from this project can be used to promote culturally appropriate ways to involve women in water management that reduce conflicts and increase access to domestic water supplies.

INTRODUCTION

The United Nations has recognized that the world faces a potential water crisis due to rapid population growth and changes in the global climate patterns that have increased pressures on finite supplies of freshwater (Black et al., 2010). Conflict among water users is due to scarcity of supply, inequities in access, and allocation and use of water among competing users (Gehrig & Rogers, 2009). In addition to the potential for violence, conflicts can result in scarcity among marginalized groups (Carius et al., 2004; Ravnborg, 2004; Wolf et al., 2005). Water-related disputes occur both between and within nations, but direct conflicts occur more often and with greater intensity at the local level. The number and intensity of local water-related conflicts are expected to increase, particularly in areas affected by drought and climate variability, where issues of water scarcity are most acute (GoK, 2002; Ravnborg, 2004; Wolf et al., 2005). Preventing and mitigating water-related conflicts in these areas necessitates approaches that account for the unique local dynamics around water and incorporate the interests of all users.

Community Water Management as Conflict Mitigation

Governance of the use and allocation of water plays a key role in mitigating potential water-related conflicts (Gehrig & Rogers, 2009; Ravnborg, 2004; Wolf et al., 2005). Water is managed not for a single purpose, but rather to accommodate conflicting interests among domestic uses such as drinking and hygiene and productive use, agriculture, and business (Ravnborg, 2004). To improve management of water resources, national governments rely increasingly on local governance (Bruns, 2005). The

presumed advantage of devolving management is that as key stakeholders, communities possess local knowledge about their water needs and may be in a better position to resolve conflicts with fewer complications as they are the parties most concerned (Bruns, 2005; Ray, 2007). In many places local communities also posses traditional methods of resource management and conflict resolution (Bruns, 2005; Scott-Villiers et al., 2011)

Examples of devolved, local management suggest that there is promise and potential for community management approaches to be effective, but limitations exist. Marginalized groups such as women, the poor, ethnic minorities, non-elites, youth, and the elderly are frequently excluded from community management schemes (Ravnborg, 2004). As a result, biased decisions can be made that neglect to consider the needs and opinions of these groups, reinforcing societal inequalities through access to water sources (Ravnborg, 2004).

Role of Women in Water Management

The inclusion of women in community water management is of particular importance in the developing world where women are primarily responsible for providing domestic water supplies for their families (Ray, 2007; van Wijk et al., 1996). Domestic water is used for consumption, hygiene, and sometimes productive use such as animal watering and small scale horticulture, and therefore traditional gender roles of women are linked to child care, home maintenance, and cooking (Howard & Bartram, 2003; Ray, 2007). The central role of women in the provision, management, and safeguarding of water is one of the four Dublin Principles representing international consensus from 1992 International Conference on Water and the Environment (Ray, 2007). While there is a

general agreement on the importance of including women in planning and management of water supply initiatives, there is less consensus on what is meant by women's participation and little evidence on what programmatic mechanisms increase participation, access, and control of water for women or their empowerment (Ray, 2007). Many community resource management projects that have been unsuccessful have neglected to include women, and therefore their knowledge and priorities, at both planning and management levels (van Wijk et al., 1996).

Women can also play a key role in water management through informal channels (Meinzen-Dick & Zwarteveen, 1998). In one village in India, women removed canal obstructions and regulated canal flow, ultimately reducing water theft from other village residents. (Meinzen-Dick & Zwarteveen, 1998). Although anecdotal, this account highlights the non-formal and perhaps less recognized ways that women are involved in water management and related conflict resolution. Further exploration of these factors could provide a way to identify unnoticed determinants of organizational performance and increase equity in management structures (Cleaver, 1998; Meinzen-Dick & Zwarteveen, 1998).

Study Aims

The objectives of this study were to understand the types and nature of conflicts over scarce water sources in Marsabit District, Kenya, how they impact women, and the role that women can play in water management and water conflict resolution. This study questions included the following:

1. What are the main sources of conflict related to water use in the community?

2. What are the effects of water source conflicts on women's access to water supplies for domestic use?
3. What efforts have been made at the community and household levels to address water conflict and how successful have they been?
4. What are community opinions on formal roles that women play in official community structures that address water management and conflict resolution?
5. What are unofficial ways that women are involved in water conflict resolution?

METHODS

This study was conducted as a collaboration between Emory University and Millennium Water Program Kenya (MWP-K); a partnership of organizations involved in water, sanitation, and hygiene development work. The MWP-K Secretariat and the partner organization, Food for the Hungry Kenya (FHK), identified conflicts over shared water resources in Marsabit as a growing challenge and an area in which research could provide valuable information for strengthening and expanding their program work.

Study Site

Figure 1. Map of Kenya highlighting Marsabit District

Marsabit is an arid/semi-arid district in northern Kenya which borders Ethiopia to the North and inhabited mostly by pastoral groups who are largely nomadic and dependent on livestock for their livelihood. Major ethnic groups considered in this paper include: Samburu, Rendille, Borana, and Gabra. Close to 75% of the district is classified as rangeland and is located in the driest region of Kenya where the lowest elevations receive only 200 mm of rain annually (Mwangi, 2006). Most of the water sources in the district are boreholes and seasonally available dams and pans. Access to available pasture and water resources is essential for the survival of livestock and a source of conflict among the different ethnic groups (Mwangi, 2006). Traditional practices of livestock raiding as well as boundary disputes, historic ethnic tensions, political incitements, and inconsistencies between traditional and modern land tenure and resources management systems are also contribute to conflicts in the district (Haro et al., 2005; Mwangi, 2006). These conflicts have become increasingly violent as fighting with spears has been replaced by small arms and light weapons entering Kenya from Ethiopia and Somalia (Mwangi, 2006).

In the past 15 years, there has been increased emphasis on community-centered natural resource management as part of an effort to address the conflicts related to pasture and water access (Haro et al., 2005). Much of the effort directed towards community management has focused on the development of Environmental Management Committees, Water Management Committees and Peace Committees, all of which are by nature or mandate conflict mitigation institutions (Haro et al., 2005).

Recent work on customary approaches to peace-building in northern Kenya led by the Borana and Gabra elders through the Pastoralist Shade Initiative (PSI) has suggested that community conflict resolution techniques can be effective, but still face challenges and have not reached their full potential. The role of women in local conflict resolution and peace-building efforts is also an important aspect of the issue, yet it is not well understood and often underrated (Scott-Villiers et al., 2011).

Definition of Water-Related Conflict

For the purposes of this study, conflict was defined as a social situation in which a minimum of two actors or parties strive to acquire at the same moment an available set of scarce resources (Wallensteen, 2002). Water-related conflicts were defined as conflicts arising between two or more parties holding competing claims over a water resource, its allocation or use (Gehrig & Rogers, 2009). The types of conflicts discussed in this paper range from disagreements or fighting among individual water users or groups of water users, to disagreements between water users and water managers, and even some accounts of violent fighting between individuals or groups.

Site Selection Criteria

Three study sites in Marsabit were selected based on three criteria. First, the study sites were restricted to those located in FHK operational areas to enable study findings to be applied to the organization's program of activities and to utilize logistical support from FHK. Second, the study sites are areas with known water conflict and where different types of water conflict occur, such as intra-community conflict and inter-community conflict. Third, since a major contributing factor to all types of conflict in the district is ethnicity, sites included each of several major ethnic groups in the district. FHK staff identified 10 potential sites that met these criteria.

Three sites – Loglogo, Walda, and Turbi – were selected to capture heterogeneity. Each site has a small town center with people also living in the outskirts. In Loglogo, intra-community water conflict is evident, and Samburu and Rendille ethnic groups reside as one community. Water from the main borehole in Loglogo supports domestic uses, livestock watering, and is sold to water trucks that supply several other nearby communities. These various water uses often fuel conflict within the community. Walda and Turbi each comprise two different ethnic groups, Borana (in Walda) and Gabra (in Turbi). The main borehole located at Walda serves both communities as well as surrounding communities who travel long distances to collect water from Walda. During the dry seasons, inter-community conflict often occurs among these different users and communities.

Data Collection

Data were collected between May and August 2011 using three research methods: key informant interviews (KII), focus group discussions (FGD), and observation.

Key Informant Interviews

A total of 10 KIIs were held with representatives from a range of organizations and local governing bodies working in water management and conflict resolution who were well informed about the community and knowledgeable about local conflict situations. The purpose of the interviews was to gain background information about the district as well as each of the study sites, and to identify specific topics and questions to cover in focus group discussions with community members. A structured interview guide was used that covered topics including the drivers and consequences of both general conflict and water-related conflict, statutory and traditional water policies, and the dynamics of current approaches to water management.

Semi-structured interviews were conducted with key informants using a question guide. The key informants were identified through recommendations by FHK and through snowball recruitment by asking those interviewed to recommend other community leaders to participate in the study. Interviews were held in private locations, such as offices or in quiet outdoor spaces, to provide a confidential environment for the participants to discuss potentially sensitive issues. All interviews were digitally recorded and lasted between 45 and 90 minutes. Seven of the 10 interviews were conducted by an American researcher in English and three interviews were conducted with the assistance of a FHK employee who served as a translator between English and Borana during the

interview. The interviews were transcribed verbatim, and only the English portions of the three interviews conducted through a translator were transcribed.

At the district level, KIIs were held with representatives from FHK, Pastoralist Shade Initiative (PSI), and the District Peace Commission (DPC). PSI is a local non-governmental organization (NGO) comprised of elders from nine pastoralist tribes that works throughout northern Kenya to secure peace by promoting usage of customary law and dialogue. The DPC is part of the Kenyan government that works with both government and non-governmental actors to facilitate conflict mitigation and resolution of intra and inter-district conflicts. KIIs were also held at each site with local chiefs, area councilors, and representatives from local community water management committees and local level peace committees to understand issues unique to the site.

Focus Group Discussions

FGDs were held with both male and female residents at each site. This method allowed us to build on the background information provided in the KIIs and identify community experiences of water conflict. Additionally, we were able to identify perceptions on management of shared water sources and the role that women play in each. The group setting was important because it provided a range of opinions on the topics, neutralized extreme views, and provided information on typical behavior, which would have been difficult to capture in individual interviews with community members.

Separate FGDs were held with men and women to ensure that participants felt comfortable speaking truthfully in the discussions. FGDs comprised of a single ethnic

groups because historically, tension between ethnic groups was often an influencing factor in conflict in the area.

The target populations for the FGDs were adults over 18 years of age. Participants were purposively recruited via FHK staff. FHK staff members have an established presence in the communities and therefore have valuable knowledge about the characteristics of community members and were familiar to the community. The FHK staff held a preliminary meeting at each site with the area chief and other community elders to explain the purpose of the research. Area chiefs and elders at all sites approved the research and then appointed community members to inform residents about the study and scheduled focus group. Chiefs were informed that capturing a diversity of opinions was important in this study and were requested to appoint community recruiters from different social networks.

At each of the three sites, between two and three focus discussions were held with each sex to maximize the diversity of perceptions and experiences (Table 1). The focus group discussions consisted of 6-10 participants, lasted for approximately 60 to 90 minutes and were digitally recorded. Discussions were held in private locations such as homes and meeting gazebos in private compounds. Discussions were conducted in the local tribal languages.

Table 1. Number of FGDs and languages used at study sites

Site	Female FGD	Male FGD	Total FGDs	Language
Loglogo	3	3	6	Samburu and Rendille mixture
Walda	3	3	6	Borana
Turbi	2	2	4	Borana

Each discussion was led by a moderator, who was an FHK staff member, the same gender as the group, and a note-taker was present to record the main points raised during the discussion. Moderators were trained in conducting FGDs as well as research ethics and the informed consent processes. They used a discussion guide to moderate discussion on the following topics: conflicts related to water both between and within communities as well as within households, the role of women in water management and water conflict resolution in a formal and informal capacity, and community suggestions on the best way to address water conflict. The questions on the discussion guide were first pilot tested and then revised to the version used for data collection. None of the languages used for the FGDs are written languages, so the moderators translated questions impromptu from English to the local language during the discussions. During the training sessions all moderators using the same languages orally translated the question guide together to ensure consistency in translation during the discussions.

Observation

Non-participant observation was used to observe the behaviors and interactions of different users at water sources in each study site. Two observations were done each at the main boreholes in Loglogo and Walda, and one at a domestic tank in Turbi. All observations lasted about one hour and were conducted during morning hours because it was the busiest time of the day at the water points. The observations were unstructured, but the observers paid particular attention to the number of men and women, the number of livestock, interactions among different users, and interactions between users and the water management committee members. At each site, the visiting researcher from the

United States was accompanied by local FHK staff to assist in communication with community members during observations. The visiting researcher recorded notes on direct observations as well as any verbal conversations relayed from the accompanying observers. The observations were used to complement and verify data from the focus group discussions with residents.

Ethics

The protocol for this study was submitted and deemed exempt by Emory University's Institutional Review Board. In Kenya, the study was approved by the National Steering Committee on Peace building and Conflict Management, part of the Ministry of State for Provincial Administration and Internal Security, Office of the President. FHK considered this work to be program evaluation. Informed consent was obtained orally from all KII and FGD study participants, both for participation in the research and to be digitally recorded. Participants were not paid for their participation, but were provided with tea at the end of the discussion as a culturally appropriate courtesy to show appreciation for their time.

Data Analysis

All textual data were digitally recorded, transcribed and translated into English (where necessary) and checked for accuracy and completeness by an independent source. Transcripts were then uploaded into MAXQDA10 (Marburg, Germany) and thematic analysis was used to identify core issues (Hennink, Hutter, & Bailey, 2011). Data were first read to identify core themes or codes. All data were then coded using the inductive

and deductive themes that were identified. Analysis involved detailed descriptions of the codes, comparisons, categorizations and developing explanations.

RESULTS

Preferred Water Sources at Study Sites

FGD participants at all three sites spoke mainly about conflicts at large boreholes. Boreholes are deeply drilled sources that provide ground water and are considered to be clean and safe. There were multiple water points in Loglogo, including three boreholes and several rain-fed ponds and catchments. KII and FGD participants in Loglogo explained that most people prefer one main borehole because of the quantity and quality of water it produced as well as its central location. There were also several rain-fed pans in Walda, but only one borehole, which served as the main water point year-round. Residents in Turbi often relied on the borehole in Walda, especially during the dry season because it was the closest reliable water source. There was potential for conflict at any of the water points, but participants spoke mainly about conflicts at boreholes because they were the most common water source and most common site of conflict. The following description of the function and management of boreholes provides the context necessary to understand the water conflict discussed in this paper

Function and Management of Boreholes in Loglogo and Walda

Typically, there are two types of water collection points at boreholes: troughs where livestock drink and taps or tanks where domestic water is collected. A diesel-powered generator pumps water from underground and then directs it through pipes to

the troughs and taps. There are several troughs at each borehole, designated for each type of livestock. Camels drink from one, cows from another, and goats and sheep together from one. Pipes lead directly from the borehole to the trough, so the troughs empty when the pump is turned off. At the domestic collection point, pipes fill a storage tank which has a tap on it. At any one point in time, water can be directed to either the domestic tanks or to the livestock troughs, but not to both.

Each borehole has a water management committee composed of community members elected for annual terms. They maintain and operate the pump and oversee water usage at each borehole. One or more committee members must be present at the borehole every day to operate the generator and collect fees from users. Women, who collect water for domestic use, queue at the domestic taps by putting what are typically 20 L containers in a queue to hold their place and in both Loglogo and Walda are charged a fixed amount for each container filled. The management committee employs a woman to oversee the queue and collect payments. Men bringing their livestock to the troughs queue separately, and the man overseeing the borehole keeps track of the order in which men arrive with their animals. Animals are supposed to drink water at the troughs based on the order in which they arrive. Herd sizes vary, but there are times when hundreds of animals may be present at the borehole at the same time. In Walda, the committee charges a fixed amount per head of livestock drinking from the trough. In Loglogo, livestock users bring their own diesel to add to the generator which pumps water to the trough for their animals. Water is pumped until the fuel is used up.

The management committee for each borehole is also mandated to assist in resolving any water-related conflicts that occur at the boreholes. In Loglogo and Walda,

the committee members received conflict resolution training from the government and NGO organizations.

Types and Nature of Water-Related Conflict in Marsabit

Although data were collected from three sites in this study, the types of water-point interactions and the influences on conflict were similar at all study sites. Figure 2 is an inductive conceptual diagram that visually represents the connections between major themes and concepts from focus group discussion data. It shows that existing infrastructure at the boreholes, environmental conditions that influence water supply, and customary practices in resource sharing influence various interactions at the borehole itself. Typically interactions occur among men who bring livestock to drink at troughs and among women waiting to fill jerry cans from the taps; interactions also occur between these two groups of water users. These interactions happen daily and are amicable a majority of the time. However, they also have the potential to result in conflict, which is the focus of this paper. The nature of conflicts stems from the three types of interactions and is influenced by congestion at the borehole, management structures of the boreholes, and gender norms. Conflicts resulted in women spending long hours waiting to collect water for their households, which compromised the quantity and quality of water they were able to collect. Variations in prioritization of household water usage between husbands, wives and children contributed to household conflict, which sometimes resulted in physical violence. Ultimately, the outcomes of household water supply impacted physical health and contributed to mental anxiety among women. The following sections explain in further detail each component of figure 2.

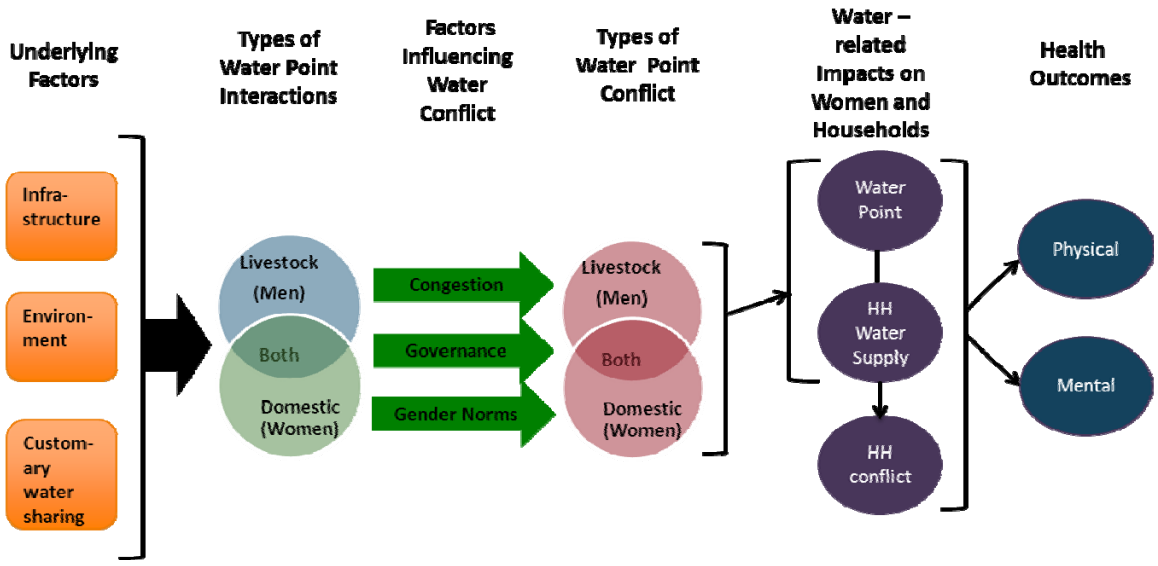

Figure 2. Inductive conceptual diagram of the influences and outcomes of conflict at boreholes in Loglogo and Walda

Underlying Influences Contributing to the Types of Interactions at Boreholes

Figure 2 illustrates three main factors leading to the types and nature of non-conflict interactions at water points. First is the infrastructure of the boreholes. The main boreholes in Loglogo and Walda provide water to domestic and livestock users and as a result, livestock and domestic users interact at one water point rather than having separate water points.

Environmental conditions are a second factor contributing to non-conflict interactions at water points. During the rainy season livestock users disperse to rain-fed dams and pans but return to the permanent boreholes in the dry season when alternative sources are not available. The prolonged drought at the time of the study has meant

longer periods of time when livestock users are dependant on permanent boreholes. The lack of alternative water sources increases the total number of users at one borehole.

The third underlying factor influencing interactions at boreholes is sharing of water among different communities, often from different ethnic groups. Participants explained that pasture and water are located in different areas. Communities share these resources with each other because they are dependant on one another for access to both resources, particularly for livestock. The customary system for sharing water involves elders or other community representatives first visiting the host community to request access to the water. An agreement is reached which is then followed for use of that water source. Often only men migrate with their livestock to water points and as a result, interactions at water points also occur among men from different ethnic groups.

As seen in figure 2, these three factors result in non-conflict interactions at boreholes among livestock users (mostly men, sometimes from different ethnic groups) among domestic users (mostly women, sometimes from different ethnic groups) and between livestock and domestic users (men and women). As shown in Figure 2, one of the factors shaping water conflict at boreholes is gender norms; therefore men's and women's roles as they relate to the other two factors of congestion and governance are discussed separately in the next section.

Factors Influencing Conflict within Each Type of Water Point Interaction

Livestock Users

Competition for priority access to the troughs, bribing the management committee, and misunderstandings of water sharing agreements between communities were key factors that led to conflict among individual livestock users. Participants explained that when men bring their livestock to water points, each man wants to have priority access to the troughs rather than waiting in the queue. Men explained that they prefer to bring their livestock to the borehole in the morning so that they can take water before travelling to look for pasture. The limited number of troughs can lead to competition between individuals as they try to access to the troughs, as explained below:

> *"…people are overcrowded in one point leading to fights because of priorities. One wants to be ahead of the other one because the animals are coming from far so you wish to take water earlier so that you will go earlier." [Male FGD, Loglogo]*

Men described instances where individual livestock users bribed the committee member overseeing the borehole to access the trough without queuing, which leads to arguments among users. Finally, participants in Walda recounted instances where other communities who had been granted access to the Walda borehole did not follow the agreed upon rules. This resulted in verbal arguments and physical fights that sometimes extended to wider ethnic conflicts as explained below:

"If a person from a particular clan brings conflict, he gets supported by the members of his clan and vice versa." [Male FGD, Turbi]

Participants in Loglogo described a unique problem related to borehole management arising from the fact that men bring their own diesel or pay for diesel for livestock troughs. They describe incidents where people brought impure diesel to add to the generator, which easily damages it and suggested that the management fuel the machine and charge users cash instead.

Domestic Users

Competition for priority access to the tap and favoritism by the woman overseeing the tap were key factors the led to conflict among individual women at domestic taps. Women explained that they often have to wait in long queues to fill their containers. They stated that they usually place their containers in a queue to secure their position, but they sometimes disagreed about who arrived first and the order of the containers. Women also explained that sometimes older or pregnant women request to fill their containers without waiting in the queue. Depending on the situation of the woman, others may or may not agree to advance her position in the queue.

Women explained that water management committees often employ a woman to oversee the domestic tap and collect payments from people for each container of water they fill. They described times when this woman was perceived to favor certain other women in the queue and allow them to collect water without waiting. This can lead to

disagreements and sometimes physical fights between women. Interestingly, women noted that conflicts at the domestic tap do not go beyond the tap and that they often forgive each other after leaving the water point because the conflict was "just about water."

Livestock and Domestic Users

Prioritization of filling livestock troughs over domestic tanks was the main cause of conflict between domestic and livestock users. Conflicts occurred between livestock and domestic users as distinct user groups and as individuals. When making the decision about prioritizing the direction of the water from the borehole either to the domestic taps or to the troughs, participants explained that troughs are often prioritized over the domestic taps. However, men at two sites stated that although this is the case in practice, domestic water should be given priority.

> *"So what we usually do when livestock are there waiting, we give them the first priority because everyone has his livestock to take water first, but what should be done is to give first human beings." [Male FGD, Loglogo]*

Men further explained that livestock are often given priority access to the water because they have far distances to travel and that women can collect water after the livestock have left. Women, however, stated that men who are on the committee and make the decisions do not understand the experience of collecting domestic water because it is not a role shared by men.

"When there is no water, men are not even aware. Women are the ones who know all the problems of water. Men only know when livestock need water, they don't care about domestic use." [Female FGD, Loglogo]

Prioritization of livestock water over domestic water leads to long queues at domestic taps. Participants described situations in which individual women bring their containers and fill them directly from the livestock troughs where animals are taking water so that they can avoid the long queues. For example:

"…when livestock are taking water in the troughs and women are fetching at the water taps, sometimes you still find some women coming to demand water in the troughs." [Male FGD, Loglogo]

Water Related Impacts on Women and Households

Water Point Impacts and Household Water Supply

There are a number of potential outcomes of conflict, but they impact women in three key ways at the water point. First, collecting water from livestock troughs poses a potential safety risk to women. Participants explained that men who have paid for the water for their livestock to drink tend to tolerate a few women coming to collect water directly from the troughs or women from their own families, but not all women. Men in Loglogo say that this is because those women do not pay for the water they take from the

troughs. Women reported that sometimes this results in their being physically beaten by the men at the trough.

Second, women are impacted in their ability to collect water for domestic use. As a result of the prioritization of livestock users at the water points, women explained that they spend long hours waiting to fill their containers. When women visit the water point, they explained that they are only able to collect water based on the number of containers they have and their ability to transport those containers home. For example, women in one FGD in Walda stated that they do not have donkeys, so they are only able to transport one container home at a time and then have to walk back to the borehole and wait in the queue again to fill their container. When the queue is long, or they have to wait for the livestock to be given water, women describe collecting less water than they prefer. The prioritization of livestock water over domestic water also impacts the quality of water women collect. When women collect water directly from the livestock troughs to avoid waiting in the long domestic queues, the water they collect has been in direct contact with the mouths of camels, goats, sheep, donkeys, and cows.

Third, women explained that time spent waiting longer in domestic queues results in less time available for other tasks. These included both domestic tasks such as cooking, cleaning, fetching firewood, and child care, as well as other community activities such as involvement in women's groups.

Household Conflict

The quantity and quality of water available in the household subsequently affects the supply of household water, which can lead to conflict within the household. Women explained that this results from disagreements between family members about the usage of water in the home. Women at all sites stated that because men and children do not understand the hardships that the woman has gone through to collect household water, they may want to use the water in different ways than the mother has intended. One woman explained:

> *You had fetched one jerrican and brought home. Everyone needs this. There is cooking, there are children in the morning to go to school and they want to wash their face. Women thinks about all this, but the husband doesn't even care. He just wakes up and says 'I want water for bathing!' When you tell him there is no water, he replies, haven't you just brought the water? Men don't think. They force you to give it to them. [Female FGD, Walda]*

Health Outcomes

Women explained that the water related impacts of water point conflict resulted in physical and mental health outcomes, as seen in figure 2. Women first described that limited amounts of water available in the household led children to suffer from skin conditions due to not bathing daily. They also described times when they had to cook less food than they prefer because of the limited amount of water available for cooking. Women described feelings of stress and anxiety at night when thinking about their prospects for collecting water the next day.

Conflict Resolution and Prevention

FGD participants explained that there are two parties who are responsible for settling conflicts at the boreholes; the water management committees and the elders and chiefs. These two parties are highlighted in red in Figure 3.

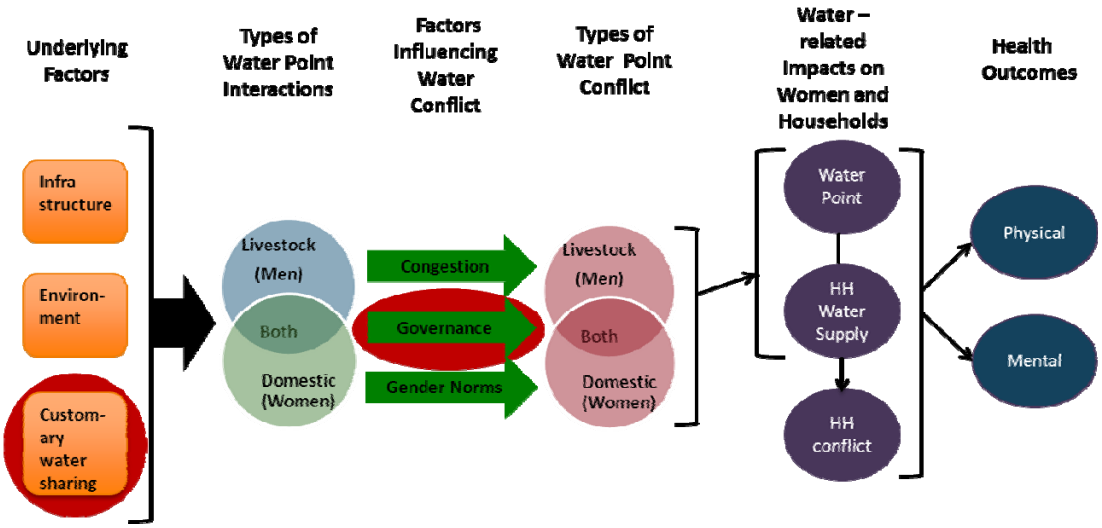

Figure 3. Inductive conceptual diagram of the influences and outcomes of conflicts at boreholes in Loglogo and Walda, highlighting domains for conflict mitigation

The water management committee for each borehole is mandated to assist in resolving conflicts that arise at the borehole and the customary leaders are responsible for dealing with conflict in the community as a whole. One participant explained the division in mandate this way:

> *"Elders are the ones charged with the responsibility of solving issues within the community. Committee members are not involved in solving for the greater community issue. Theirs is probably looking at conflicts such as water and solving such, but not the entire community problems." (Male FGD, Walda)*

Men and women explained that the management committee is most involved in resolving conflicts among livestock users because they are most likely to become violent at the borehole. When a user breaks the rules of the borehole, such as jumping the

queue, the committee is responsible for enforcing the pre-set fines. Some punishments are fines and others involve restrictions on water usage. One participant explained the standard punishment for jumping the queue:

> *"There are standard fines for any sort of crime committed. For example, there are rules that punish the guilty by accessing the water point after everyone's animals have drunk. So the guilty is kept waiting till the end. [Male FGD, Turbi]*

When conflicts involve disagreements, they are also brought to the management committee to be solved. The committee brings the conflicting parties together to discuss and settle the conflict. When they are not able to solve the conflict, they may also engage other customary leaders. However, there was often confusion and misunderstandings about who is supposed to address conflict at the water point. Sometimes it is also dependent on who people feel most comfortable with. One participant explained her understanding of conflict resolution this way:

> *"There is also this, we do not know much about the government rule, we know more of our traditional rule. We go to the chief. Then the chief takes it to the next level. People have different opinion. Conflict arises on water over the rules set, and if someone trespasses the rule conflict arise on the water area, and later they report each other to the leaders, chief, and if the local leaders are defeated to solve dispute the case reach to the government. It sometimes reaches to the water committee too. (Female FGD, Walda)*

Both men and women further explained that many conflicts at the water points can be mitigated by fair management practices by the water management committees. In particular, the conflicts between livestock and domestic users could be mitigated if there was better understanding of the priorities of each type of user. Involving women in the water management committees was one suggestion for improving sharing between livestock and domestic users. The opinions of FGD participants on women's role in the committees are outline in the next section.

Community Opinions on the Role of Women in Water Management Committees

Men and women highlighted that women have unique skills and knowledge to contribute to water management. Currently water management committees at the boreholes are composed mostly of men, but participants explained how incorporating women into the committees would allow them to apply their unique skills, contributing to better sharing of water among all users. However, including women on community water management committees was not seen as an appropriate way to incorporate these unique contributions within this cultural context. The following sections outline the key contributions of women and the challenges the face in committee participation, as explained by FGD participants.

Contributions of Women to Water Management

Specialized Knowledge

Women have a unique knowledge of the challenges of domestic water collection due to their experience as the primary collectors of domestic water. Men lack a full understanding of these experiences and participants explained that management committees composed entirely of men can make decisions regarding allocation of water between domestic and livestock users that do not account for the needs of domestic users.

Resources Utilization

Women were perceived by both men and women to utilize limited resources well. FGD participants believe that this skill would improve the utilization and sharing of water, particularly between domestic and livestock users. They explained that in a practical sense, women utilize food and water well at the household level by planning ahead in order to avoid the consequences of running out. Women in Loglogo said that they plan food and water usage so that they will have some in reserve for emergencies. They also utilize resources well at the neighborhood level, such as food aid provided by the government and NGOs. Men explained that communities formed committees to assist in the distribution of the food aid, which are composed almost entirely of women. Women attributed some of their skills in resource utilization to their "merciful" hearts and desire to "feed the masses" with available resources.

Both men and women believed women to be especially good at managing money. They described women as "faithful" with money, and diligent in record keeping.

Participants said that some of the money water management committees collected from user fees had been mismanaged and used for personal gain. Men felt that if women were involved in the committee's treasury, money was less likely to be misused. Women also added that they have creative ideas for community projects that they could put the money towards.

Joint Decision Making

Participants explained that as members of the community, women also deserve be part of institutions that make decisions affecting the livelihood of the community. They emphasized that the partnership between men and women in making water management decisions would benefit the entire community. Women also stated that they feel comfortable and at ease expressing their concerns to one another. Therefore women would be able to express their concerns to women on the committees who could share them with the larger committee. Additionally, women at one site explained that participating in the water management committees is also an important way for women to learn about new things.

Challenges to women's participation in water management committees

Attendance

Men and women both said that the first challenge for women on the water management committees is their ability to attend the meetings. However, men and women had different understandings of the reasons women do not attend meetings. Men stated that, even when they have posts on the committee, women often fail to show up to meetings and are subsequently removed from their post by the rest of the committee or withdraw themselves. Women, however, explained that many times women fail to attend meetings because they are not informed about them. As a result of not knowing about the meetings and being left out of them, they decide to drop out of the committees. Men further expressed concern that asking women to be members of the committees adds an extra burden to their existing workload. Interestingly, women did not share this concern.

Influence of Gender Norms on Participation

Both men and women explained that there is a clear distinction between attendance and active participation in committee meetings. They said that women are not supposed to speak up in a group of men because it is considered disrespectful, so what they say may not be acknowledged. Similarly, women stated that they would feel uncomfortable voicing their opinions in front of men. As a result, even women who attend meetings may not be able to voice their opinions and therefore are excluded from decision-making.

"Usually women are not given the first positions, even if it's talking or giving out points in a meeting, they don't even contribute because they know that their contributions are not even considered." [Male FGD, Loglogo]

Communication Channels

Participants explained that there is a communication channel between men and women at both the household and community level. At the household level women are supposed to communicate their concerns about water to their husbands, who will then take those concerns to the committee. Men are also expected to share the information from the meeting with their wives. Participants state that also at a community level, women are expected to share their concerns with men, who will assist in addressing them. This is the proper communication channel that women should follow to have their concerns addressed rather than being on the committee themselves.

Social Risks

Women in some FGDs expressed concern that attending meetings would cause other women in the community to gossip about them because it was not viewed as part of their normal role. Men further explained that government policies and NGOs required women to be part of the water management committees. They described that as times change and with more involvement from NGOs in the area, there has been more emphasis to increase women's involvement on the committees, although it was not considered an appropriate role for women.

Women in Informal Water Management

Men and women explained that women are involved in water management outside of the official water management committees. Women's groups at two study sites engaged in projects that provided domestic water collection at sites far from the main borehole. Women said that these projects were helpful because they reduced the walking time and waiting time for domestic water collection. Interestingly, men at both sites cited the projects as ways of mitigating the conflict between livestock and domestic users at the main borehole by reducing the number of domestic users at the borehole. Men also praised the way women's groups managed their projects. They explained that women should manage these projects themselves because they involved only water for domestic use.

Box 1: Domestic Water Close to Home

The town of Loglogo is made up of several small villages. Women's groups from several of the villages worked together to secure funding from Kenya's Constituency Development Fund to purchase water tanks for each village. They installed pipes that run from the main borehole out to the tanks in each village. Within each village, members of the women's group make contributions to purchase diesel and fuel the generator at the borehole to pump water to their tank. Once the tank is filled they are able to collect domestic water from it for several days and can avoid walking all the way to the main borehole to collect water. The women's groups also sell the water at a reduced rate to other women in the village who are not members of the group. In addition to saving time for water collection, this system also helped poorer women in the village access domestic water at a reduced price.

Box 2: Storing Rain Water for the Dry Season

Women in Turbi explained that they often rely on rain-fed ponds for domestic water collection. However, these are open sources which are empty during the dry season. They explained that they needed a way to store the rain water for use in the dry season. One of the women's groups in Turbi secured funding from a private NGO to install a rock catchment system. The system has a large, covered, cement holding tank located at the bottom of a rocky hillside. When it rains, the water flows down the rocky hillside and into the tank. There is a tap on the side of the tank where water can be collected. The tap is locked and the water is preserved for domestic collection during the dry season. Women said that the project helped them provide domestic water in dry seasons, during which they previously had to walk long distances to collect domestic water.

DISCUSSION

This study explores the types and nature of conflicts over scarce water sources in Marsabit, Kenya, how they impact women, and the role that women play in water management and conflict resolution. To date there has not been a systematic overview of local level water conflicts and little is known on exactly what factors contribute to their character or intensity (Ravnborg, 2004). Study findings show that in this context, typical non-conflict interactions occur at water points among men who bring livestock, among women who collect domestic water, and between these two groups. Conflict within these interactions was primarily based on gender norms and management of water sharing among users. Findings suggest that while community members viewed women's contributions to water management as important, involvement in water management committees may not provide an appropriate forum for women to participate in decision-making regarding community water resources. Therefore, typical conflict mitigation strategies that focus on increased participation of women on committees may not be successful without considerable education.

Focus group discussions with men and women in Samburu, Rendille, Borana, and Gabra communities revealed a common set of factors that influenced normal water point interactions to result in conflict. Understanding the relationship between these factors helped to identify the key causes of conflict and potential mitigation strategies. Environmental conditions such as drought, customary water sharing practices, and the infrastructure of boreholes led large numbers of livestock and domestic users to converge at one water point. This resulted in interactions among different ethnic groups and

livestock and domestic users, but not necessarily conflict. Rather, conflicts occurred as a result of inconsistencies in the enforcement of water point rules such as acceptance of bribes from some users to jump the queue. Conflicts between domestic and livestock users often occurred as a result of perceived unfairness in the regulation of water sharing such as prioritization of livestock users. This is similar to the case of Cochabamba, Bolivia where perceived unfairness in water management, rather than scarcity of water itself, led to conflict. To improve the provision of the city's scarce water sources to residents, the Bolivian government signed a contract with Aguas del Tunari (AdT). Water bills increased, but residents did not perceive an equivalent improvement in services. Residents who had dug their own wells feared that AdT would take ownership of the wells and they would be forced to pay for water that was previously free. Citizens protested with strikes and roadblocks, eventually leading to violent clashes, which the government sent soldiers to calm. The city agreed to remove the contract with AdT and return management to the municipality, but performance is still unsatisfactory (Wolf et al., 2005).

In addition to preventing conflicts through fair management practices, water management committees are responsible for resolving conflicts that occur at boreholes. However, community members in Marsabit understand statutory water management committees to have an overlapping role in conflict resolution with customary community leadership bodies such as elders. We found no clear mandate for the authority of either institution and often community members bring conflict issues to the group with which they feel most comfortable. Customary approaches to natural resources management and conflict resolution often operate in parallel to statutory approaches (Robinson, Sinclair, &

Spaling, 2010; Scott-Villiers et al., 2011). A key challenge is that customary approaches focus on a deliberation process rather than participation (Robinson et al., 2010). Deliberation is the process by which people "confer, ponder, exchange views, consider evidence, reflect on matters of mutual interest, negotiate, and attempt to persuade each other" (Robinson et al., 2010). Participation overlaps somewhat, but is an inclusive process where stakeholders have some control over decisions and institutional examples often focus on formal structures such as the water management committees at boreholes in Marsabit (Robinson et al., 2010). Facilitating the incorporation of elements of customary methods and the process of deliberation into statutory management schemes could enhance their effectiveness.

We found that conflicts between domestic and livestock users were specifically influenced by the gendered nature of management decisions. Due to the gendered division of labor, men and women have different experiences and priorities related to water collection at the borehole. Male decision makers prioritize livestock at the boreholes and women wait until the livestock have taken water to collect domestic water. We found that both men and women value women's "specialized knowledge" as domestic water collectors, and believe it should be integrated into management decisions to better address the needs and priorities of women.

Although there was strong appreciation and respect for women's role in management, key challenges related to their successful participation in decision making on the water management committees were related to gender norms specific to this cultural context. Case studies of women's involvement in water management in Zimbabwe and Sri Lanka showed that women's participation in water management

committees was hindered by the time constraints due to their other domestic tasks and the opportunity costs related to taking time to attend meetings (Cleaver, 1998; Meinzen-Dick & Zwarteveen, 1998). In our study, the key challenge to women's involvement was not their ability to attend meetings, but their ability to participate in decision-making at meetings. Cultural norms dictate that women are not supposed to speak in front of men or lead groups of men. The proper communication channel for women to express their opinions about water issues was through their husbands, rather than as members of the committee themselves. As such, the typical conflict mitigation strategy employed to increase involvement of women on committees may not actually provide more agency without discrete activities to overcome social norms.

Women in our study expressed concern about the social risks of committee membership. They were specifically concerned that other women in the community would look down on them for fulfilling a role that was meant for men. Similar findings related to social risks were seen in another case study from Zimbabwe where younger, unmarried women were concerned about speaking up at a meeting where older women were present (Cleaver, 1998). Women in our study did explain that the women on the committee should be ones that they feel free communicating with and who will voice their concerns at meetings. An understanding of the communication networks among women and which women from the community can best integrate concerns in committee meetings is an important component of enhancing women's participation and ensuring that their priorities are contributed.

Study findings showed that projects by women's groups such as domestic tanks and rock catchments systems enhanced access to domestic water and were viewed

favorably by both men and women. These interventions also mitigated conflict by reducing the potential for livestock and domestic users to interact at the boreholes. They were cited as culturally appropriate examples where women demonstrated management capabilities. Part of the goal of increasing women's involvement in management is that it would reduce conflicts and increase access to domestic water. These projects accomplish both objectives outside of formal management structures. Given their acceptance within the community, enhancing these efforts could also offer a complementary approach to involving women in formal management committees.

The findings of this study show that management of water sources plays a dual role in conflicts in prevention through fair management practices and through the mandate to resolve conflicts that do occur. Therefore enhancing management of water sources is a key way to mitigate water conflicts. Two key components currently lacking from management approaches are the inclusion of women and customary decision making bodies. Current management schemes could be improved by incorporating components of customary approaches to natural resource management and conflict resolution. Recent work on customary approaches to peace building in northern Kenya and southern Ethiopia highlighted that women have a unique role in customary peace building approaches as well (Scott-Villiers et al., 2011). Given the challenges of incorporating women into statutory committees, women's involvement through customary approaches and informal management projects are two alternative approaches to enhance women's contributions to management.

Strengths and Limitations

One of the strengths of this exploratory study was the use of multiple qualitative methods. The formative work done through key informant interviews provided the context necessary to understand key issues related to water conflicts such as water sharing among the different ethnic groups and the dynamics of current approaches to water management. The key informant interviews also guided the specific topics covered in the FGDs. This allowed for FGDs to be more focused on specific topics that related to the research questions. A second strength of this study was the partnership between Emory University and FHK. At all three research sites, FHK had an established presence, and community members were willing to participate fully in research activities conducted with FHK. Focus group discussion moderators were FHK staff members who were well known and trusted in each community, and already had an established rapport with many community members. In this case, the pre-established rapport seemed to elicit more in-depth discussions among participants.

A key challenge for this research project was narrowing the scope of the research to a topic that was focused enough to be able to gather meaningful data on within the three-month timeframe. Many of the issues related to conflict, violence, and insecurity in Marsabit have multiple contributing factors, including natural resource sharing, boundary disputes, politics, and historic ethnic tensions, among others. We attempted to focus specifically on conflict situations that occur due to sharing of water sources and the role of women in potential solutions to mitigating these conflicts. However, it was also

important to recognize and incorporate a thorough understanding of all of the major factors that influence conflict over water sources.

A second limitation of the study was that the primary water point for each of the study sites was a borehole. Boreholes are growing in number in Marsabit, but the dynamics of interactions and management of boreholes may be different from the dynamics of interactions at other types of water points such as seasonal pans and dams. However, given that boreholes do serve as a major water source for many communities in Marsabit, especially domestic users, a clear understanding of the dynamics water conflicts at boreholes is important.

Finally, women were considered to be a homogonous group in this research. The inclusion of women with more decision making power as members of the water management committees does not exclude the possibility possible that poorer women, or those with less influence in the community could still be excluded from management structures.

Conclusion and Future Research

Study findings show that management of boreholes is closely linked to conflict mitigation. In Kenya, the Water Act of 2002 has devolved management of water resources to communities in an effort to improve water management and the central role of women in water management is recognized (GoK, 2002; Ray, 2007). There are no clear guidelines on how to include women in water management in ways that improve water access or address conflict resolution. Effective management of water resources in Marsabit is important in preventing conflicts that occur when different users are unable to

access enough water to meet their needs. Women can play an important role in the community structures that govern water management by offering a unique perspective as domestic water users. Although gender norms make attendance and active participation particularly challenging for women, men and women highlighted the importance of exploring ways to better facilitate women's participation in these community structures. Whether participation alone is sufficient to increase women's voices remains to be seen. Women also played a key role in mitigating some of the key causes of water-related conflicts such as overcrowding and competition between livestock and domestic users at shared water points, by installing tanks or building rock catchments that provided separate sources for domestic water collection. One overarching theme in this study was the importance of customary mechanisms of natural resource management and conflict resolution and the challenges of these mechanisms operating in parallel to statutory ones.

This was a formative research piece that sets the stage for further work on improving water management and mitigating water-related conflicts in Marsabit. Two potential areas for future research in northern Kenya include:

- What are ways that traditional management systems and conflict resolution systems can be effectively incorporated into statutory approaches? What is the role of women in these systems and how can it be incorporated into more effective management?
- Interactions related to water were amicable most of the time and water was shared well among users from several communities. Where water is one of several

contributing factors to conflict, how can effective sharing of water sources be a bridge to peace among different groups of people?

PUBLIC HEALTH IMPLICATIONS

Access to water for domestic use is defined by the UNICEF/World Health Organization as 20 liters per person per day from an improved source within one km from the dwelling (UNICEF, 2012). Lack of access to sufficient quantities of safe water supplies impacts health in a variety of ways. Inadequate water supplies can hinder proper hygiene practices such as hand and face washing and bathing. Diarrheal diseases attributed to sanitation and hygiene contribute to an estimated 1.37 million deaths in children under 5 annually from preventable diarrheal diseases (Black et al., 2010). Additionally, skin and eye diseases such as trachoma, louse, and tick-borne typhus are linked to inadequate hygiene (Howard & Bartram, 2003).

The ability to access this quantity of water can be affected by many factors. In Marsabit, water conflicts, particularly between livestock and domestic users, compromised the quantity and quality of water available in the household. When livestock are given priority access and women have to wait in long queues to access water, they collect smaller quantities of water. As a result, there is less water available in the home for the entire family to use. Study findings show that women reported several different health effects resulting from the quantity of water available in the home, including skin diseases from lack of bathing, especially on children and reduced amounts of food due to lack of water for cooking. Although the connection was not made directly by participants, the inadequate supply of domestic water also contributes to the burden of diarrheal diseases among residents at study sites. During one observation at a borehole, a woman recounted the story of a particular NGO that was promoting hand-washing with

soap to prevent disease. She explained that she did not wash her hands often because of lack of soap, but rather due to lack of water.

The quality of water in the household was also compromised when women collected water directly from the livestock troughs. Water from the troughs has been in direct contact with mouths of camels, cows, goats, sheep, and donkeys, which increases the risk of potential disease transmission to the human consumers in the household. The health impacts from conflict at water points therefore impacted all members of the household, not just women. Addressing conflicts over scarce water sources in Marsabit is an important way to ensure that women have access to sufficient supplies of domestic water for the entire family.

Program Recommendations

This research was conducted as an applied project with the intention of providing useful information for FHK and other MWP-K organizations for their programmatic work in Marsabit. Preliminary results were presented at the end of data collection to FHK staff who were invited to suggest ways the program could make adaptations to reflect lessons learned in this study. Additionally, at the conclusion of each of the focus group discussions, the participants were able to give their suggestions about potential solutions and ways to address the issues they brought up in the discussion. Insights from data analysis are outlined below and coupled with initial ideas for integrating them into program work:

- **Community sensitization with men and women on empowering women to be involved in management.** Both men and women at each of the research sites mentioned this as an important way to address some of the major challenges for women in water management. Study participants recognized the valuable contributions that women have to make that could benefit the entire community, were they able to attend meetings and be involved in decision-making. The differing perspectives from men and women about why women do not attend meetings highlights that promotion of gender balance on committees is not enough in and of itself. The goal of women's representation on committees is to ensure that their concerns as members of the community and as primary handlers of domestic water are understood and incorporated into decision making. In light of this, facilitating women's decision-making power on the committees is important in addition to their representation at committee meetings. Further, women explained that the women on the committee should be ones that they feel free communicating with and who will voice their concerns at meetings. The dynamics of communication networks among women and which women from the community can best integrate these concerns in committee meetings is an important component of enhancing women's participation and ensuring that their concerns and priorities are contributed.

- **Support to Women's Groups and initiatives related to water access**

  Given the challenges of incorporating women into the existing official community structures, the contributions of women's initiatives to reducing the underlying

causes of conflict at shared water points are also significant. Water tank and catchment projects by groups of women at two sites eased the congestion at shared water points, a major contributor to water-related conflicts. Women also explained that these initiatives improved their ability to access water for domestic purposes. Although FGD participants discussed the challenges of incorporating women into water and peace committees, men in particular recognized that these projects were useful and that women were capable of managing them. Further examination of how these interventions could be enhanced and better separate livestock and domestic water might allow be one potential way to reduce competition for water between different types of users at one point.

- **Incorporating traditional laws into governance strategies**

  Many people in Marsabit follow traditional methods that have been used historically to manage water and land use. People also follow traditional methods of conflict resolution to govern interactions and disputes over natural resources. Although official community management structures exist for water resources, they employ different strategies and exist in parallel to traditional methods. In areas where people prefer traditional methods, facilitating incorporation of elements of those methods into statutory management schemes could enhance their effectiveness. Recent work on customary approaches to peace building in northern Kenya and southern Ethiopia highlighted that women have a unique role in customary peace building approaches as well.

- **Continued work with water management committees.**

  Working with these committees to successfully and sustainably manage the water sources is also an important way to prevent conflict over the sources. Additionally, program staff emphasized the importance of working with the community as well to ensure that they also understand the by-laws that govern the water management committees and therefore are able to hold the committees accountable for proper management of the water sources.

- **Separation of domestic and livestock water sources.** Study participants noted that one way to reduce conflict is to reduce overcrowding at the water points. Overcrowding is an issue not only because of the total number of users at one source, but also because of the competition for priority access between different types of users. As existing water points are rehabilitated and new ones constructed, clear designation of domestic and livestock usage is an important consideration.

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APPENDICIES

Appendix A: Institutional Review Board

Institutional Review Board

[redacted]

[redacted]

Appendix B: Interview and Discussion Guides

Key Informant Interview Guide

ID #:
Participant type:
Location:
Organization:
Position:
Date:
Interviewer:
Audio Recording #:

Introduction:

Good afternoon. My name is Sarah Yerian and I am a student working on my Master's in Public Health at Emory University in the United States. I am here working with Food for the Hungry on a research project about water conflict in Marsabit. As part of the project we think it is important to talk to people like you who are very knowledgeable about the topic to ensure that we have a clear understanding of the issues involved. In addition to key informants, like yourself, we will be talking with men and women in the community to understand their perspectives and experiences on the issues as well.

I want to let you know that your participation in this interview is completely voluntary so please let me know if there are any questions that you feel uncomfortable answering or if you would like to stop the interview at any point. You have the right to choose not to answer any question that may make you uncomfortable, or quit the discussion at any moment. If you decide to withdraw from the study at any stage of the process, the information you have already provided will not be used as data, and there will be no negative impact. However, your opinions and views are valuable to us, so we hope you will share them.

Oral consent for the interview obtained? **Yes No**

If you don't mind, I would like to tape record the interview because I cannot write as fast as we speak and I do not want to miss or forget any of the things that we talk about. None of the research documents related to our conversation today will include your name or any personal information. Is it OK if I tape record the conversation?

Oral consent obtained to tape record the conversation? **Yes No**

I am excited to speak with you today. Your views are very valuable and we are here to learn from you so there are no right or wrong answers. I do have a list of topics I would

like to discuss, but please feel free to bring up any other topics that you feel are related. I am most interested to hear your personal opinions and views, so please do not feel shy. What you say today in the interview will be completely confidential and your name will not be used, to make sure that no one can identify you with your answers.

This interview should last about one hour. Do you have any questions before we get started?

Background Information and Opening Questions:

1.) How long have you been working with _____?
2.) What are some of your main responsibilities with _____?

Topic 1 General Conflict in the area

3.) Although our project is focusing specifically on conflicts related to water sources, I first want to get a clear idea about some of the general issues driving conflict in this area. What are some of the major causes for conflict in this area?
Probe : Boundaries, natural resources – land (for grazing), water

4.) How would you rank these issues moving from the most influential drivers to the least?

5.) Which groups of people are most often involved in the conflict?
Probe for reasons why these groups are involved.

6.) Could you give me a rough timeline of the major conflicts in the area?
Probe for each event: What was it about?

Who was involved?

How was it resolved?

Topic 2 Water Related Conflicts

I would like to focus more specifically on conflicts related to water sources, but first I would like to explain a bit more about what I mean by the term “conflict” in relation to water. We are interested in learning about different types of conflict that result from competition for different uses of the water (such as livestock and domestic uses) as well as between different users (such as people from within this community and those from outside). Our interests include conflict between this community and other communities, within this community, and even within households.

7.) What water sources in the area are central to conflicts?
Probe: Why these water sources?

8.) Are there ever conflicts between this community and other communities over these water sources?

What happens?

Probe: What are the effects on domestic water collection for people in this community?

How are the conflicts resolved?

Who is involved in resolving them?

Probe: involvement of women?

What do they do?

Probe: What in particular do women do?

9.) What kind of conflicts happen within this community over water sources?

Probe: Domestic and livestock usage

Probe: What are the effects on domestic water collection for people in this community?

How are they resolved?

Who is involved in resolving them?

Probe: involvement of women?

What do they do?

Probe: What do women in particular do?

10.) In your experience, what are some of the consequences of water source conflict to people in the area?

For different ethnic groups?

For men and women?

Specific health consequences?

Topic 3 Efforts to prevent and mitigate conflict

11.) What does *[their organization]* specifically do when there is a conflict?

12.) What are some challenges your organization faces in working to resolve conflicts?

13.) How do you deal with those challenges?

15.) We've talked about how conflicts are handled when they do happen, but I'd like to also talk about efforts to prevent conflicts from happening. Are there any systems (or agreements) in place specifically to prevent conflict over water sources?

Who is involved in establishing these systems?

How effective has it been?
Probe: What are some reasons it has been effective or not effective?

Topic 3 Role of women

16.) We are coming to the last topic for the interview; the involvement of women in water conflict. Can you tell me roughly, what is the gender composition of *[your organization]* ?

17.) What do you think are the benefits of having women in your organization?
Probe: Specifically when dealing with water conflict resolution

18.) Are there any drawbacks to having women in your organization?
Probe: Specifically when dealing with water conflict resolution

19.) Outside of these formal institutions, how are women involved in water conflict resolution?
Probe: Women's groups, setting up of pipes, building tanks, taking collections or diesel

Are there any interventions that women have been involved in that have addressed issues of water conflict?

20.) Do you think there are ways that women should be involved in water conflict resolution that they are not ?
Explain.
If yes, what are the main barriers they are facing to fulfilling this role?

Closing:
Thank you so much for everything you have shared so far. We are coming to the close of the interview now.

21.) Considering everything we have talked about today, what are some of the biggest effects of water conflict in this area?

22.) What do you think are the most promising solutions to address these issues?

Probe: How should women be involved

Thank you for taking time to talk with me today, the information you provided is very valuable. That concludes all of the questions I have prepared for today. Do you have anything further that to add that I have not asked about?

Thank you again for your time.

Focus Group Discussion Guide for Men and Women

Group ID #:
Participant type:
Location:
Date:
Moderator:
Note-taker:
Audio Recording #:

Introduction:

Introduction: Good morning/afternoon and welcome! Thank you all for being here. My name is _____ (name of Moderator) and this is my assistant _____ (name of Note-taker). We are working with Sarah Yerian, a student working on her master's in Public Health from Emory University in the United States. We are doing a research project in collaboration with Food for the Hungry on water and conflict in this area. As part of the project, we think it is important to talk to women from this community like yourselves to understand your experiences and opinions on the issues. We politely ask your participation in this activity by providing responses. The result of this research will have a considerable importance by providing supportive ideas for Fh as well as other organizations working on water development in this area.

Consent for Participation: The issues that we are going to raise during this discussion will concern different types of conflict over the water sources in the area. You will provide information about your experiences and your opinions on efforts to address the conflict, including how women should be involved. You were selected to participate in this discussion because you are a married woman over 18 years of age living in the Loglogo/Walda/Turbi area. You have the right to choose not to answer any question that may make you uncomfortable, or quit the discussion at any moment. For those who decide to withdraw from the study at any stage of the process, your information will also be removed from the pool of collected data, and there will be no negative impact. However, everyone's opinions and views are valuable to us, so we hope you will stay and share them. Please also know that whatever is discussed in the group today will be completely confidential and will not be used for anything other than the research project.

Oral consent from each person for participation? **Yes No**

Consent for Audio Recording: During the discussion _____ (name of Note-taker) will be taking notes and reminding me if I forgot to ask something important. Since it will be hard for them write down everything that is said, we will also be tape recording the whole session. The tape recording will also let other members of the research team who are not here today be able to hear exactly what you say. Please don't worry about this because our discussion will be completely confidential. No one outside of the research team will have access to the tapes and they will be destroyed after we write our

report. Even if names are mentioned during the discussion today, they will be removed when the report is written. You are entitled to the right to request the tape recorder to be turned off. If you don't mind, photographs may be taken for research and training purposes. We ask every participant to keep everything discussed here secret; however, we cannot guarantee it.
Is it OK with everyone if we tape record our discussion?

Oral consent from each participant for tape recording obtained? **Yes No**

I have a number of questions I want to ask during the discussion, but I want the discussion to be informal, so you don't need to wait to be called on to speak. Please also feel free to respond directly to what other people say. Since we want to make sure that we get a chance to hear from everyone, I want to lay out a few things to make the discussion fun for everyone:

- Remember that there is no right or wrong answer, so please be sure to share your opinions and views honestly.
- You do not need to talk in a particular order, so feel free to speak up at anytime. But, please make sure that only one person is talking at a time.
- Be sure to speak loud enough so that everyone can hear you.
- We expect that people will have different opinions, which is great! We want to know about these different views so feel free to share your opinions, even if you disagree with what other people in the group have said.

There will be no compensation for participating in the discussion, but we will have a light snack at the end for all of the participants to show our appreciation for your time and input. We assume that the meeting will take one to two hours.

Does anyone have any questions before we get started?

Warm-Up:

Before we get started, I wanted to explain a bit more about what we mean by the term "conflict." The definitions we are using are the following:
Conflict*: *A social situation in which a minimum of 2 actors or parties strive to acquire at the same moment an available set of scarce resources.
Water Related Conflict: *Conflicts arising between two or more parties holding competing claims over a water resource, its allocation, or its use.*
We are interested in learning about different types of conflict that result from competition for different uses of the water (such as livestock and domestic uses) as well as between different users (such as people from within this community and those from outside). Our interests include conflict between this community and other communities, within this community, and even within households.

Now, to get us started, let's get to know a little bit more about each other first by introducing ourselves. As we go around the room, please say only your first name and tell us your position in the community.

Topic 1 Water Resource Map

a. Water resource map exercise: Explain to the participants that we first want to get a sense of all the different water sources that they use in this area. We will do that by creating a small map together. Lay out the large piece of poster board in the middle of the circle. Then give the participants the small cut outs that they will lay on the paper to represent the main water sources that they use. Use the marker to identify/draw any other community structures for reference points. Label each water source with the type (*borehole, pan, spring, etc.*) and its name (if it has one). If the sources do not have names, label them with numbers by type (*example: Borehole 1, Borehole 2, Pan 1, Pan 2, etc.*)
b. For each source identified, ask about the main characteristics of that source:
    i. How much water is available at this source?

    ii. What time of the year is water available at this source?
    Is it completely dry at any point in the year?
    When?

    iii. What is the quality of water at this source?
    Probe for "salty" / "hard", good for human consumption, good for animal consumption)

    iv. How much does it cost to get water from this source? Shillings per 20 liter jerry can/ to water a certain number of livestock/ amount of time livestock take water.

    v. Which ethnic groups/villages usually use this source?

    vi. For what purpose do you use this water source?
    Probe for domestic (drinking, washing, bathing) and livestock

    vii. Why do you prefer this source for that purpose? Probe for quality, quantity, distance, waiting time, priorities for the water point such as livestock or domestic use.

    viii. What do you dislike about this source?

ix. Can you tell us about times that you experienced dangers (threats to your safety) when collecting water from this source?
Probe: who was involved, when did this occur, what time of year, what happened, what were the implications, how was it resolved.

x. Can you tell us about other challenges you experience when collecting water from this source?
Probe for priorities (livestock/domestic), distance, waiting time

How frequently do you experience these challenges?

c. Are there ever times when you want to use your preferred source (for either domestic or livestock usage) but cannot?

i. Explain why you sometimes do not collect water from your preferred source?
Probe: Dry season/wet season differences, conflict (either with other communities or within this community)

ii. What are the consequences of not collecting water from your preferred source?
Probe: changes in daily habits, amount of water used, quality of water used, distance, waiting time, dangers.

Topic 2 Interactions among Different Water Users

Thank you that was very helpful. We are interested in understanding how interactions among different users (different communities, men and women, livestock and domestic users) are managed in the community and how issues of conflict among these different users are managed when they arise.

Inter-Community Interactions

2.) Specifically with regards to water, what kind of interactions do you normally have with members of other communities (on a regular basis)?
a. What are the interactions about?

b. When do these interactions occur?
Probe for seasonality

c. Who is involved in the interactions?
Probe for men, women, elders, warriors

d. What normally happens during these interactions?

e. What are the laws/norms that govern these interactions?
Probe for cultural norms, water policies, water management committees, informal agreements, formal agreements

f. What are the effects of these interactions on access to preferred water sources for people in this community?
Probe for domestic and livestock

3.) Please recall and describe a time when there was conflict over a water source between this community and another community. This conflict may have involved you or someone you know.
   a. Who was involved in the conflict?

   b. What was the conflict about?

   c. What were the consequences in terms of your water use habits?

   d. How was the conflict resolved?
      i. Who was involved?

      ii. What efforts were made by community institutions to resolve the conflict? Probe for involvement of water management committee, peace committee, women's groups, etc.

      iii. What did they do?

      iv. How successful were their efforts?

      v. What are some reasons that they were successful/not successful?

      vi. How were women involved?

4.) What are some of the major causes of conflict over water sources between this community and other communities?

Probe for violation of norms/laws that govern the interactions

Intra-community Interactions

5.) Specifically with regards to water, what kind of interactions do you normally have with other people in this community?
   a. What are the interactions about?

Probe for interactions among different types of users: livestock and domestic, and among the same types of users: livestock and livestock, domestic and domestic

b. When do these interactions occur? Probe for seasonality, time of day, day of the week

c. Who is involved in the interactions? Probe for men, women, different users

d. What normally happens during these interactions?

e. How are these interactions governed? Probe for cultural norms, water policies, water management committees, informal agreements, formal agreements

f. What are the effects of these interactions on access to preferred water sources for people in this community? Probe for domestic and livestock

6.) Please recall and describe a time when there was conflict over a water source between different water users in this community. This conflict may have involved you or someone you know.
   a. Who was involved in the conflict? Probe for types of people or users (ex. Men or women, livestock or domestic users, not necessarily names of people)

   b. What was the conflict about?

   c. What were the consequences in terms of your water use habits?

   d. How was the conflict resolved?
      i. Who was involved?
      ii. What efforts were made by community institutions to resolve the conflict? Probe for involvement of water management committee, peace committee, women's groups, etc.
      iii. What did they do?
      iv. How successful were their efforts?
      v. What are some reasons that they were successful/not successful?

   e. How were women involved?

7.) What do you think are some of the major causes of conflict over water sources among people within this community?

Probe for management, scarcity of preferred source, priorities at the water point (livestock vs. domestic)

Topic 3 Involvement of Women in Conflict Resolution

8.) What, if any, are the benefits to having women serve on the committees? Explain.

What specifically can women do as members of these committees?

What challenges do women on the committees face?
Probe for: Cultural norms (ability of women to stand up and speak in front of men), other time commitments (probe for domestic work such as water collection, firewood collection, cooking, caring for children, doing small businesses)

9.) What interventions have women have done to increase access to water for domestic use?

Probe for: building tanks, piping to tanks, contributions to buy diesel, efforts to designate certain water points for domestic usage only

For each intervention mentioned ask:

a.) How does this work?
b.) Why was it started?
c.) How has it changed access to water for domestic use?
Probe for time, distance, quantity, quality, cost
d.) What are the biggest challenges for the women involved in this intervention?

10.) Are there any other ways that women in the community are involved in resolving conflicts over water?

Probe : informal agreements among households, ability to influence husbands

Topic 5 Household level Conflicts

Now I would like you to think about how water is used in your household

11.) Who normally collects water for domestic use? Probe for women or men.

a. Who decides where you will get the water?
b. What influences how much water you will get? (probe for distance, cost, waiting time, priorities (such as livestock or domestic) or regulations at the water source)
c. Which members of the household express preferences about the water for domestic use? Probe for wife, husband, children.

d. What preferences do they express? Probe for quantity, quality, availability.
e. Are there ever times when you have disagreements within your household about water usage?
Probe: What happens?

Who is involved?

12.) How are these conflicts resolved?

Summary

Thank you for your input so far, we have learned a lot from you. We are now coming to the end of our discussion.

13.) Considering everything we have talked about today, what are some of the biggest effects of water conflict in this area?

14.) What do you think is the most important way that conflicts over water sources can be resolved in this area?

15.) What do you think are key ways that women should be involved in water conflict resolution?

Closing:

Thank you so much again for your participation, we have learned a lot from you. This has been a great discussion and the information you have provided will be very helpful. We just want to say thank you again and tell you how much we appreciate your participation.