



Linking Land Tenure and Use for Shared Prosperity

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PASTORAL LAND TENURE AT THE MARGINS OF INTENSIVE AND EXTENSIVE LAND USE: BASELINE SURVEY RESULTS FROM A USAID CUSTOMARY LAND RIGHTS RECOGNITION PROJECT IN SOUTHERN ETHIOPIA

Dr. John McPeak, Dr. Peter Little*, M. Mercedes Stickler, Dr. Heather Huntington

Syracuse University, Emory University, USAID, Cloudburst Consulting Group

jomcpeak@syr.edu, pdliittl@emory.edu, mstickler@usaid.gov, heather.huntington@cloudburstgroup.com

*Presenting author

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Abstract

This study analyzes baseline data from an impact evaluation of USAID/Ethiopia's Land Administration to Nurture Development (LAND) project, which is being implemented in Ethiopia's Oromia Region in the Guji and Borana pastoral zones. The LAND Project aims to protect land and resource rights of pastoral communities and strengthen land governance institutions in customary grazing units (*dheeda*). This study presents a series of baseline indicators on land rights, land use, environmental quality, incomes, investments, conflict and conflict resolution, and external transfers of food aid and other assistance. The findings indicate that both Guji and Borana zones are undergoing important transitions, including increases in cultivation, settlements, bush encroachment, drought incidence, communal and individual rangeland enclosures (*kalo*), and NGO involvement. At the same time, per capita livestock holdings have declined relative to the recent past and that the role of customary institutions and conflict resolution mechanisms have diminished, especially relative to the increased prominence of government administration and institutions. Little outside private investment in land is evident in the study area, though concerns about outside investors and possible impacts on lands and livelihoods were expressed. These findings set the context into which planned interventions will be implemented and evaluated by future research.

Key Words:

Pastoralism and Agro-pastoralism, Communal Land Tenure, Group Land Rights, Land Use Change, Conflict

1. Introduction

This study^{1,2} analyzes baseline data from an impact evaluation of USAID/Ethiopia's Land Administration to Nurture Development (LAND) project, which is initially being implemented in Ethiopia's Oromia Region in the Guji-Borana pastoral zone³ beginning in 2015. The USAID/Ethiopia LAND Project aims to establish a locally-appropriate model to legally recognize and protect the land and resource rights of pastoral communities and recognize and strengthen their customary land governance institutions. The Ethiopia LAND Project proposes an innovative approach to working with regional governments and pastoral communities and their customary governance institutions to strengthen land tenure security among pastoralists through a pilot formalization process that allows communal land rights to be demarcated, recognized, and certified. The project is also designed to legally recognize customary communal land governance institutions and to strengthen pastoral communities' capacity for inclusive and evidence-based land use planning, management, and investment negotiations.

Funded jointly by USAID/Ethiopia and USAID's Land Tenure and Resource Management (LTRM) Office, the impact evaluation of LAND represents part of a growing portfolio of land tenure and property rights (LTPR) research that seeks to build the global knowledge base on the impacts of land tenure security interventions, including formal recognition of customary land rights. The impact evaluation research strategy has been designed to identify effects of the new formalization approach on pastoral communities and households, including the program's effect on livelihoods, resilience, and conflict, with a particular focus on differential impacts on women, agro-pastoralists, and resource-constrained and other potentially vulnerable groups, including youth. The research reported in this paper represents the results of a baseline study prior to the start of the pilot project, which will provide a benchmark for evaluating the eventual impacts of the LAND project.

Study motivation and comparative review of pastoral tenure interventions

Numerous studies have demonstrated the positive impact that land tenure security has on investment and development outcomes in rural areas (Deininger et al. 2011; Deininger & Chamorro 2004; Feder et al. 1988; Holden et al. 2009; Jacoby et al. 2002; Rozelle & Swinnen 2004). In Ethiopia, empirical evidence from the highlands suggests that the low-cost land registration and certification that took place in the late 1990s and 2000s increased land productivity and welfare (Holden et al. 2009b), particularly for female-

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2 The views and opinions expressed in this paper are those of the authors and not necessarily the views and opinions of the United States Agency for International Development.

3 Although the project plans to expand into Afar and Somali regions in coming years, this study and baseline report focus on Oromia as the first region targeted for implementation.

headed households (Holden et al. 2009a). Research also indicates that female-headed households with certificates are more actively engaged in land markets, and certification has been shown to enhance women's participation in household decisions-making related to land improvement practices (Adgo et al. 2014).

Research indicates that these productivity gains were motivated by better land management practices and the reinforcement of private incentives to make long-term investments (Adgo et al. 2014). In particular, land certification in the Tigray region of Ethiopia contributed to increased investment in trees, soil conservation structures, and water harvesting structures (Holden et al. 2009b). Furthermore, the evidence from Ethiopia's highlands indicates that land registration and certification programs reduced the number of conflicts arising from border and inheritance disputes, thereby enabling better market access (Deininger et al. 2008).

Despite the growing body of work on strengthening individual claims, there remains a dearth of research on the impact of strengthening *communal* tenure in the context of pastoralism. Indeed, the LAND IE is designed to expand the evidence base (Lawry, et al. 2014). LAND is based on an assumption that the program theory linking tenure security to development outcomes at the individual level could conceivably translate to the community level. That being the case, the benefits derived from strengthening the customary rights of pastoral groups could under strengthened incentive and institutional structures mirror many of the outcomes identified from codifying individual rights, including increased investment and improved land management. However, the gap in documentation of the impact of strengthening individual rights and communal rights is significant and presents a research challenge to evidence based policy making.

That said, the evidence we do have indicates historical attempts to implement communal tenure initiatives in other pastoral rangelands in the region and globally have had limited positive impacts and at times negative impacts (Bruce, et al. 2013; Catley et al. 2012; Galaty 2012). Many of these interventions have been based on the assumption that migratory pastoralism is an inefficient, open access production system that necessarily leads to land degradation through what has been inappropriately labeled "the tragedy of the commons" (Hardin 1968). These interventions sought to replace the customary communal tenure that facilitates mobility with more exclusive rights held by individuals or (typically small) groups to defined areas of pasture that, coupled with investments in water provision, fencing, and often livestock quotas, were expected to achieve more sustainable production (Bruce et al. 2013).

For example, most empirical evidence on the group ranches in pastoral areas of Kenya indicates this intervention has done little to protect the land rights of pastoral communities and has allowed transfers of their lands to outside investors and other groups (Galaty 2012; Little 2014). Likewise, in Mexico, *ejidos* were created by agrarian reforms following the country's revolution to redistribute land to formerly landless peasants. While *ejidos* have generally been upheld as an example of enlightened common property governance in rural farming areas (Gordillo 2010), there is evidence that the 1992 reform permitting privatization of *ejidal* land has in some cases resulted in the transfer of lands previously used for local cattle grazing to outsiders, some of whom have even been linked to narcotics trafficking (Emanuel 2006). Tenure interventions in Morocco and Tunisia that officially recognized and registered the full range of customary pastoral rights to rangeland resources in concert with government support for improved rangeland management have apparently been more successful in maintaining customary pastoral management systems but have also in some cases increased pastoralists' reliance on external resources, for example to finance expensive irrigation systems (Bruce, et al. 2013).

Alternative pastoral tenure interventions focused on private land titling have had even worse environmental, economic and social equity problems. The Kenya case, in particular, has been marred by corruption and unscrupulous elites who used group land registration to sell off large parcels of land to outsiders with little involvement of most of the community. Similar criticisms have been made about efforts to individualize rangelands in Botswana and China through long-term leaseholds for private ranches. These interventions have reportedly resulted in increased grazing pressure, increased rural poverty and inequality, and rural-urban migration in Botswana (Adams 2013) and unsustainable grazing pressure, household dependence on government subsidies, and corruption in China (Banks 2005, Li and Huntsinger 2011, and Zukosky 2008). This track record provides ample evidence of the challenges facing the LAND initiative.

In the Sahelian region of West Africa, in turn, the key land issue for pastoralists is to protect their transhumance corridors from extensive farming and other land uses that can block livestock movements, as well as instigate conflicts (Brottem et al. 2014). The challenge in that case has been to create an innovative tenure instrument that recognizes pastoralist seasonal rights to the corridors through some form of formalization, but builds in enough flexibility to handle contingencies, especially during droughts when flexibility is needed (Kitchell, Turner, and McPeak 2014). While several Sahelian states have passed pastoral "codes" or "charters" that aim to protect livestock resource access, implementation of these policy instruments has been limited, and efforts to map and certify land rights have tended to favor the rights of settled agriculturalists (Brottem et al. 2014). Meanwhile, although grazing reserves implemented in Nigeria in areas outside the lands historically claimed by pastoral groups have in some

cases successfully formalized the reciprocal relationships between herders and sedentary farmers that facilitated both groups' livelihoods, in other cases, poorly sited reserves with limited potential for migratory herding apparently increased competition between these two groups (Bruce et al. 2013). There is a fundamental challenge in these West African cases between decentralization in land use management to the community level and the scale of livestock movements that is regional and even international in scale.

The consensus on the impacts of these early interventions in pastoral rangelands is that they often failed to result in the improved range quality anticipated; negatively impacted smallholders' access to pasture; and led to elite capture (Bruce et al. 2013). A primary criticism of the designs of these interventions is that they focused too narrowly on the "grazing commons, to the neglect of other resources that migration had allowed pastoralists to access on a more temporary basis, and...the still larger network of resources and relationships around those resources that facilitated resource access" (Bruce et al. 2013, p. 27). Moreover, by introducing exclusive boundaries, often accompanied by fences and other barriers to mobility, these interventions may have, in fact, undermined the very system they (arguably) sought to strengthen (Mwangi and Ostrom 2009).

More recent scholarship suggests that pastoral tenure and production systems can be an efficient and rational way of managing production risk in rangeland environments, where the availability of key resources, namely forage and water, changes both spatially and temporally in what has been described as a "non-equilibrium model" (Briske, et al. 2003; Illius & O'Connor 1999). Likewise, recent rangeland policy guidance highlights the importance of avoiding fencing and the subdivision of land to the achievement of both livelihood and rangeland conservation outcomes (e.g., Silvestri et al. 2012). Still, the flexible and variable nature of pastoral production and tenure systems appears to contradict Ostrom's (1990) framework for effective "common property" management, in particular the apparent lack of exclusivity and rights to alienate land. Pastoralists' historic dependence on and control of rather limited key resource points, such as wells and pastures, as opposed to larger, more comprehensive territories, as well as the shifting historical patterns of control, access, and use resulting from continual renegotiation among clans or groups, also complicate the formal recognition of pastoral land and resource rights.

Despite these challenges, the need to recognize and protect the rights of pastoralists is only becoming more urgent given existing trends in threats to pastoral rights and livelihoods, in particular the expansion of both small-scale and large-scale agriculture into areas claimed (at least seasonally) by pastoralists. Agricultural expansion into former herding areas has been argued to be the single greatest threat to pastoralism in West Africa (Brottem et al. 2014), and the growing incidence of farmer-herder conflicts

throughout both West and East Africa suggests that this threat is increasing (Hussein 1998). Furthermore, research suggests that land used intermittently for grazing, shifting cultivation, collection of forest products or hunting may be the most vulnerable to large-scale expropriation, particularly if this land also has high potential for settled agriculture or other commercial use (Anseeuw et al. 2012; Cotula & Vermeulen 2009). This risk is particularly relevant to Ethiopia, where the government's stated rural development policy objectives include "settling" migratory pastoralists and developing large tracts of "unutilized" agricultural land (Federal Democratic Republic of Ethiopia 2003, p. 58).

In light of these trends, officially recognizing pastoral land rights remains an important (if complicated) policy option that is designed to reduce the risk of pastoralists continuing to lose access to land by providing some degree of formal legal protection and procedural guarantees to communities. In cases where legal expropriation does occur, formal land rights should also provide communities with a means to seek redress and fair compensation. Moreover, advances in the understanding of both pastoral tenure and production systems and the increasing availability of relatively low-cost high resolution spatial imagery could provide the basis for a new model of pastoral rights recognition that upholds the integral characteristics of mobility, flexibility, and reciprocal (rather than strictly exclusive) access to key forage and water resources.

Pastoral production systems in many contexts have been shown to rely on customary tenure systems that provide for flexible, customarily regulated access to key land and water resources (McCarthy et al. 2004). In particular, the high degree of rainfall and forage variability over both time and space has been argued to require flexible access and use rules that often depend on "porous social boundaries to facilitate pastoral mobility" (Brottem et al. 2014). In other words, customary pastoral tenure systems typically allow for overlapping claims to critical forage and water resources, sometimes with resources managed jointly by neighboring groups (Niamir-Fuller 1994). Rights to access and use key forage and water resources are often regulated by membership in a group, such as the clan, and in some cases, a group that has stronger rights over the resource in question will allow for other groups to negotiate access to and use of the resource under certain circumstances, especially at certain times of the year or during extreme climate events. This suggests that more flexible approaches to securing pastoral tenure that recognize and help maintain this complexity could be more successful than past efforts to subdivide the rangelands.

Furthermore, recent innovative geospatial research in Mali (Brottem et al. 2014) and Senegal (Kitchell et al. 2014) in West Africa and Kenya and Tanzania (Rowley 2013) in East Africa suggests that mapping key pastoral forage and water resource points and the corridors between them can be a powerful strategy for documenting pastoral claims to land and resources. Importantly, an analysis of the spatial and

temporal variation of forage availability in four large “transhumance sheds” in Mali finds that key resources used by pastoral communities varies less over time and space than previously thought, which supports local herders’ understanding of migratory pastoralism as a system of “regular patterns of herd movements along prescribed corridors between key pastoral sites” (Brottem et al. 2014, pg. 1). If validated in other contexts, these findings could provide the basis for more appropriate and low-cost methodologies for recognizing pastoral claims to key forage and water resources, as well as corridors between them.

Brief Overview of Migratory Pastoralism in Ethiopia⁴

As previously discussed, pastoral and agropastoral production systems rely on mobility in shared rangelands to manage spatial and temporal variability in water and pasture availability (Elias & Abdi 2010). Herds may be split during the year, with some of the herd, usually bulls and immature stock, being sent to distant extensive grazing areas away from settled zones, while other animals, such as milking cattle with their calves and small stock, remain in the area around the main resident settlement (Homewood 2008).

Figure 1

Figure 1 presents a graphical representation of the Guji-Borana customary territorial structure. Complex governance institutions have evolved to manage grazing systems and resolve conflicts within the Guji-Borana society over the past five centuries (Legesse 1973). Legesse provides an in depth discussion of *Gada*, which is both an age-grade system and a political and judicial system that oversees laws, customs, and practices in Oromo culture. *Gada* exists to provide order, and order is seen as critical to maintaining peace.

The smallest unit of land and livestock management in the Borana grazing system noted in figure 1 is the *ola*.⁵ An *ola* is a collection of multiple households (*warra*) that represents a sometimes seasonal home camp or settlement.⁶ These household clusters are led by an *ola* leader. The *ola* make independent decisions on herd management and share access to resources, such as water and fuel wood.

A *reera* represents the next level of grazing system governance. *Reera* are sub-units of grazing systems (*dheda*) and comprise multiple *ola*. *Reeras* are managed by an *aba reera*; ‘aba’ refers to the father of the

⁴ This section is adapted from the LAND Impact Evaluation Design Document (USAID 2014).

⁵ A *minh* is a house or dwelling. A *warra* is the household.

⁶ An *ola* is a household if it stands alone but can represent multiple household management units. It roughly corresponds to a camp or village unless it is located near a large town.

system or structure. The *reera* is the smallest land management unit or “community” for the LAND project.

Dheeda contain multiple *reera* and are central to the management of the Borana ethnic grazing system. There are six Borana rangeland or *dheeda* systems that will be the target of the LAND intervention, including Dida, Woyama, Dire, Malbe, Gomole and Golbo.

What is noteworthy about the Borana and Guji pastoral and agro-pastoral systems is that the use of remote grazing areas during dry seasons is mainly dependent on having access to clan-based wells (Hogg 1990, Coppock 1994). Tiki et al (2011) report that the rangelands associated with the deep wells complexes called the *tula* comprise less than 25% of the total grazing area in southern Ethiopia yet during dry seasons they support over a million head of livestock, which they estimate to be over half of the total owned by Borana. Generally, Borana cattle need to be within 25-30 km of a water source to allow watering on an every two or three day schedule during the dry season. During the wet season, surface water is available, including from two perennial rivers (Dawa and Genale) that traverse the borders of the region, but in the dry season the main sources of water are shallow or deep wells. These, in turn, are under the control and management of particular clans.

Use of these wells is not restricted to members of a certain clan, but non-clan members may be limited to watering their herds after clan members have used it, raising the spectrum that water might be limited by the time the well is used and stressing the importance of the role played by *abba Herega*, the one who determines the watering order. One might be allowed access to the well, but at a time when most of the labor used to transfer water up to the surface from the water level has moved away, which in effect restricts access. Thus, a herder can feel confident that he/she can access pasture in remote grazing areas if there is a well in the area under the control of the individual’s clan which corresponds to a favorable position in the watering order. Because clans are not localized but are dispersed across the entire region, herders can be confident that even outside their main grazing range, they are likely to find wells under the control of their clan. Any discussion of use and rights to rangelands cannot be divorced from rights to water, especially in the drier parts of southern Ethiopia. Without access to a water point for the individual’s animals, a herder cannot utilize the surrounding pastures (Hogg, 1990).

The degree to which *dheeda* or *reera* are understood by users as well defined spatial units is a matter of some debate. Hogg (1990) defines *madda* as a land unit corresponding to a permanent water point and this is composed of *dheeda* which are common grazing areas, stating “the boundaries of the *madda* are well known, but have little significance except in times of crisis. It is at these times that herdowners who

come from outside may, unless they show good reason, be denied access to *madda* wells” (p.8). Schlee, however, writing of the larger *Worr Libin* cultural group (of which the Boran and Guji are part) states “...they did not have boundaries delineating surface areas. Even the words for ‘boundary’ in the local languages are loanwords from other languages...”(2009, p.4). This relates to a finding of an earlier study reported by Schlee (1990) where he tried to construct a map with a Rendille pastoralist in northern Kenya who border with Oromo speaking people, ultimately abandoning the quest to draw boundary lines as he was informed that the only border line was ‘one of fear’ (1990, p 24) as one became more distant from a point that was clearly defined as being in land controlled by the Rendille, such as a well or ritual site.

Tiki et al (2011) present an analysis of the *tula* well system introduced above that can help us understand the concept of a *dheeda*. At the center of this land use system is a cluster of deep wells, the *tula*. Surrounding the *tula* is the *laaf seera dargula ela*, the well zone. This is a dry season grazing zone, and is the lands contained in a circle with a ~ 8 kilometer radius of the well complex. Wet season grazing is not permitted in this zone. From ~8-15 kilometers out, there is the *laaf seeraa ardaa*. settlement zone. This is where the olla cluster into *reera* going in different directions out from the *tula*. Beyond this is the *laaf seera fora* zone which consists of the grazing zones in the opposite direction of the well complex from the settlements. In this form, a *reera*, a cluster of villages, will have a defined wet season and dry season grazing area associated with a water point and the collection of *reera* that rely on a *tula* and the associated grazing lands can be thought of as a *dheeda*. Note that the *laaf seera fora* zone starts at around 15 kilometers from the well and may or may not have a clearly marked outer boundary; in some of the qualitative interviews it seems that a *dheeda* ends where you are too far to go back to the *tula* well to water and would instead go somewhere else to water your animals (or echoing the Rendille elder, it is unsafe to go), while in others it was defined in reference to a geographical feature.

Despite the important historical role of customary governance institutions in managing rangeland tenure and resources, recent developments in Ethiopia have introduced new challenges that may be undermining the customary tenure system. For example, around the *tula* well complexes in the *laaf seera dargula ela* zone noted above there now are human settlements--in some cases quite large--and there is cultivation in areas that customarily were restricted for use as dry season grazing. In addition, in southern Ethiopia, there has been a recent growth of enclosed grazing areas called *kalo*, some of it clearly stimulated by Non-Government Organizations (NGOs) and other development interventions that have encouraged their establishment. Traditionally, these were used to manage pregnant, ill, or lactating animals, but today they increasingly are incorporated into seasonal grazing patterns, where large communal ‘*kalos*’ (100 ha+) are being reserved for dry season use for all kinds of cattle rather just the vulnerable, and this has been promoted both by NGO and local government officials. There can be ambiguity about whether a

household can establish their own *kalo* or about whether they have membership in a community-managed *kalo*, although this pattern varies in the research area. There also is some ambiguity about the process of laying claim to a field for cultivation and how secure it is after a claim. In addition, for those animals remaining in the area around the main home residence, there is growing scarcity of land available for pasture due to the increase in cultivation over the past few decades, the growth of small towns and other settlements, and the increase in exclusive grazing areas. Customary institutions have attempted to restrict *kalo* proliferation but have had limited success.

More broadly, government policy in the rangelands may also be increasing competition for land and water, including for pastoral settlement and for large-scale commercial agricultural and infrastructure investments. Importantly, the Rural Development Policy and Strategies recognizes the need to better understand pastoral migratory patterns “in order to design and implement programs that are relatively better suited to” these patterns (Federal Democratic Republic of Ethiopia 2003, p. 58). However, overall, the Policy prioritizes the *voluntary* settlement of pastoral communities around available surface and/or underground water to facilitate their transition out of migratory pastoralism and adoption of settled crop production. As discussed above, wells are vital to dry season livestock production, and the encroachment of farming (even by former pastoralists) into relatively water-abundant areas could undermine livestock access to seasonal grazing resources. At the same time, as previously noted, the Policy also promotes the development of “large tracts of unutilized land, particularly in the western lowlands stretching from north to south, which are suitable for irrigated agricultural development” (Federal Democratic Republic of Ethiopia 2003, p. 58). Although inclusive investment models can be designed to allow for pastoralists and their cattle to continue accessing key water and forage resources and/or to benefit more broadly from such investments, since pastoralists’ land and resource claims (including migration routes) are not officially recognized, mapped, or recorded, they may be especially susceptible to uncompensated expropriation (Deininger, et al. 2011).

The LAND project has attempted to learn from the cautionary and more recent promising experiences presented in the previous sub-section by emphasizing the demarcation and official registration of entire grazing units (*dheeda*) as they are customarily administered, in addition to the recognition and strengthening of the customary land governance institutions that manage access to and use of pastoral land and resources. This in some ways is taking a customary land use unit that is well understood and accepted and refining the definition by making it a spatially explicit unit that is legible to governments. It is hoped that by accomplishing these objectives, the project will result in more secure tenure for pastoral communities – without undermining the mobility and reciprocal access regulations that support pastoral

production – and ultimately in reduced incidence of conflict and uncompensated expropriation, improved natural resource management, and improved economic growth.

The remainder of this paper is divided into six parts and addresses a number of issues that are important for understanding current rights and uses of land and other key resources in the Borana-Guji areas of southern Ethiopia. In the next section (2) we describe the study’s methods, data sources, and the study area as background materials for subsequent sections. The next two parts of the paper, in turn, address (3) Household Characteristics, with a focus on household demography, income, and herd ownership distribution, and (4) Rangeland Use, with attention to issues such as livestock mobility, seasonal uses of different pastures and water points, rangeland enclosures, and other range-related issues. In section (5) the discussion of access to and use of land continues but with a focus on farming lands; while section (6) addresses conflict and its causes, including competition between farming and grazing lands and the roles that boundaries—especially between different ethnic groups—assume in conflict dynamics. The final part (7) of the paper summarizes the findings of the baseline study and points to relevant issues that need to be monitored under any program to formalize and protect the land rights of Borana and Guji pastoral and agropastoral communities.

2. LAND Impact Evaluation Baseline Study

To understand the context and development challenge of recognizing customary land rights and improved communal land governance, the paper explores patterns in recently collected baseline data to uncover trends in customary land and resource management, land assets, rangeland access, mobility, and land loss. The data used in the analysis includes population-based household survey data collected from 3838 households in 200 communities in the Guji-Borana pastoral zone in September and October, 2014 and information from a series of 36 Focus Group Discussions and 69 key informant interviews collected from 46 different *kebele* (equivalent to approximately 5-6 different villages). Key informants included customary leaders, such as *Aba Dheeda* (‘a leader of a large grazing unit’) (7), *Aba Reera* (38) (‘a leader of a sub-*dheeda* grazing unit’), *Aba Ela* (20) (‘leader or owner of water point’), and *Aba Herega* (4) (‘water scheduler at a water point’). The focus groups had different compositions with 10 women and 16 agro-pastoralist (mainly men) groups, and 9 locally defined as groups of resource-constrained (vulnerable) households (including poor, youth, and widowed/female-headed households). There is one focus group that was undefined in terms of composition. Most groups had between 4-9 participants.

The impact evaluation strategy appeals to the fact that the Borana and Guji ethnic groups have many similar characteristics, including similar ecology (Coppock 1994; Desta & Coppock 2002), land use strategies (Solomon et al. 2007), and customary governance institutions (Hogg 1990), while the project

implementation strategy will only work in the predominantly Borana area. Thus, over the planned life of the project, treatment effects will be identified by comparing outcomes in communities in the Borana rangeland system to the outcomes observed in the Guji rangeland systems. It should be noted that recent boundary revisions of Borana and Guji zones means that there are some Borana communities and customary rangeland systems in Guji Zone (an administrative unit above a *Woreda*/district but below a Region), as well as Guji communities and rangeland systems in Borana Zone.

One of the major objectives of the LAND project is to facilitate formal recognition and demarcation of customary communal land rights. A challenge to the implementation of this project is that the formal administrative zones and the rangeland systems targeted by the LAND project do not precisely overlap. LAND is targeting management of well understood, but not always geographically precisely defined, rangeland systems (*dheeda*). Households in the Impact Evaluation sample, which are cartographically identified in Figure 2, are drawn from *woreda* in the following rangeland systems:

Figure 2

Borana customary rangeland systems (LAND IE treatment areas)

- Dheda Dida
- Wayama
- Dire
- Malbe
- Gomole
- Golbo

Guji customary rangeland systems (LAND IE control areas)

- Wadera
- Golba Genale
- Golba Dawa

While the unit of analysis in the LAND program is defined as a grazing unit (*dheeda*) and sub-grazing unit (*reera*), administratively the area is organized according to a different logic. Ethiopia is divided into 9 regions, with Borana and Guji Zones included in Oromia Regional State (also referred to as Region 4), and both zones border other regions. The lines that divide these regions have recently proven to be a source of conflict. For example, both Borana and Guji Zones share a border with Somali Regional State (Region 5), and there have been occasional conflicts over water and pastures in these border zones (Bassi 2010; Tache and Oba 2009) that were discussed in our qualitative surveys and reflected in our household level data as will be illustrated below.

Each zone, in turn, is divided into smaller units, called *woreda* (district), and *woreda* are composed of *kebele*. A *kebele* is comprised of a set of villages or settlements. As a sampling issue, a *kebele* is the logical unit of analysis, as it corresponds to a Peasant Association (PA)⁷ with a well-defined set of villages and members. Population lists for sampling purposes do not exist for the rangeland units of *dheeda* or *reera*, and in many cases the administrative units today are more meaningful units for organizing rangeland use than the customary units, especially in areas where there has been increased settlements and cultivation, as these do not necessarily follow the logic of the grazing oriented rangeland system (Kamara et al. 2004; Personal communication, Waktole Tiki). In practice, we selected *woredas* that roughly correspond to the *dheeda*-defined rangeland systems illustrated in Figure 1 and identified *kebeles* within them to define our sampling framework. Using recent studies by the Food Economy Group, we selected paired *kebeles* in Borana with Guji zones based on the livelihood categories reported as predominant for a given *kebele* to allow an eventual difference in differences approach to be taken with the impact evaluation. With the paired *kebeles* in place, we then randomly sampled from the list of households in the villages associated with that PA. The size of the overall sample was determined by conducting Power Calculations to identify a minimal detectable effect size (MDES) for key variables. The calculations were calibrated using statistical values drawing on the survey data of the Index Based Livestock Insurance (IBLI) impact assessment repeat survey round that was fielded in early 2014 in the Borana plateau. The overall IBLI project is a joint effort of the International Livestock Research Institute (ILRI), Cornell University, Syracuse University, and the University of California-Davis working in Kenya and Ethiopia. An overview of the IBLI-Borana initiative is found here: <https://livestockinsurance.wordpress.com/ibli-southern-ethiopia/>

Table 1

As shown in Table 1, an overview of our sampling framework, the survey research focused in 10 *woreda* (7 Borana and 3 Guji). The largest number of *kebele* and households were in the Guji zone area. In fact, 45 percent of the total households included in the study are from just one *woreda*, Liben. This outcome is the result of trying to match observations in the treatment area (Borana) with those in the control (Guji) and having fewer options for matching *kebeles* in Guji given the characteristics of the zone as it transitions from lowland pastoral to highland cultivation.

The content of the impact evaluation survey of the IBLI project noted above that is currently active in this same area was taken as the starting point for the LAND impact evaluation questionnaire. Sections related

⁷ In the pastoral areas the *kebele* or PA often is referred to as a Pastoral Association.

to risk and insurance were reduced, the content on land use was elaborated on, and other sections were revised, but many questions are fundamentally asked in the same way as was done by IBLI. The enumerator team was trained in Ethiopia in August 2014 and was in the field in Borana by the end of that month. After completing in Borana, enumerators moved to Guji where data gathering was conducted. Data was entered directly onto tablets and downloaded and formatted into Excel spreadsheets. Data gathering at the household level was completed by the end of September, and the database became available for analysis in late October 2014.

The qualitative research, on the other hand, was heavily concentrated in Borana Zone, with 79 percent of key informant and/or focus groups conducted in Borana and only 21 percent completed in Guji Zone. The qualitative research purposely sought a more pastoral population due to requests by the research sponsor (USAID) for more detailed analysis of pastoral grazing areas, thus it sought more interviews in Borana zone than in Guji. The qualitative research covered one additional *woreda* (Moyale) and several local grazing areas (*reera*) of Borana Zone that were not included in the household survey. Since we wanted to match treatment and control areas in the household survey for a difference in differences estimation strategy, it did not make sense to spread out the household survey across areas in one zone that could not be matched by areas in the other zone. However, to ensure that we covered all of the rangeland systems and sub-grazing areas of particular interest to the LAND project, the qualitative work was spread out across the *kebeles/reeras* that were not covered by the household sample. The qualitative research documents began to be delivered to the research team in November–December 2014.

3. Household Characteristics

From the household survey, we calculated some basic information on the households that are reported in Table 2 by *woreda*. The households in the study area are largely identifying themselves as settled households, but this does not mean that they still do not utilize mobile herd camps to seasonally move livestock (see later section on the use of remote grazing camps [*fora*]). This self-reporting may also be strategic because it is widely known in the pastoral communities that the government's eventual objective is to settle them, so they tactfully may be identifying themselves as settled. In Dhas, Dillo and Yabello *woredas*, there is a group of 10-17% of households who report that they are semi-settled, which implies that they occasionally move household residence. A very small minority in a few sites identify as nomadic, which means that both base resident households and herds move during the year as rainfall and pasture conditions dictate. The latter category of households usually move within their home range area (*reera* defined more compactly) except during droughts when they leave the home area for other parts of the *dheeda* or, when conditions are exceptionally bad, leave their *dheeda* entirely.

Table 2

Household sizes range from a low of 4.7 people per household in Dillo to a high of 6.6 in Gorodolo. For the most part, household size in the Guji sites is larger than average household size in the Borana sites, a pattern that reflects the more sedentary farming orientation among the Guji as compared to the Borana. Mobile pastoralism usually is associated with smaller household sizes and considerably lower population densities than sedentary agrarian systems (McPeak, Little, and Doss 2012). The table also indicates that an important reason for the difference in household size is generated by differences in the size of the population 18 and under. The sites in Borana generally have a higher incidence of female-headed households than the Guji sites, and the age of the household head tends to be higher. The higher incidence of female-headed households among the Borana could reflect lower incidences of remarriage after widowhood. Where polygamy is practiced, Borana wives tend to be considerably younger than husbands and more likely to experience widowhood during their lifetime. Because of complications related to rights to children, inheritance, and repayment of bride wealth, widows with children are more likely to be supported by the deceased husband's brothers or other family members rather than remarry unless the original marriage produced no children (Bassi 2005).

Table 3

The income data in Table 3 only includes cash income, which for both pastoral and agro-pastoral households tend to be less than 50 percent of total household income (cash and non-cash) (McPeak, Little, and Doss 2012). Milk production, which is largely consumed by household members, tends to account for the largest percentage of total household income, and this does not show up as cash income unless milk is sold. Other sources of non-cash income include breeding (herd reproduction), consumed crops, and consumed meat. The household survey was not designed to capture non-cash income values, as these require assigning a cash value to all home produced and consumed commodities.

We also asked households to report on livestock ownership. We first report the share of the sample in each *woreda* that reported having a herd of livestock, and of those owning livestock, average herd size in tropical livestock units (TLU) and TLU per capita.⁸ TLU is a Tropical Livestock Unit, equal to 250 KG live weight or 10 goats or sheep = 1 head of cattle = 0.7 camels = 1 TLU. We then report the percent of

⁸ To arrive at the average herd size by site including those with zero herd, the livestock herd owning percentage can be multiplied by the reported average TLU herd size or TLU per capita of those owning animals.

the herd as measured in TLU that is female, the percent that is cattle, the percent that is small stock (sheep and goats), and the percent that is camel (Table 4).

These are relatively small herd sizes for pastoral systems and are lower than other survey results we have seen recently for the study area. Ideally, a pastoral household, with some level of diversified income sources, should have per capita herd holdings around 4.5 TLU or higher to ensure viability in the face of potential climate shocks (Fratkin and Roth 1990, Dahl and Hjort 1976). The relatively low herd holdings that are reported could reflect the larger orientation to cultivation in our sample, which includes a large percentage of non-Borana households. We speculate it also could be strategic on the part of household responses in anticipation of the roll-out of the Productive Safety Net Program (PSNP) to the zone. The PSNP is a poverty alleviation program where means-based targeting of poorer households creates an incentive to under-report livestock wealth. For a comparative case in northern Kenya, where underreporting of livestock holdings also may have distorted ownership data in a pastoralist safety nets project area, see Kratli and Swift (2014).

4. Rangeland Use

In this section, we address the different uses of rangelands in the study area, with a particular focus on mobile herding in remote sites and around settlements, customary and new forms of range enclosure, and the institutional dimensions of rangelands use.

4.1 Extensive Remote (satellite) Camp Grazing Zones.

We have asked households to report on their use of satellite herding camps (*fora*) over the past year and also their use of such camps in the drought year of 2011. To get a longer-term sense of the use of satellite camps, we add in data from the household survey work of the Pastoral Risk Management (PARIMA) project, which was undertaken in the area during 2000-2002 by two of the co-authors of this study. Table 5 reports the share of households in different sites in a given year reporting any use of a remote satellite camp. It should be noted that 2011 was recorded as a difficult drought year to compare with 2013 at the time the survey was drafted, although as it turned out 2013 was not a particularly good rainfall year either. Moreover, in the PARIMA study, the 1999-2000 period also was also characterized by a severe drought.

Table 4

Satellite camp use is clearly not adopted by the majority of households but is practiced by a significant minority, especially in the Borana districts. The three districts in Guji Zone, Gorodolo, Liben, and Wadera, all show uses of *fora* both in 2011 (range of 7 to 19%) and 2013 (4 to 13 %) well below use of

remote grazing units in districts of Borana Zone. Korati from the PARIMA data was a highly insecure Borana site during 2000-2002, which explains its low use of satellite grazing camps. In conditions of insecurity, herds cluster around settlements, where security tends to be better than in remote grazing areas (McPeak 2003). In fact, Korati shows up in the current sampling framework as a site in Guji zone, indicating some of the political influences on spatial definitions in the study area (Negelle town and Liben *woreda* were transferred from Borana to Guji Zone in 2004).

The survey results are generally generated from largely sedentary farming and agro-pastoral *kebele* in the LAND impact evaluation. Households in Borana districts showed ranges in the use of remote grazing units of 16 to 28 % and 20 to 43 % in 2011 and 2013, respectively. The use of satellite grazing sites appears to be contingent on the state of local pastures and water points and, in a few cases illustrated in the qualitative findings elaborated on below, the presence of conflict.

To further probe what influences the decision to use a satellite camp, we asked those who did not use satellite camps why they did not. Figure 3 reports the share of responses per site that correspond to a given category of response.

Figure 3

By far the biggest reason reported is ‘small herd’. Notably, many of the ‘other’ responses report a total lack of animals, accentuating this line of reasoning. Limited satellite camp use is mostly driven by household herd sizes not sufficient to make use of a satellite camp necessary or perhaps feasible. Restrictions by authorities, by conflict, or due to settlement of satellite camp areas are noted by a minority but do not appear to be major factors limiting satellite camp use, except in a few noteworthy cases. In two of the key informant interviews conducted in Borana communities near the border with Region 5 (Somali Regional State), conflicts with neighboring Somali communities were highlighted for their impacts on grazing patterns. One informant lamented that good grazing zones are left unused because of security issues: “we fear for insecurity so we do not leave animals in reserved grazing areas...cattle and goats are dying because of the lack of feed [pastures]” (Interview notes, August 2014).

Figure 4

One of the follow up questions we asked of those who did report use of a satellite camp was about the need to obtain permission to graze in a satellite area during the drought year of 2011. The first line for each site in Figure 4 reports the share of households reporting they used a satellite camp in the drought year of 2011. We followed up with a question about whether they sought permission to use the site, and if

so, from whom. A minority of households used satellite camps in the drought year of 2011, and of this minority, only a few sought permission to use the site. When permission is sought, it is either from PA officials at the local administrative *kebele* level or from local elders, or in some cases from both.

According to one respondent, “before we migrate to an area with livestock, we send people ahead and ask permission from elders and *kebele* officials” (Interview Sept. 7, 2014). Dillo is the only site where elders are reported to be more commonly asked for permission than formal government personnel, which would be expected because it is a relatively isolated district where administrative personnel are limited.

From key informant interviews we also found some variation in the pattern of authorities from whom to seek permission when moving herds to different grazing areas depending on different local and regional factors. Most interviews indicated that permission from local administration usually was sought if they expected the move to last a significant amount of time (2+ months), moved into another administrative zone or country (for example, Kenya), or it was an area where they did not normally migrate. For example, one local leader (*aba reera*) noted that when they graze areas outside Borana Zone, they ask permission: “We may go up to Bale to search for water and pasture. Requesting pasture and water in this case has its own procedure: first you request government and the government then asks the community and finally the issue should go to the *abba reera* (Interview, September 2014).” In more sedentary areas, such as in the Guji communities and in Yabello district, where administrative presence is greater than in the more remote pastoral area, respondents note that they more frequently seek permission from *kebele* officials than from local elders.

As previously noted, access to clan-based wells is critical to dry season production in the Borana and Guji pastoral and agro-pastoral systems. One respondent from Dirre *woreda* stated that when he moves to Arero *woreda* (Wayama rangeland area), there is no problem of water since the individual’s clan “owns a well there so he has no problem of water” (Interview, August 29, 2014).

4.2 Home Camp Grazing Zones.

In the survey we have also asked households to report on how they managed any animals that were kept at their home camp if they did not send them to satellite camp. This allows insight into how animals and resources are being managed within the *waara* and *reera*. We are attempting to understand rights to these lands, if there are methods to keep them reserved for home camp area residents vis-à-vis cultivation, local enclosures, and other land use pressures.

Figure 5

When we asked a follow up question to identify herd management strategies that are alternatives to satellite camp use for those who did not use satellite camps, we found a significant share of households identified production or purchase of feed as the option they favored. Figure 5 indicates that a large share of households in our study sites are ‘bringing feed to animals’ rather than ‘bringing animals to feed’. The emphasis on production compared to purchase tends to be higher in the Borana sites than the Guji sites, where farming is considerably more important. In many of the key informant interviews and focus groups, it was noted that supplemental feed often was provided both during 2011 and 2013 by NGOs and/or governments, in most cases for free. The household survey did not pick up this free distribution of feed, since it was conducted in 2014 when most of the distribution programs had ceased. Note that a significant share of households in many sites reported ‘nothing’ as their response, indicating there were no special herd management practices around settlements that they identified.

Figure 6

Herds in 2014 were largely based in the respondents’ communities and did not leave the *waara*, but with important local differences. One way of viewing the contrast is to compare average milk production per day at the base camp to average milk production at the satellite camp (Figure 6). Clear differences exist in the amount of milk per day across sites, but in all cases the production at the base camp dominates production at the satellite camp. Part of the reason for this is that even when remote camps are used, milk cows (and their calves) often are left behind at the settlements to provide a source of food for the family (McPeak et al. 2012).

4.3 Intensive Home Camp Enclosures (*kalo*)

Data on access to community and private enclosed grazing areas (*kalo*) are presented in Figure 7, while Table 6 presents average areas of these *kalos*. Several of the interviews noted that NGOs even provided training in pasture management, and many indicated that *kalos* were created through bush clearing activities funded by NGOs or the government. Participants in the creation or fencing of *kalos* often were paid by NGOs to clear bush and fence off reserved grazing areas, which raises the question of how much of the recent increases in *kalos* results from external interventions and how much is internally generated. In some districts, especially in Guji sites and Yabello, the use of *kalos* appears to be evolving into *de facto* private grazing and/or farming land, raising questions about the private appropriation of what is traditionally communal land.

Figure 7

Table 6

In most of the Borana area, the growth of community *kalos* appears to be an elevation of community members' right to exclude non-community members from access to rangeland resources, which also alters the definition of common property membership. Since common property tenure systems have historically facilitated herd mobility, this group-wise privatization of the commons could potentially have implications for the viability of pastoral land use and livelihood strategies (McCarthy et al. 2004). However, evidence from southern Kenya, where historically communal rangelands have been extensively privatized, suggests that pastoralists are finding new ways to maintain mobility, for example through social networks (Archambault 2014). In follow-up work, we should be able to document perceptions on this process and establish additional information about how *kalo* are being obtained and used in this area, as well as potential implications for the broader pastoral land use and livelihood systems.

There is an inverse relationship between the prevalence of community *kalo* lands and private *kalo* lands. The Guji sites, in particular, show a higher incidence of private *kalo* compared to community *kalo*, which is supported by the qualitative research that emphasizes an increase in private *kalos* over communal ones. For example, in one interview in Guji Zone, a local leader noted that “now there seem to be a lot of individual *kalos*—and an individual uses his own *kalo* and when somebody else tries to use it there is conflict” (Interview, September 2014). Another stated how “due to expansion of private enclosures, there is an insufficiency of communal grazing and a limitation of livestock mobility” (Interview, September 9, 2014). In the Borana sites, on the other hand, community *kalo* dominates private *kalo*, with private *kalo* use relatively uncommon except for in Teltele, where there also is a high percentage of households that farm. In fact, Borana focus groups frequently expressed very strong sentiments against the use of private *kalos*. Comments⁹ include:

“Individual *kalos* are a problem...A few days ago an individual fenced a *kalo*, and the community made him take down the fence...If somebody fences individual land, the community will not stay quiet” (Interview notes, August 30, 2014).

“If *Kalo* [communal] is divided individually, the land for the pastoralists will be diminished, therefore, there should be no individual *Kalo*. Dividing *kalos* among individuals may cause conflict” (Interview notes, September, 2014).

⁹ The English transcriptions of interviews conducted in Oromifaa language had to be slightly edited when grammar and sentence structures were flawed.

“As the number of private enclosures increase, conflict over utilization of pasture in the community will also increase” (Interview notes, September 27, 2014).

4.3 Overall rangeland condition and trends.

We asked a broader set of questions to assess people’s sense of rangelands areas to which they feel they have some degree of access and to assess the quality of the rangelands they use. In general, people express that the condition of the rangeland is not good and has gotten worse over the past five years ((Figures 8–11). This pattern is reflected both in the household survey work, as well as the key informant interviews and focus group discussions. However, it should be acknowledged that a “nostalgic factor” often influences interviewer responses when making comparisons to the past. Respondents often point to better conditions in the past than the present, in the case of our survey even when the time span is only five years. In short, the past frequently is seen as better than the present, especially when conditions already are difficult.

Figures 8-11

Interestingly, there is a significant share of ‘don’t know’ responses, which may indicate that people are oriented towards other activities and don’t feel qualified to judge rangeland quality and trends over time. There is also a higher share of people not wanting to respond to the question about current conditions than there are to those willing to assess the trend over the past five years.

There is not much difference in assessments of range quality of *fora*, *dheeda*, and *warra* areas. Responses are qualitatively similar. With few exceptions, respondents in group and individual interviews also indicated that conditions in grazing and water conditions had deteriorated in comparison to the past five years.

When we asked why things have gotten worse for those who responded things have gotten worse, most identify the lack of rains as the cause of the decline. From the qualitative interviews, a few individuals pointed to the fact that rain is no longer as effective as it was in the past because of degraded landscapes which facilitate runoff. The decline in rangeland quality is also attributed to encroachment on rangelands by unpalatable shrubs, weeds, and trees. More than 70 percent of respondents in key informant interviews and focus groups pointed to increases in shrubs and unpalatable weeds, which in some interviews were noted to be toxic to livestock and often outcompeted quality grass species. Respondents often were very specific in giving the exact species with local vernacular names of shrubs and other plants that have

proliferated in recent years, especially those that are harmful to pastures, as well as the livestock dependent on them.

Figure 12.

Figure 12 illustrates that people identify the expansion of cultivation as a cause of rangeland loss, but in most sites it is not identified as a major cause of rangeland quality decline. Most respondents indicated that land was sufficient for both farming and livestock, and lands for farms and lands for pastures were kept separate. However, in a few important sites where there is considerable farming, such as Yabello, Wadera and Liben *woredas*, expansion of farms was identified as an important reason for why rangeland condition had deteriorated. In the words of one respondent, “the farmer who ploughs the land keeps the cattle away” (interview, August 29, 2014). Another notes that “in Dida Yabello the land is taken largely by farmland.” In contrast to these opinions, there is very little mention of cultivation as a problem for rangeland quality at the Dillo and Dirre sites, where there is only minimal farming.

Figure 13

Symmetrically, when we asked what would make things better, the main response was a return to abundant rain (Figure 13). Almost all respondents indicated that a return to normal rainfall patterns would help to restore rangeland quality. However, across the sites there is a significant minority that identify steps that could be taken (water development, better management, bush clearing) that could lead to improvement. While increasing rains are to be hoped for, as far as development interventions within the remit of the LAND project, it appears in some of the study sites there is a base of opinion supporting other kinds of steps, though among a minority of the population.

5. Access to and use of cultivated land

There has also been rapid growth of cultivation in this area. We have information on how much land is being cultivated and with what kinds of crops to establish a baseline on the role of cultivation currently in the production system. We also asked questions about how land was obtained, people’s perceptions of the transparency of the procedures that led them to have land ownership, as well as the type of ownership they felt that they had. Finally, we have information on crop-livestock conflict that can indicate the degree to which integrating these production systems are leading to competition and disagreements.

Figure 14

In our questionnaire, we asked plot-specific information for all fields owned by the household. One of the details we asked was in what year was the plot established. Figure 14 provides an overview of the founding year of plots by recording the cumulative percent of all fields identified in the survey that were established in a given year. The baseline code on the left of the figure is “777” which stands for the answer ‘we have had them as far back as anyone can remember,’ and this is around 30% of all fields and does not really change significantly until the 1990s. In the 1990s, there is an acceleration of fields being obtained, and from 2000 to present almost half of all fields were obtained. This period coincides with government-led interventions to certify household farmland rights in the Ethiopia’s highland areas, including in Oromia (Deininger et al. 2011). The acquisition of land for cultivation has been extremely rapid and pervasive over the past ten to fifteen years; around 70% of fields were established in the past 25 years.

Figure 15

While this trend is significant for the entire study area, we can look at the pattern by site and see there is variation across the sampled communities (Figure 15). In Dhas, Arero, Dillo and Dirre, we see the most rapid recent growth in the establishment of fields, with the extreme of 25% of growth since 2010 in Dhas.

Table7

Table 7 reports the proportion of household survey respondents who farm and with access to an irrigated and/or non-irrigated plot (a rough proxy for productivity), along with the size of each type of plot, respectively. More than half the sample in all of the sites reports that they farm. In a few cases, households report both irrigated and non-irrigated land holdings. However, much of what is being called irrigated land is actually lowland fields that become inundated following heavy rains rather than plots on irrigation schemes fed by canals. The respondents did not make the distinction between canal- and flood-based irrigation. In fact, our impression is that, with few exceptions, those who indicated using irrigated lands were referring to flood-based irrigation not canal- or channel-based irrigation.

Figure 16

We also asked people how they obtained their fields (Figure 16). The most common response is that they went out and cleared the land. In a few sites, there appears to be some level of control over this process by the government or the elders, but for the most part this seems to be uncoordinated establishment of fields. However, this does vary by *woreda*. In Dillo, a mainly low rainfall pastoral district of minimal farming, those families who do cultivate mainly obtain land by clearing it. By contrast, two other Borana *woreda*,

Yabello and Teltelle, and the Guji *woredas* with the most farming and the highest demand for land, illustrate that access to farm lands often is obtained from local government. In a few communities in Guji Zone, good farm land is increasingly difficult to access even when the farmer seeks permission from the administration.

Figure 17

This difference in how land is obtained is matched in the response to whether they had any kind of registration document to the land that they claimed (Figure 17). Not surprisingly, there is a correlation between where the government is reported to have granted written permission or a certificate for long-term use of the land and the possession of a document attesting to the household's rights to cultivate the land. In most sites, however, documentation is rare, and ultimate ownership of the land still is vested in the state. Once again, it is those districts where farming is most important where one finds a higher incidence of registration papers for individual farm plots. One other finding from the analysis merits note. When we look at female headed compared to male headed households, 13% of female headed households reported they have a registration document compared to 31% for male headed households. Attention will need to be paid to the gender dimension in any effort to enhance tenure security in this area.

Figure 18

Not all of this land is reported to be under cultivation (Figure 18). It appears that in some sites, land claims are being established on fields that are either left fallow or used for pasturing animals. There is not much evidence that land is being claimed in order to rent it out, although there is a small degree of renting out plots in exchange for a share (usually one-third) of the harvest, which is a form of share cropping found in Gorodolo *Woreda*. This might indicate individuals are establishing claims to land in anticipation of increasing land scarcity in the future.

Figure 19

For the land that was cultivated in the past year, the most common crop planted is maize. Overall, most of the cultivation is grain and pulse oriented, for example, beans and lentils (Figure 19).

Figure 20

We asked if they felt the process that led them to get each plot of land they claimed was fair and transparent (Figure 20). The responses are on a five-point scale in reaction to the statement, ‘the process by which I obtained this land was fair and transparent’. Generally, there is agreement that the process is fair and transparent, with less than 15% of the respondents in each site disagreeing with the statement. This pattern also is reflected in the key informant interviews and focus group discussions, although there were some inequities that are highlighted. One focus group of poor/resource-constrained households indicates that they differ from the survey mean response noted above in that “the poor cannot get the better land, which is given to rich persons. There is no transparency on the distribution of land” (Focus Group discussion, September 2014). However, as most land is being claimed by clearing it, this would confirm a general acceptance that if a household clears the land, they establish a claim to cultivate on it (usufruct rights), and that is generally considered fair and transparent. It will be interesting to examine this issue in the near future (4-5 years) years in those Guji communities where indications are that cultivable land increasingly is limited and, thus, one cannot gain access any more to farm land merely by clearing and farming it. As one Guji respondent noted about his *kebele*, “the land is getting limited, because of high population and because of the utilization of *Kalo* and farming. Earlier, everyone who asks legally for land, was given land” (Interview notes, October 3, 2014).

Figure 21

Figure 22

We also asked if the household head was concerned that some people are getting more land than others in the community as reported in the focus group mentioned earlier (Figure 21). In no case was the majority concerned that this was a problem currently. The overall picture that emerges is one where land allocation and land use patterns as they currently exist are generally acceptable, in spite of what seems clear evidence of recent and rapid growth in cultivated area. However, there is general agreement with the idea that the expansion of cultivation has come at the expense of the livestock production system, and in some of the areas, increased cultivation has even resulted in conflicts. One focus group of women emphasized that: "farm lands are expanding and...many are complaining there is not enough grass for weak cows and calves" (Focus Group, October 3, 2014). As Figure 22 shows, complaints about the impacts of farm expansion on pasture availability are most serious in Gorodola *Woreda*, where more than 60 percent of household heads noted that it had reduced available grazing.

Figure 23

As far as land intensification, in most sites, the majority of plots are not under any particular management regime, and the response of ‘nothing’ predominates for the majority in all but two sites (Figure 23). In the two sites of Yabello and Teltelle, which are the exception, there is much more evidence of intensification than in other sites. We interpret this intensification as a result of heightened competition between farming and grazing for land. The Guji sites and Yabello and Teltelle show increased intensification and are characterized by competition between farming and grazing.

6. Conflict.

We also asked questions about any land and resource-related conflicts that may have occurred over the past year, the nature of the conflict, the impact of the conflict, and if it was resolved and—if so—how it was resolved. If it was not resolved, we asked why not and what are the consequences and steps that may follow. We have a particular focus on uncovering disputes over use of rangelands with other herders, whether they are of the same ethnic group or not, conflicts between cultivators and herders, and conflicts that involve outside investors.

Figure 24

When asked about inter-zone or inter-*woreda* conflicts, most respondents said that they usually occurred along borders with other groups and regions. As all but boundary disputes are relatively small in terms of incidence, we will focus analysis on the boundary disputes (Figure 24). The Guji sites bordering Region 5 (Somali Regional State) and Borana Zone and Yabello and Arero sites bordering Guji zone and Region 5 seem to be where most of the problems occur. In contrast, Dillo, Dirre and Miyo are almost conflict free. The FGDs and key informant interviews that were conducted in districts that bordered Somali Regional State and other ethnic groups showed higher incidences of reported conflict. Some of these were related to the establishment of the boundaries themselves, which have changed during the past 10 years. For example, one Borana leader from Liban district indicated that neighboring pastoralists from Region 5 have created conflicts with Borana communities: “they migrate as they want andgraze the area we reserved for the dry season. and that is what caused conflict between us” (Interview, September, 2014).

With the exception of the green (other) in Yabello, Arero, and Liben, most conflict seems intra-community. The green in these sites is mostly described as Borana-Guji and Borana-Somali disputes. Disputes are mainly between members of the same ethnic group, with the exception of Liben, Yabello and Arero, where there are conflicts between different ethnic groups. Conflict between communities and outside investors is at this point not experienced as a problem.

Table 8

Figure 25

Note that the first question we asked was about whether or not household heads were aware of a dispute. We followed this up to ask if anybody from the household was involved in the dispute. Table 8 is reporting on awareness of incidents, not actually experiencing them. Figure 25 further diminishes the incidence of conflict, as the majority of awareness of conflict does not correspond to household involvement in the conflict.

Figure 26

We did also ask about how any conflicts that were identified were resolved (Figure 26). There is a contrast here in our results. In Liben, Arero, and Dhas, sites people clearly rely mostly on the government to resolve conflicts, especially in border communities. Recall these are the sites where most of the boundary conflict is being reported. In the words of one Borana informant in a focus group discussion: “These days there is conflict between Guji and Borana, and the government is trying to bring peace....There is now a meeting to establish peace which is being conducted in Negelle town. The dispute arose over a pastureland around a place called Waleenso which we, the Borana, used previously in dry season” (Focus Group discussion, September 2014). By contrast, Yabello and Wadera respondents rely more on local elders to resolve conflicts. Teltelle respondents stand out for being heavily reliant on the customary Gada system to resolve disputes. Gorodolo is distinct in that it has an elevated share of issues that have not been resolved. Clearly, there are nuances to conflict resolution that exist across the sites that further research will help us to understand.

Table 9

We asked how satisfied people were with the outcome of the resolution process. Overall, satisfaction is highest when the elders resolve the conflict and lowest when the government resolves the conflict (Table 9). We would note that that this is probably more a statement about the tractability of the problems being brought to a given resolution mechanism than the efficacy of the resolution actors, though this remains a topic for further research. There is a difference in conflict reporting based on the perceived severity of the conflict and whether or not parties from outside the area are involved, especially members of another ethnic group, indicated in the qualitative data. The interview data show that minor land- and water-related conflicts often were handled by elders, while more severe issues, especially if physical harm or death resulted, were taken to the government. Even in the latter case, a common pattern is to try to resolve the

conflict through customary means and, if unsuccessful, then the next step is to seek government intervention. The government may be dealing with cases that are harder to solve due to this approach. The government is both the most commonly used institution to settle these disputes and the least likely to lead to a satisfied customer.

7. Transfers and Transactions from Outside the Agro-pastoral Systems

We asked households about any assistance they may have received from non-governmental organizations (NGOs), government agencies, or private investors (Table 10). We will situate the development challenge of the study area in the context of the kinds of actions and activities that are currently in place and look at spatial patterns to understand where there may be differential provision of outside resources.

Table 10

Table 10 presents transfers in cash or in kind. A transfer received is recording flows into the household from outside the household, but not from Governments, NGOs or private investors. A transfer they gave is recording flows from the household to another household. The share reports what percent of households reported such an event happened to their household in the past year. The net value reports the receipts minus gifts in net ETB (with 1 USD = 19 ETB roughly). We then asked for them to estimate the value of in-kind transfers that were not based on cash into or out of the household. The incidence and net value for these kinds of transfers are also reported in Table 10. Again, net value of in-kind transfers is calculated per household, with flows in assigned positive values and flows out given negative values.

Recalling that 19 ETB are one USD, even given the low income levels reported above, there is not much transfer among households in cash or in kind to report. The table indicates that most households are not involved as transfer recipients or donors, either in cash or in kind. Miyo is one site where it appears there is a net inflow of cash from outside the community.

Table 11

We also have responses for transfers from outside agencies in the form of food aid, food for work, government and NGO assistance, and other private transfers (Table 11). Following reporting on the share of the sample in each community over the past year is the average number of months food aid was received by those receiving food aid. The next set of columns reports what share of the community reported participation in a food for work scheme, followed by an average number of days worked for those who participated in the program. The next set of values is the percent reporting having received government or NGO aid (these do not appear to be distinct in respondents' answers) and the average

amount received by those who report receiving it. The final two columns report the share of households receiving payments from private investors and the average amount received; here the average is the value as there is only one payment of 500 Birr to one person in the whole sample. This very low figure is not surprising since not one of the 50+ key informant interviews mentioned a single case where an actual private investment had been made, although about 15 percent had said either inquiries had been made or they have heard about private investors and/or government approaching another community. At this point in time in this area, interactions with private investors are not yet a reality but are an issue of which people are increasingly aware and of which they are wary.

Comments from interviews with key elders and leaders during August to October 2014, including Aba Deeda (customary head of large rangelands), Aba *Reera* (customary head of local rangeland area), Aba Ela (owner of wells), and Aba Herega (water schedulers at water points), reflect this concern:

“Yes we have fear about investment, if private investors come to our area. It may make our vast grazing area become crowded. It can reduce the grazing land. It may prevent the community from using water in order to use water for another purpose.”

“What we want from an investor is payment, since our land is for pastoralists and we don’t have anywhere to go to take our livestock. Therefore, the site the investor requests must benefit the community or he should be forbidden immediately.”

“We heard about this (investors). The Chinese are building roads but are damaging our land and digging in inappropriate places...There is no agreement with the government or non-government about investment. The five aba *dheedas* have approached the government about recognition of pastoralists lands and resources and the rights of pastoralists and their lands should be respected... we are still waiting for a response.... problem is that they (investors) want the best and most fertile land and if they ask us for such land this gets us into a problem.”

“If he (investor) get one hectare of land today, he will buy more land from us...he (investor) has the financial power to dominate and influence us and ...the government will support the private investor more than us so it is better to protect first....We don’t want to see private investors on our land leave alone expecting and seeking benefit from them. We do not need anybody who wants to distribute our land.”

“We do not want investor because it makes our land become crowded. They displace people from their home and make farm land become crowded.”

“Investors have not come to the area...investors will not be successful in acquiring land... we are not unemployed, we have livestock and we do not have land which is sufficient for investment.... we do not need it (land investment) at all.”

These comments strongly suggest that any program that encourages private land investment has to be highly participatory with strong involvement by the community, highly transparent, and willing to withdraw if there is sufficient local resistance and the costs are too high for the community. At a minimum focus group discussions also need to be held with different pastoralist stakeholders (male/female, rich/poor, youth/elders, and others) to identify if they want their customary, communal lands registered in the first place, and to determine whether or not different stakeholders even know what certification would mean. Since boundaries of different grazing regimes remain in some places ambiguous and different communities may hold different notions of what/where those boundaries are, it is important that all pastoralist stakeholders participate in any discussion of the registration of communal lands, even if the goal is to better protect pastoralist land rights.

Food aid and food for work are more common in Borana than in Guji. Government aid is not very common but is generally of relatively large magnitude when it is given. Payments from private investors are not at all common in the study area; one payment of ~\$25 dollars is the only one reported in our sample.

The quantitative patterns revealed by analyzing the baseline survey results will be further developed by utilizing results from focus group discussions and key informant interviews. The baseline data collection for the LAND impact evaluation included a substantial qualitative component. The focus group discussions were deliberately designed to ensure the voices and perceptions of less politically powerful members of the communities (females, youth, and poor) are represented. The key informant interviews, somewhat conversely, ensure that we are capturing what the more powerful members of the communities (the elders who decide on grazing land management, the water point managers, the age set of respected elders) are seeing in terms of rangeland change, management changes, threats, and opportunities to the broader production system.

9. Conclusions

This paper has assessed a series of baseline indicators on land rights, land use, environmental quality, incomes, investments, conflict and conflict resolution, and external transfers of food aid and other assistance. Both Borana and Guji zones are undergoing important transitions. The most important that we have observed are increases in cultivation, settlements and human population, perceptions of bush encroachment, perceived drought incidences, communal and individual rangeland enclosures (*kalo*), and NGO involvement, especially in bush clearing, food aid and cash-for work programs, and range management. Other factors and conditions seem to have declined or stabilized. It is clear that per capita livestock holdings have declined relative to 5 and 10 years ago and that the role of customary institutions, conflict resolution mechanisms, and rangeland systems have been diminished, especially relative to the increased prominence of government administration and institutions. We suspect the decline of the latter factors is the result of a ‘crowding out’ factor by the government, which has sought increased controls over local institutions and authorities. The large extent of social, economic, and environmental changes occurring in southern Ethiopia, both internally and externally generated, will make it difficult to attribute causation to one or more key variables.

Our findings, especially from the qualitative research, also show that customary grazing units have imprecisely defined boundaries. The managers of these units, the *aba dheeda* and *aba reera* at times are articulating precise lines in some instances and at other times are not able to identify a boundary line. Our sense of this is that the traditional management unit of the *dheeda* and *reera* are undergoing a process of adaptation to become legible in the formal administrative framework of the *kebele* and *woreda*. Considerable movements of livestock and people traverse the borders that have been defined, especially during droughts. Depending on which community of pastoralists’ views are represented, responses may show rights to grazing and water points that overlap with other groups of pastoralists, especially in reference to critical border zones. The demarcation of official administrative borders, such as *kebele* and *woreda*, only complicate issues, with administrative units assuming more importance than customary grazing units in certain areas but less significance in others (also see Kamara et al. 2004; Bassi 2010). Rigid borders tend to be the norm in years of good rainfall and pastures, but porous boundaries and flexibility take over during poor years. As our paper has shown, it is those years of poor conditions that increasingly are the norm rather than the exception in southern Ethiopia.

In addition, the growing role of *kalo* is not being experienced in the same way throughout the study area. In Guji, it is generally seen as a private enclosure, and this is seen as problematic. In Borana, the trend is more towards communal areas, and the qualitative discussions indicate there is some interest in using these communal *kalo* as a step towards intensification in the production system (as in finishing / fattening

livestock before sale). Similarly, the growth of cultivation is very pronounced in the past decade or two. It is not yet seen as leading to major problems, but is worth further research as the expansion has been very rapid and very recent. On a different note, this rapid and recent expansion of cultivation has likely not been met by recent rapid expansion of extension services, making it likely that agricultural productivity could be increased by better provision of information and inputs that do not lie within the shared knowledge base of this formerly livestock oriented population.

We conclude here with an assessment of the trends revealed in the data and the implications for communal and private tenure arrangements in the study area. We speculate on future scenarios given different policy measures and tenure-oriented programs that could be taken going forward. In essence, this study is an attempt to understand the existing land rights system as experienced by residents of the area to uncover strengths and weaknesses as they currently exist. Based on this foundation, we will be able to both identify policy recommendations for strengthening land rights and priority areas that should be addressed where we see weaknesses. We also will be able to compare the experiences in southern Ethiopia with existing literatures and the authors' observations on land tenure from other rangelands of sub-Saharan Africa.

As noted earlier, there has been very little outside private investment in land that has taken place in our study area, but this does not mean that local concerns about outside investors and possible impacts on local lands and livelihoods were not expressed in interviews. With increased communications and use of mobile phones, many pastoralists and agropastoralists in the area are aware of the presence of outside investors and the large-scale investments in land that have taken place elsewhere in rural regions of Ethiopia, including mainly pastoralist areas.

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Tables

Table 1—Study Sites and Descriptions

<i>Woreda</i>	<i>Rangeland System</i>	2007 census population	<i>Kebeles in woreda</i>	<i>Kebeles sampled</i>	2007 population density	Household Sample
<i>Borana Zone</i>						
Arero	Gomolle / Woyama	48,126	15	5	7	342
Dhaas	Woyama/Dirre	14,779	5	4	NA	259
Dillo	Malbe/Golbo	9,145	4	1	NA	72
Dire	Dirre	73,401	15	1	7	74
Miyo	Dirre / Woyama	50,601	17	1	17	69
Teltelle	Malbe	70,501	21	4	7	317
Yabello	Gomole / Malbe	102,165	23	6	18	440
<i>Guji Zone</i>						
Gorodolo	Golba Dawa / Dida	NA	13	1	NA	81
Liben	Golba Dawa / Dida	138,813	37	23	19	1731
Wadera	Wadera	50,554	20	6	53	453

Sources: *Ethiopian Census 2007, FOOD group 2006 reports, LAND rangeland maps, LAND survey data.*

Table 2—Household Characteristics by Site

<i>Woreda</i>	Settled	Semi- settled	Nomadi c	Adults	Childre n	Female head	Age of head	Wives per husband
<i>Borana Zone</i>								
Arero	92%	7%	1%	2.0	3.8	28%	46	1.2
Dhas	83%	17%	0%	2.0	3.4	26%	50	1.2
Dillo	89%	10%	1%	2.0	2.7	22%	49	1.2
Dirre	99%	1%	0%	2.1	3.4	35%	49	1.0
Miyo	93%	7%	0%	2.1	3.1	32%	52	1.1
Teltelle	97%	3%	0%	2.0	3.1	29%	43	1.1
Yabello	89%	10%	1%	2.2	3.5	29%	48	1.2
<i>Guji Zone</i>								
Gorodol o	99%	1%	0%	2.1	4.5	11%	41	1.3
Liben	94%	5%	1%	2.0	3.8	23%	44	1.2
Wadera	96%	3%	1%	2.0	3.9	13%	40	1.5

Source: *LAND survey data*

Table 3--Cash Income Past 12 Months and Sources of Income

	Household income	Livestock products	Livestock sales	Crop sales	Salary	Labor on farms	Hired herding	Rental income	Trade income	Work for wage	Other
<i>Borana Zone</i>											
Arero	\$149.05	0%	37%	1%	3%	3%	2%	0%	30%	17%	7%
Dhas	\$121.05	1%	38%	1%	13%	2%	2%	0%	20%	17%	6%
Dillo	\$149.47	0%	59%	0%	18%	1%	1%	3%	11%	6%	1%
Dirre	\$34.05	0%	17%	3%	6%	20%	0%	0%	36%	16%	2%
Miyo	\$136.47	0%	43%	12%	9%	7%	0%	4%	8%	16%	0%
Teltelle	\$160.47	0%	22%	13%	7%	12%	1%	1%	18%	20%	7%
Yabello	\$152.11	1%	42%	11%	5%	5%	1%	2%	9%	10%	15%
<i>Guji Zone</i>											
Gorodolo	\$46.84	0%	0%	27%	0%	0%	1%	7%	65%	7%	10%
Liben	\$188.68	0%	18%	41%	5%	3%	0%	2%	21%	10%	3%
Wadera	\$179.16	0%	26%	46%	7%	1%	0%	1%	16%	3%	4%

Income converted to USD at a rate of 19 Birr=1 USD.

Source: LAND survey data

Table 4--Household Herds by Site

Woreda	Have animals	TLU	TLU per capita	Female	Cattle	Smallstock	Camels
<i>Borana Zone</i>							
Arero	94.4%	7.8	1.4	74%	76%	14%	10%
Dhas	96.9%	9.2	2.0	71%	77%	15%	9%
Dillo	95.8%	15.6	3.7	78%	76%	12%	11%
Dirre	100.0%	11.7	2.4	76%	73%	19%	8%
Miyo	97.1%	10.5	2.4	69%	79%	17%	4%
Teltelle	83.6%	6.2	1.2	55%	78%	21%	1%
Yabello	92.6%	9.8	1.8	70%	71%	16%	13%
<i>Guji Zone</i>							
Gorodolo	97.5%	8.5	1.3	73%	87%	9%	4%
Liben	91.7%	9.1	1.7	64%	76%	16%	8%
Wadera	94.2%	8.1	1.5	62%	92%	7%	1%

Source: LAND survey data

Table 5--Satellite Camp (fora) Use by Woreda and Year

	2000	2001	2002	2011	2013
<i>Borana Zone</i>					
Arero				21%	29%
Dhas				23%	39%
Dillo	83%	37%	47%	19%	43%
Dirre				28%	20%
Miyo				16%	43%
Teltelle				6%	7%
Yabello				19%	16%
Dida Hara	35%	13%	3%		
Finchawa	28%	19%	19%		
Korati	0%	3%	0%		
Wachille	3%	3%	0%		
<i>Guji Zone</i>					
Gorodolo				17%	5%
Liben				9%	13%
Wadera				7%	4%

Source: LAND survey data, PARIMA data 2000-2002

Table 6--Average Size of Community and Private Kalos in Hectares

	Community	Private
<i>Borana Zone</i>		
Arero	79.5	1.5
Dhas	68.9	3.8
Dillo	124.8	2.0
Dirre	31.9	none
Miyo	144.7	none
Teltelle	26.7	1.6
Yabello	35.0	2.4
<i>Guji Zone</i>		
Gorodolo	6.2	1.0
Liben	69.9	2.9
Wadera	20.8	1.3

Source: LAND survey data

Table 7--Cultivation and Fields

	Do you farm?	Do you have an irrigated plot?	Do you have a non irrigated plot?	Size in hectares (HA) irrigated	Size in HA non-irrigated
<i>Borana Zone</i>					
Arero	69%	8%	67%	4.24	4.38
Dhas	77%	5%	76%	4.33	4.54
Dillo	51%	6%	51%	1.75	3.24
Dirre	78%	34%	74%	3.40	2.76
Miyo	83%	10%	83%	2.86	4.63
Teltelle	71%	15%	67%	4.94	4.17
Yabello	76%	23%	65%	3.84	4.42
<i>Guji Zone</i>					
Gorodolo	93%	0%	93%	none	3.45
Liben	86%	8%	85%	4.91	5.40
Wadera	91%	5%	91%	6.29	5.53

Source: LAND survey data

Table 8--What Kinds of Disputes are you Aware Happened in your Area over the Past 12 Months?

	Boundary	Water	Grazing	Forest	Privatize	Crop	Salt	Raid
<i>Borana Zone</i>								
Arero	10%	5%	9%	2%	1%	1%	0%	1%
Dhas	2%	2%	2%	0%	0%	2%	0%	0%
Dillo	0%	0%	0%	0%	0%	0%	0%	0%
Dirre	0%	1%	3%	0%	0%	1%	0%	0%
Miyo	0%	0%	0%	0%	0%	0%	0%	0%
Teltelle	2%	2%	2%	1%	0%	2%	0%	1%
Yabello	5%	3%	5%	3%	0%	1%	0%	0%
<i>Guji Zone</i>								
Gorodolo	21%	1%	1%	0%	1%	0%	0%	0%
Liben	17%	1%	4%	0%	0%	1%	0%	2%
Wadera	2%	1%	2%	0%	0%	1%	0%	0%

Source: LAND survey data

Table 9--Were you Satisfied by the Way it was Resolved by Whom it Was Resolved?

	Satisfied	Not	Cases
Elders	85%	15%	46
Gada	75%	25%	12
Government	55%	45%	286

Source: LAND survey data

Table 10--Net Cash and In-kind Transfers with Other People

	Received Cash	Gave Cash	Net Cash	Received In-kind	Gave In- kind	Net In- kind
<i>Borana Zone</i>						
Arero	10%	7%	44	11%	6%	44
Dhas	12%	8%	19	10%	3%	30
Dillo	11%	11%	-30	17%	4%	-4
Dirre	15%	15%	-64	18%	8%	-8
Miyo	17%	9%	108	9%	4%	-4
Teltelle	8%	3%	52	5%	3%	-5
Yabello	9%	7%	28	8%	4%	20
<i>Guji Zone</i>						
Gorodolo	6%	7%	-107	17%	15%	18
Liben	9%	10%	6	11%	9%	3
Wadera	4%	5%	8	8%	6%	48

Source: LAND survey data

Table 11--Food Aid, Food for Work, Government Assistance, and Private Investor Payment in Past Year

	Food Aid	Months	Food for Work	Days	Government Assistance	Birr	Private Investor	Birr
<i>Borana Zone</i>								
Arero	25.7%	5	20.2%	83	3.5%	900	0.0%	NA
Dhas	15.1%	5	9.7%	70	3.5%	673	0.0%	NA
Dillo	13.9%	4	9.7%	67	6.9%	216	0.0%	NA
Dirre	10.8%	4	8.1%	43	6.8%	359	0.0%	NA
Miyo	23.2%	3	10.1%	57	1.4%	400	0.0%	NA
Teltelle	2.5%	6	5.4%	41	0.0%	NA	0.0%	NA
Yabello	14.2%	6	9.5%	114	2.3%	840	0.2%	500
<i>Guji Zone</i>								
Gorodolo	9.9%	2	3.7%	55	7.4%	517	0.0%	NA
Liben	10.7%	3	6.5%	60	5.0%	605	0.0%	NA
Wadera	0.4%	2	0.9%	20	1.3%	5460	0.0%	NA

Source: LAND survey data

Figures

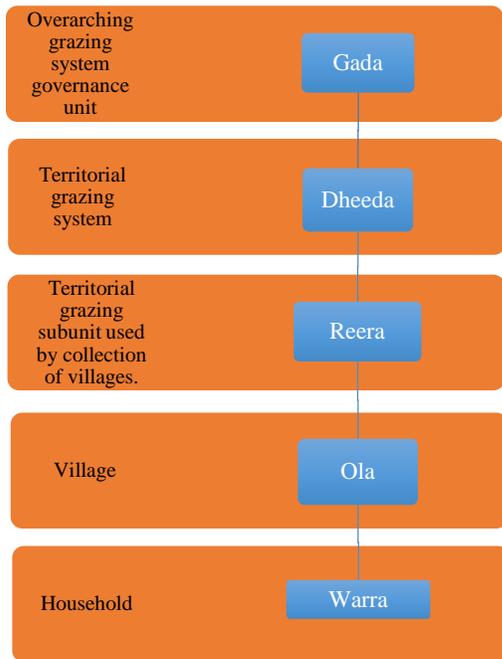


Figure 1--Guji-Borana Customary Territorial Structure

Source: Hogg, 1990

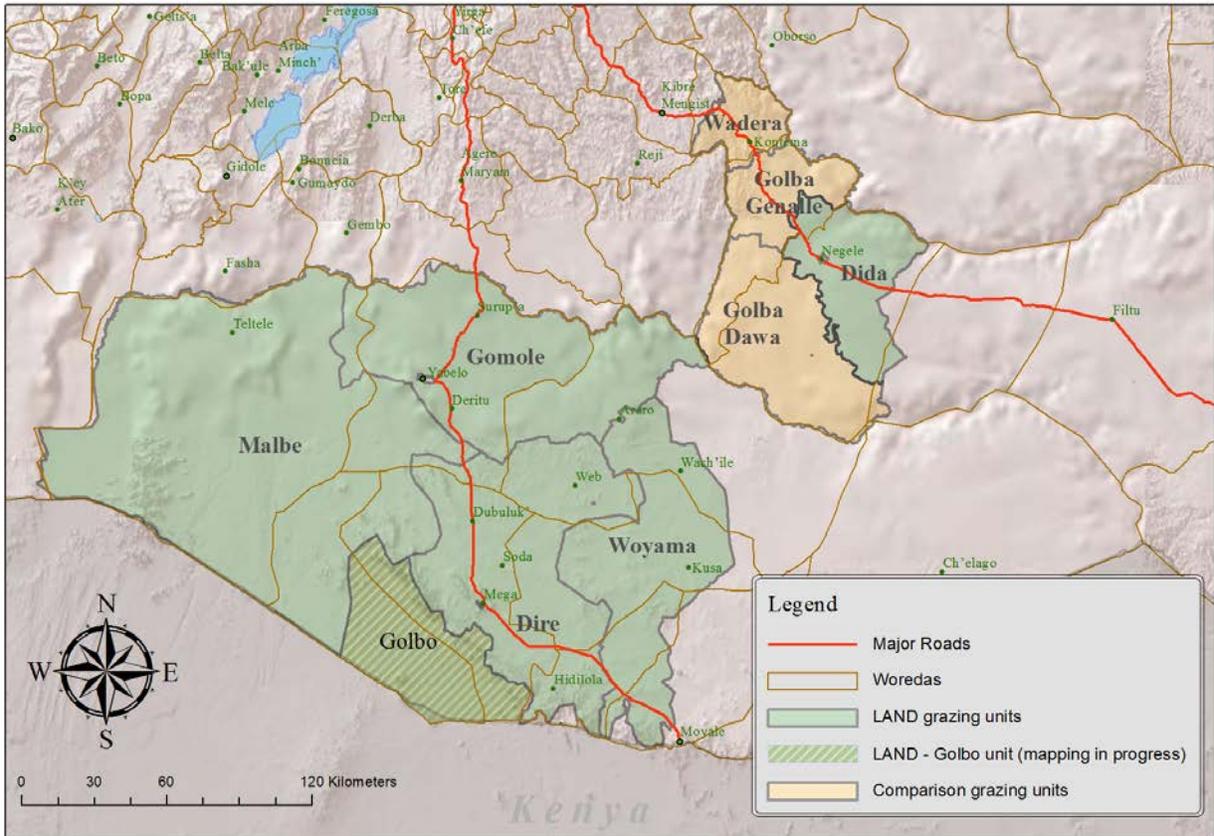


Figure 2--Map of Research Area in Southern Ethiopia
 Source: USAID, 2014

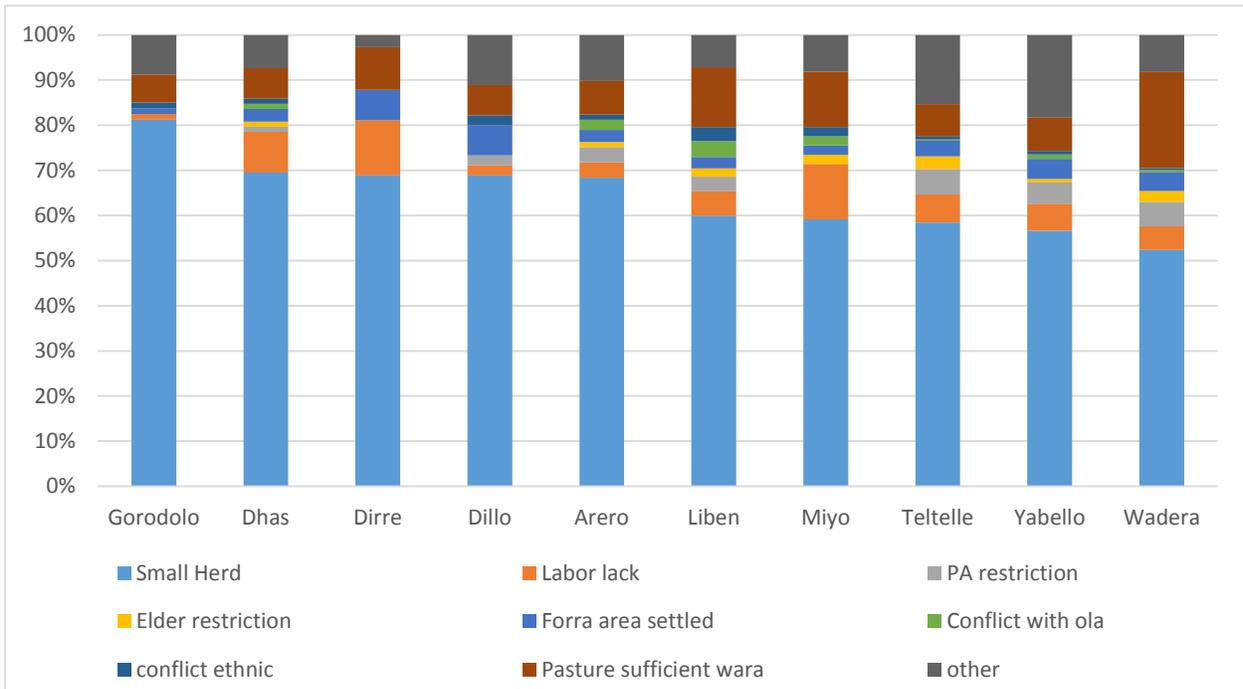


Figure 3--Reasons for a Lack of Satellite Camp Use October 2013 to September 2014.
 Source: LAND survey data

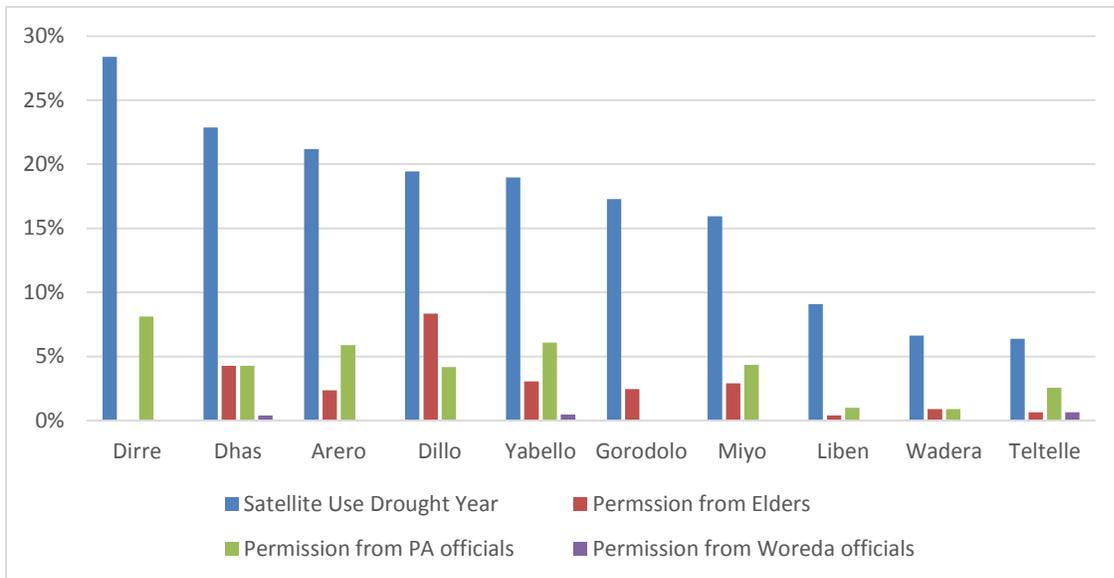


Figure 4--2011 Drought Year Satellite Camp Use and Permission to Use
 Source: LAND survey data

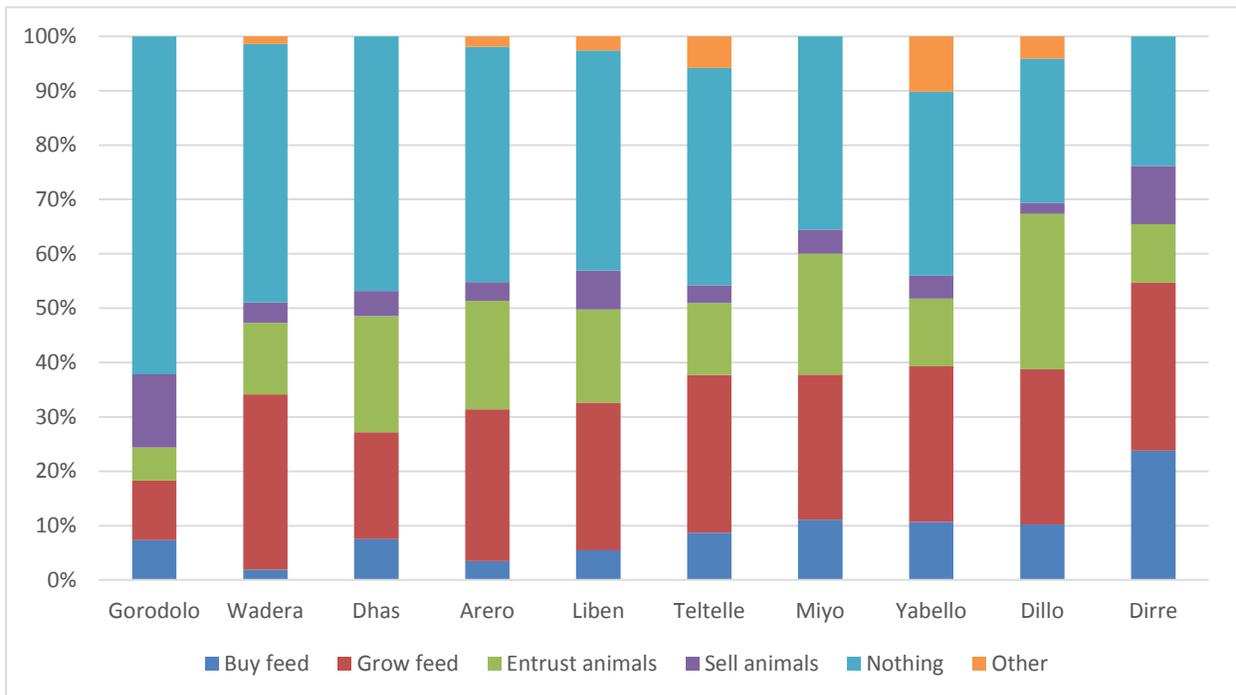


Figure 5--Management Practices Instead of Satellite Camp Use
 Source: LAND survey data

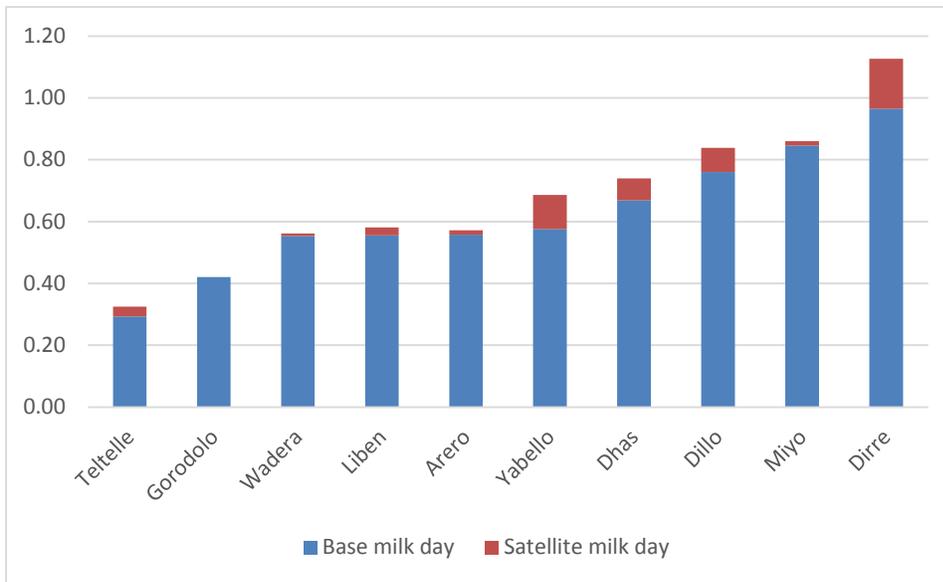


Figure 6--Average Amount of Milk Produced, in Liters per Day
 Source: LAND survey data

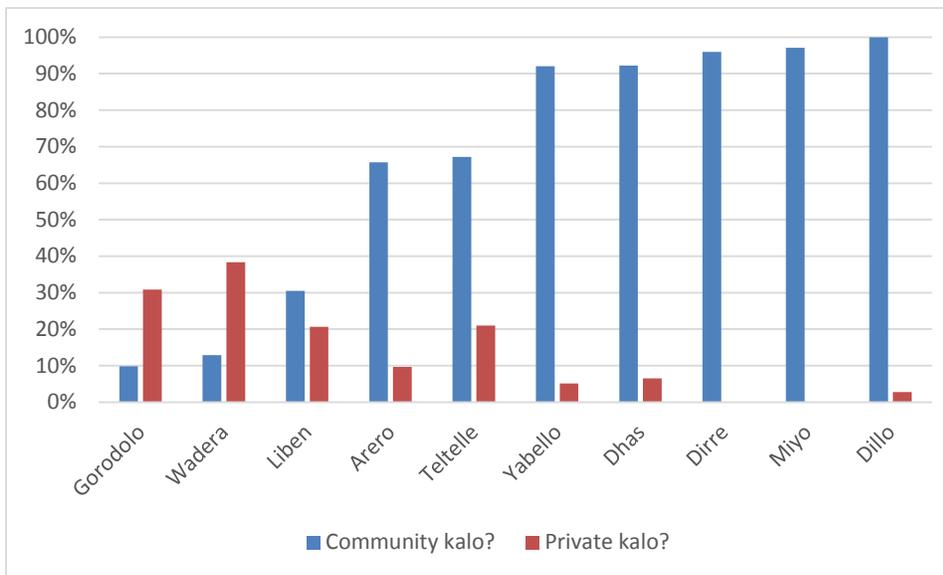


Figure 7--Access to Community and Private Kalo by Woreda
 Source: LAND survey data

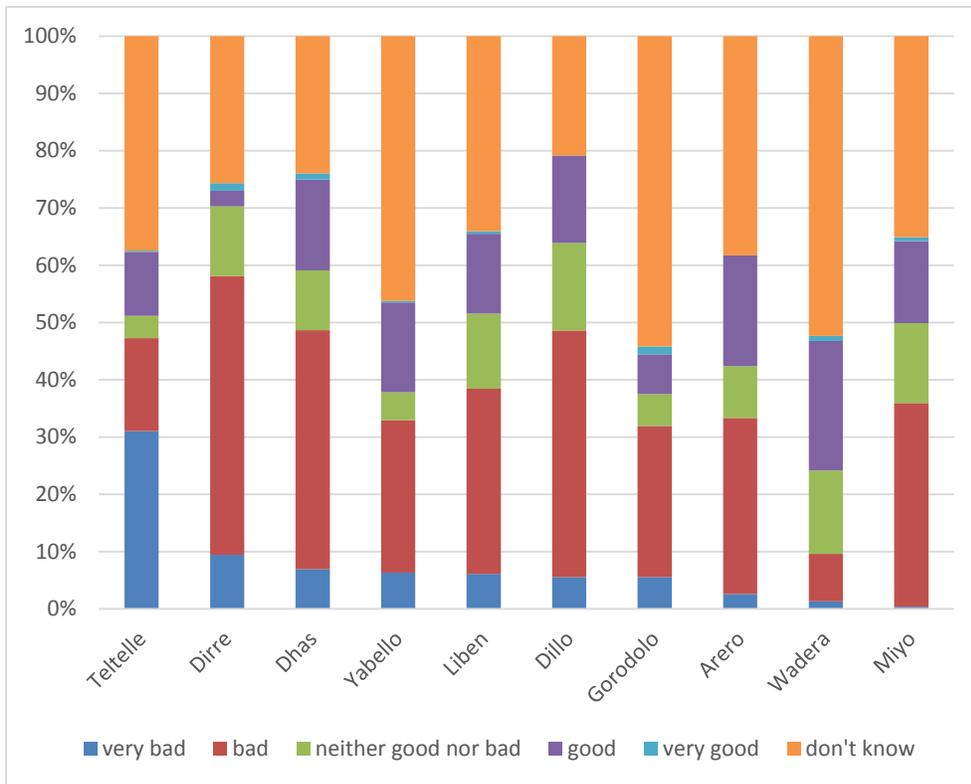


Figure 8--Evaluation of Current Dheeda Condition

Source: LAND survey data

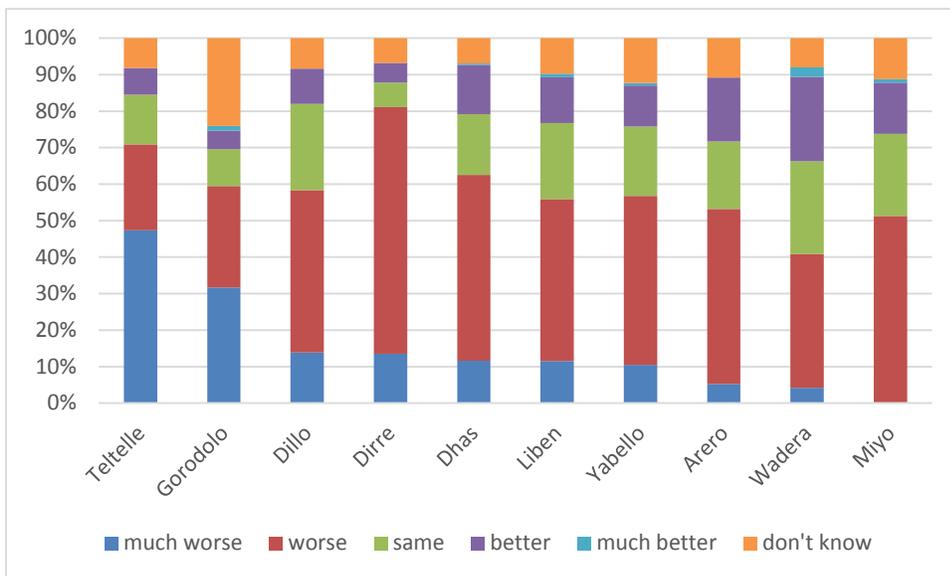


Figure 9--Contrast of Current Dheeda Condition to 5 years ago

Source: LAND survey data

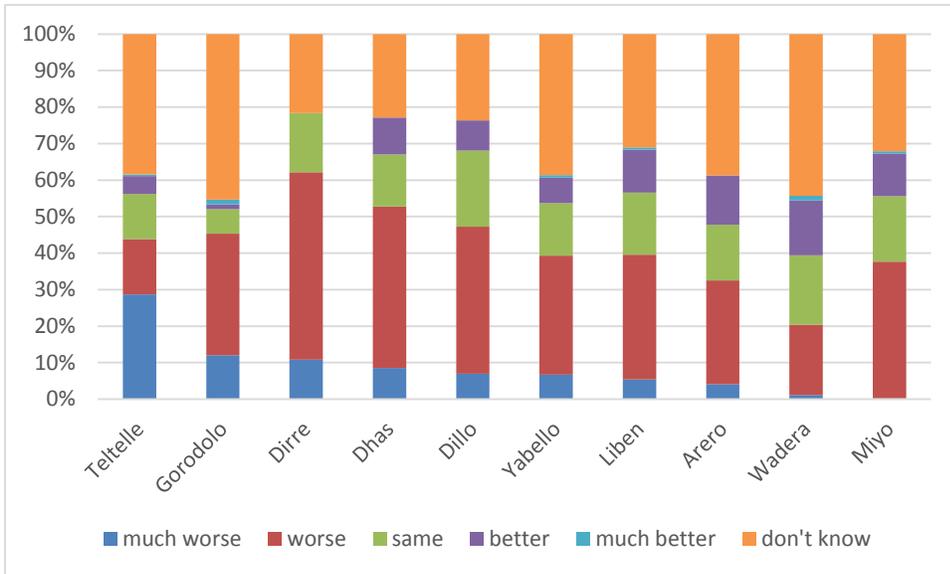


Figure 10--Comparison of current waara condition to condition 5 years ago
 Source: LAND survey data

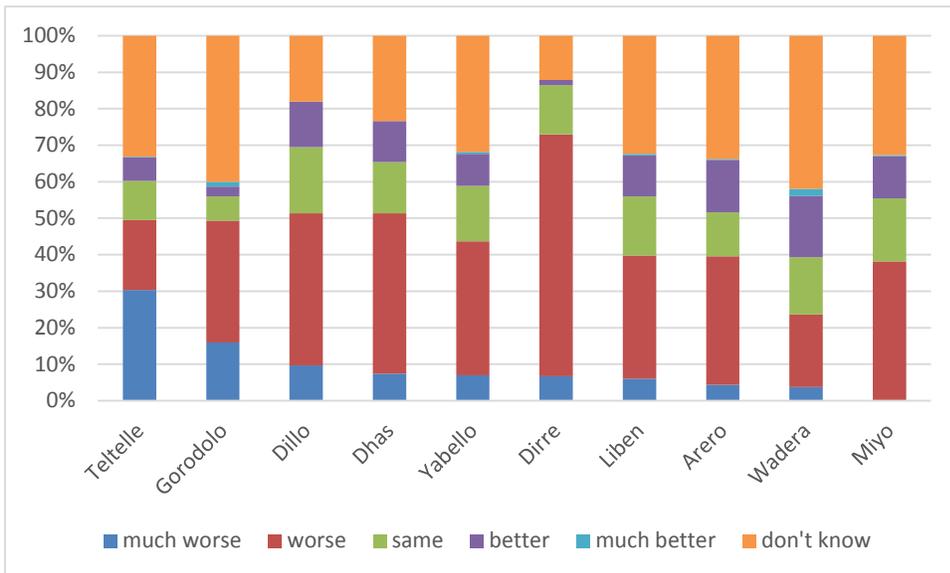


Figure 11--Current Fora Condition Compared to 5 years ago
 Source: LAND survey data

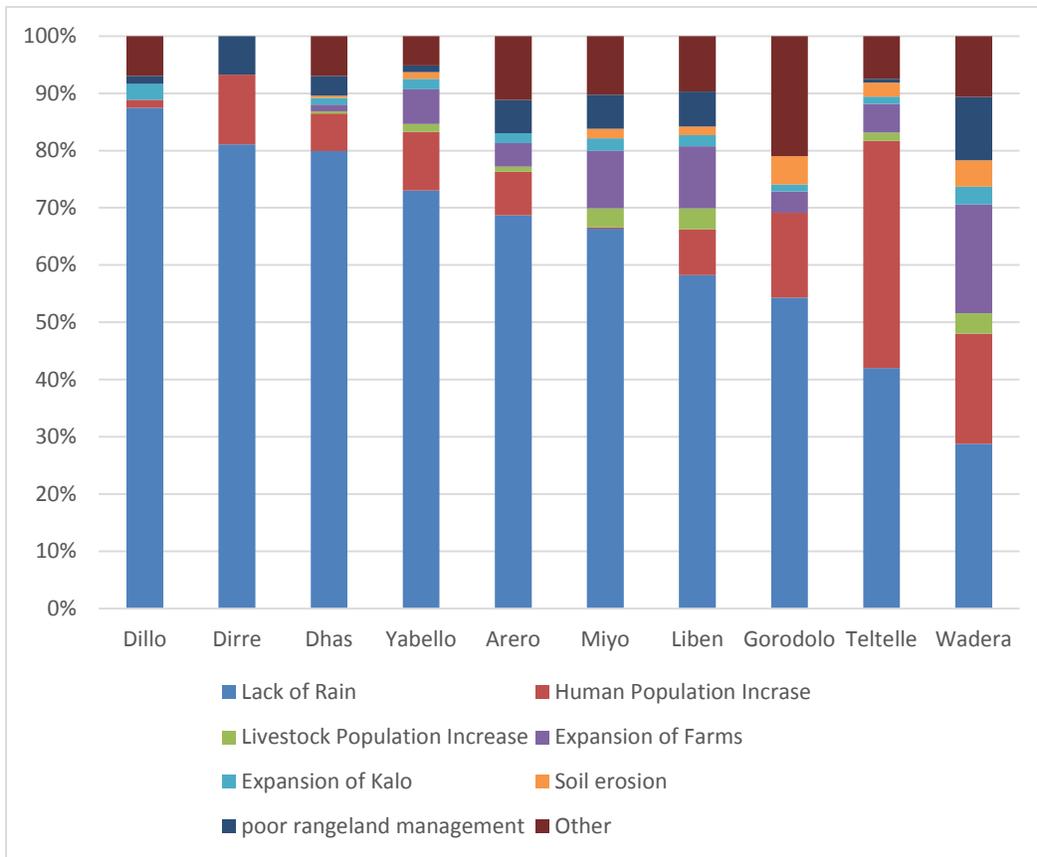


Figure 12--Why have things gotten worse?
 Source: LAND survey data

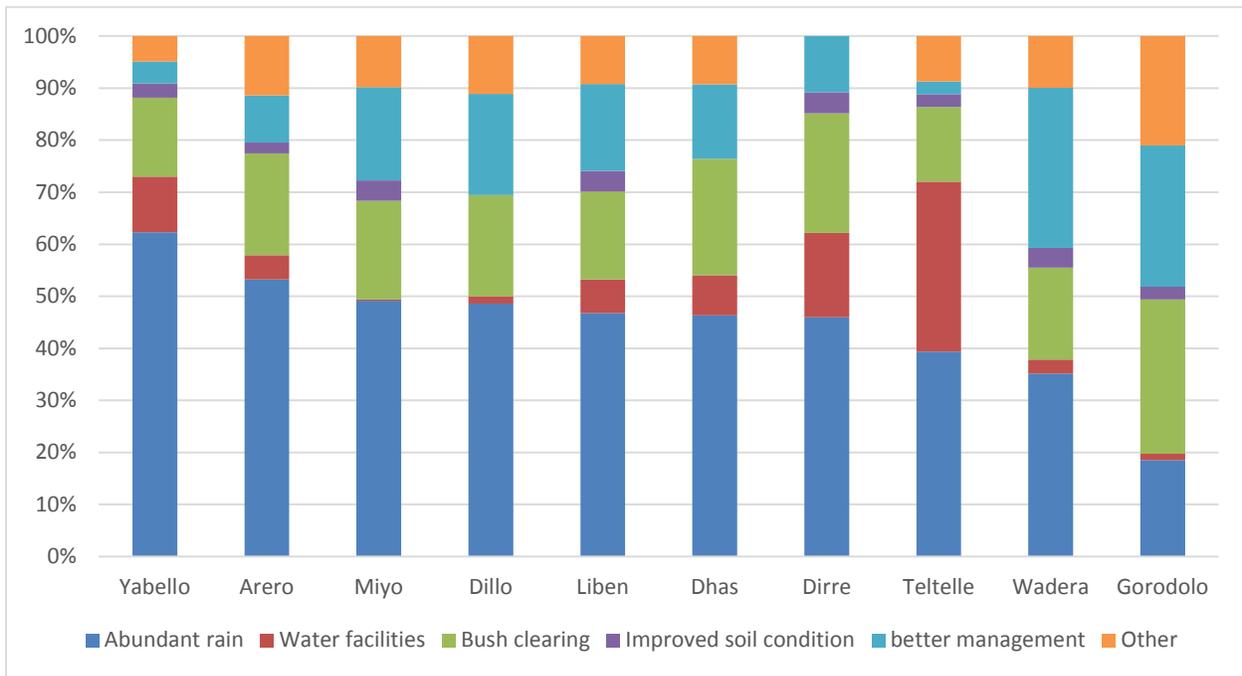


Figure 13--What would it take to make it better?
 Source: LAND survey data

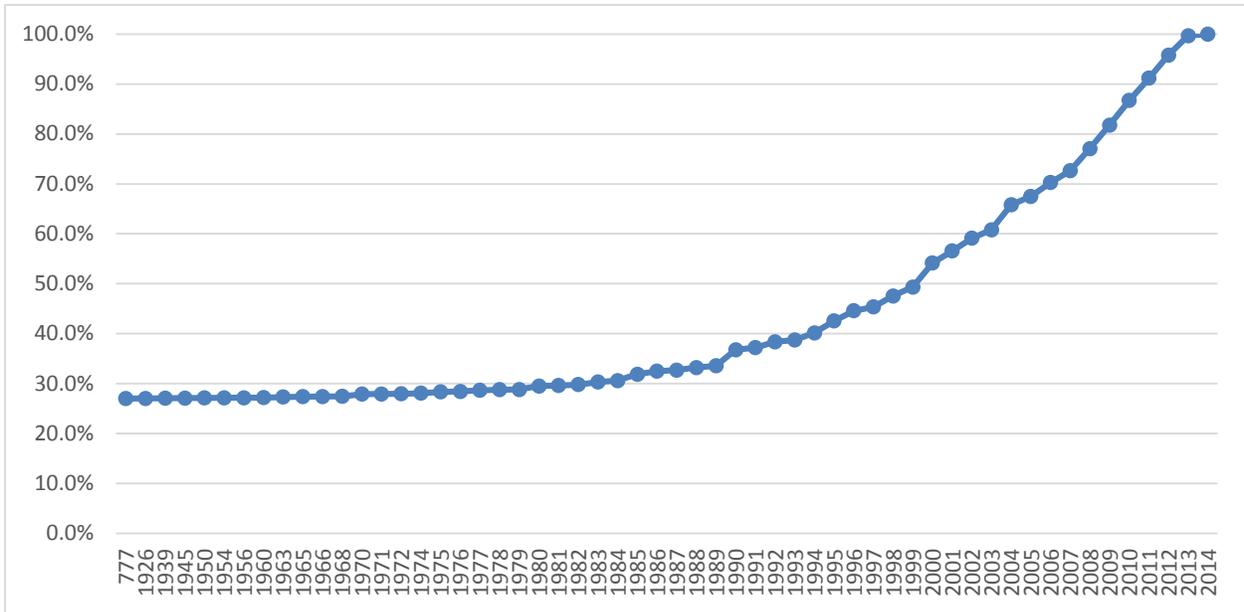


Figure 14 Cumulative Percent for When Was a Cultivated Plot Established?

Source: LAND survey data

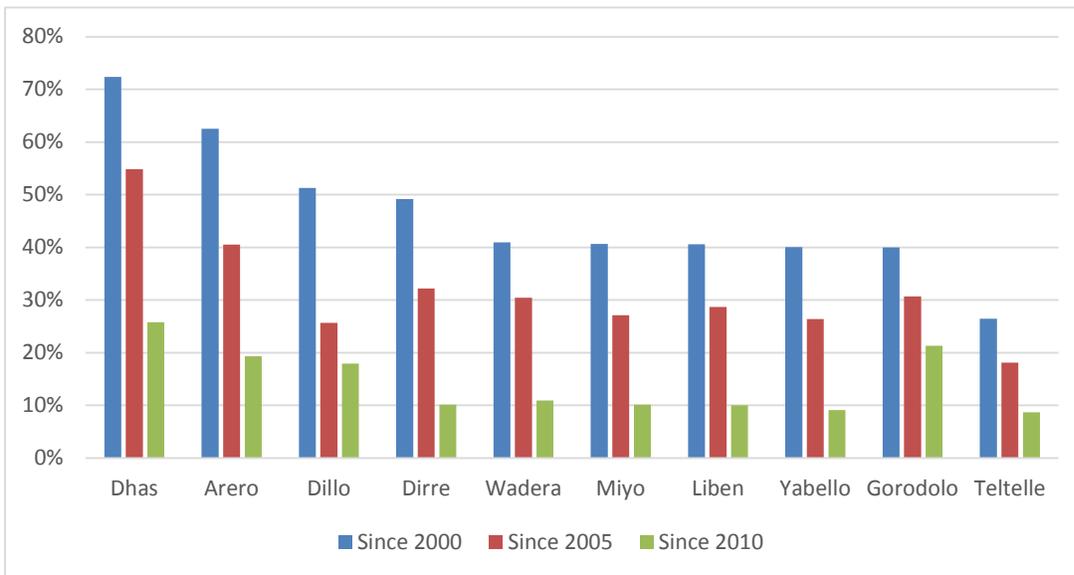


Figure 15--Profile of Recent Establishment of Fields by Site

Source: LAND survey data

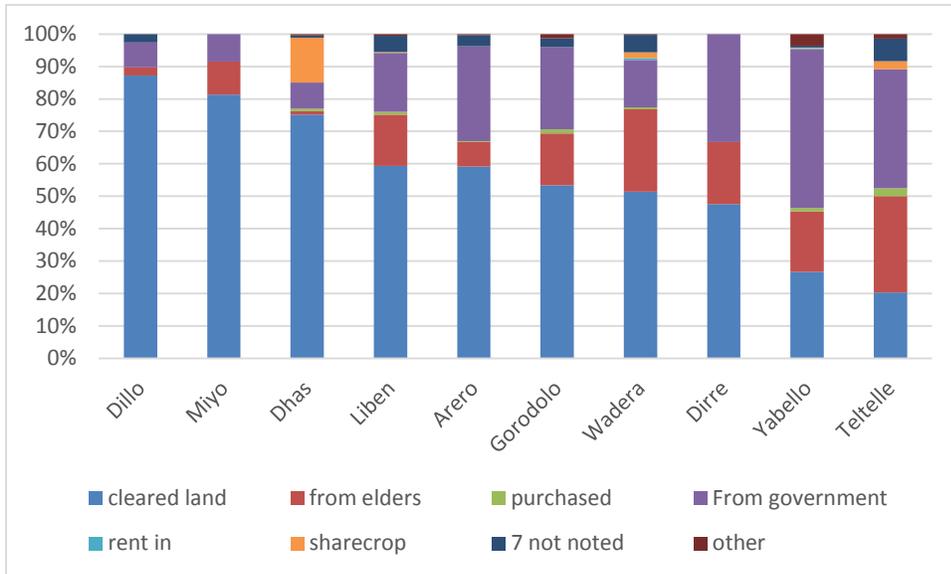


Figure 16--How was field obtained by woreda

Source: LAND survey data

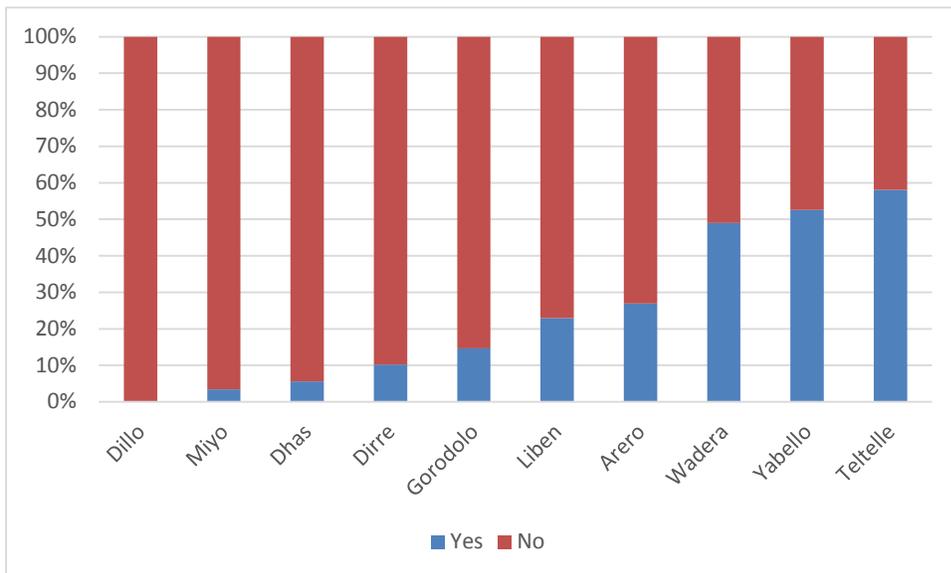


Figure 17--Do you have registration documents for the land?

Source: LAND survey data

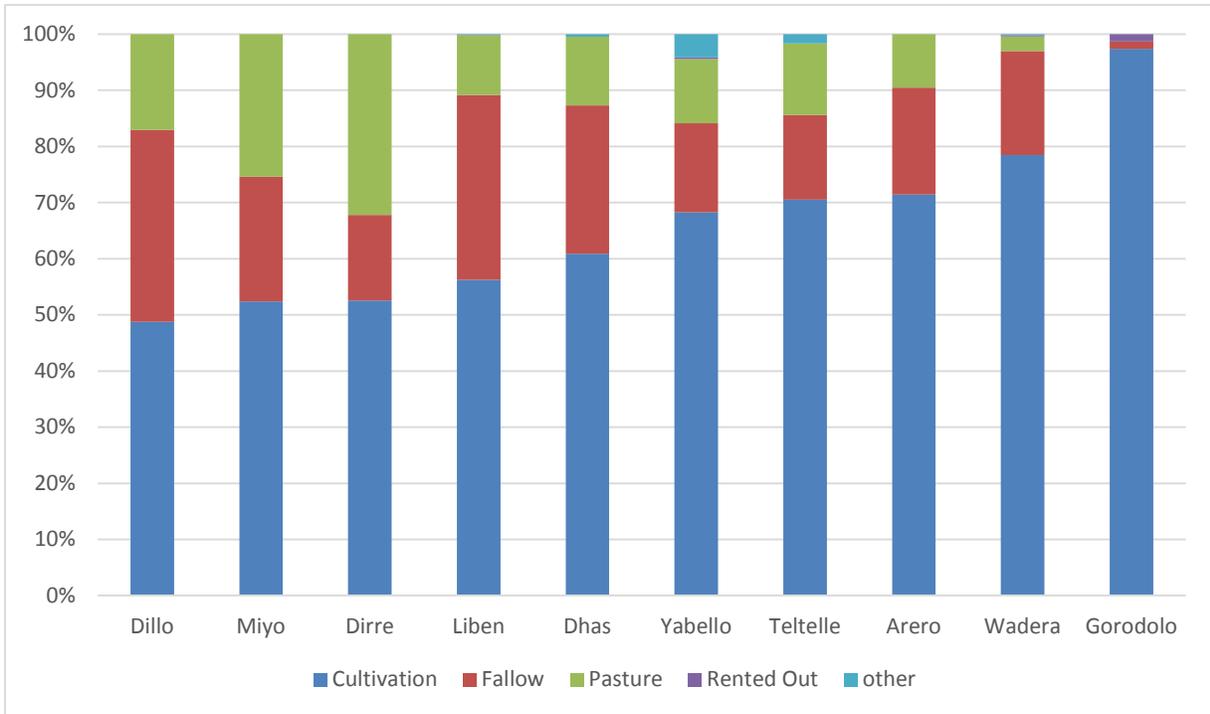


Figure 18--Current Use of Land

Source: LAND survey data

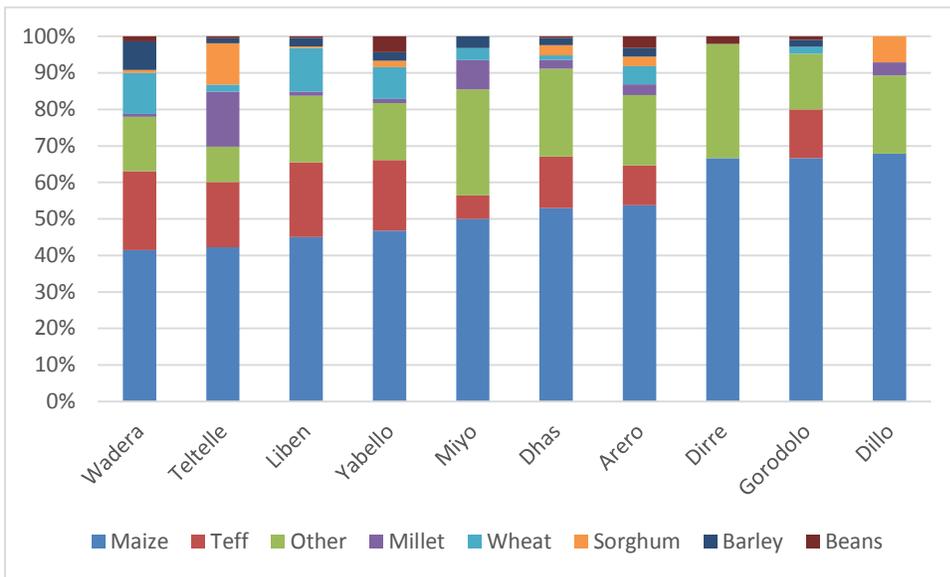


Figure 19--What Was Grown Last on the Field?

Source: LAND survey data

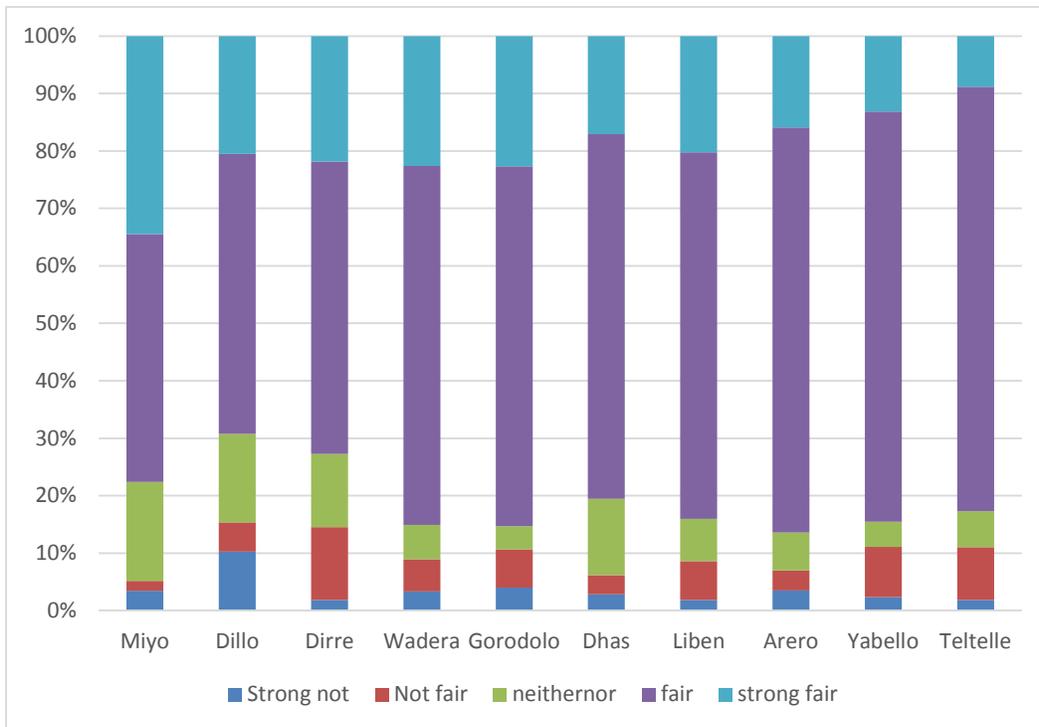


Figure 20--The process for claiming a plot was fair and transparent
 Source: LAND survey data

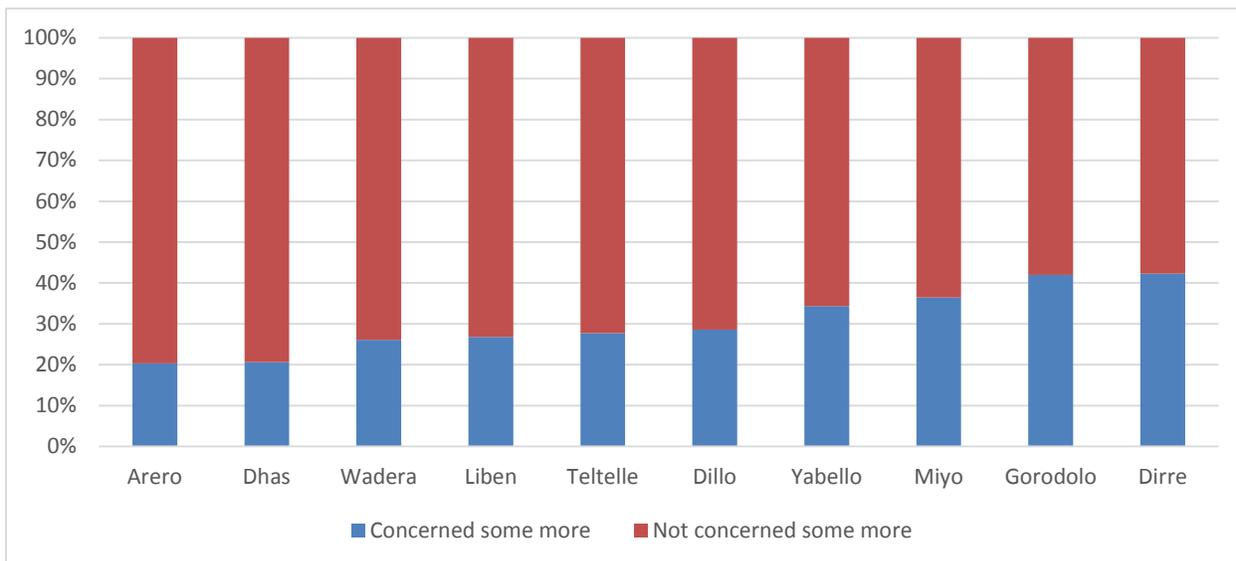


Figure 21--Are you concerned that some households are getting more land than others?
 Source: LAND survey data

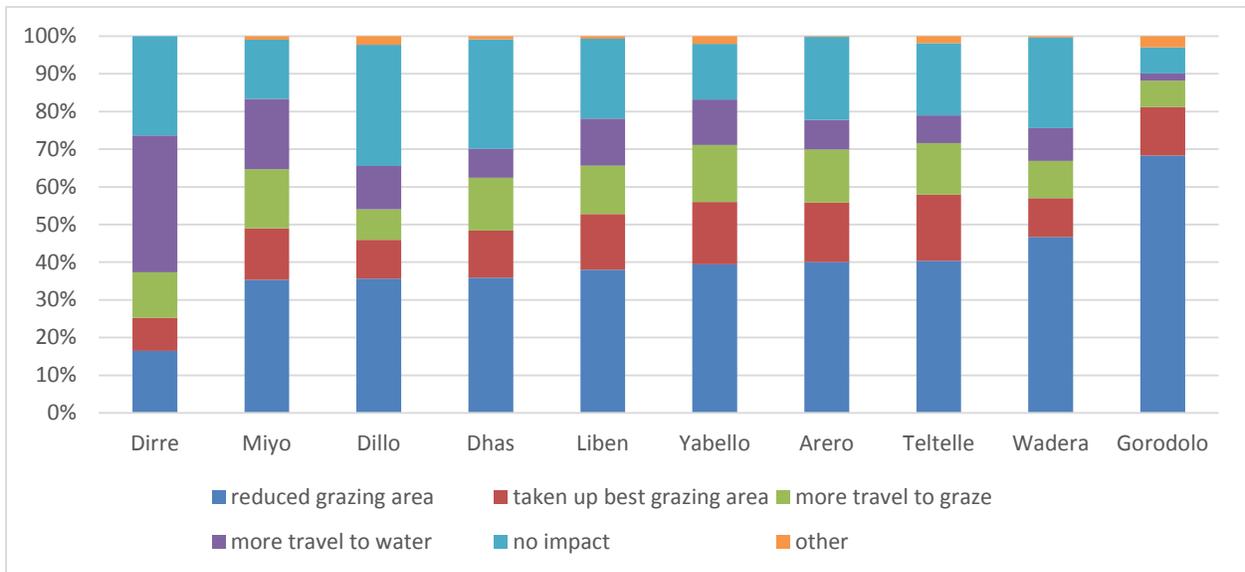


Figure 22--What has been the impact of land allocation on grazing?

Source: LAND survey data

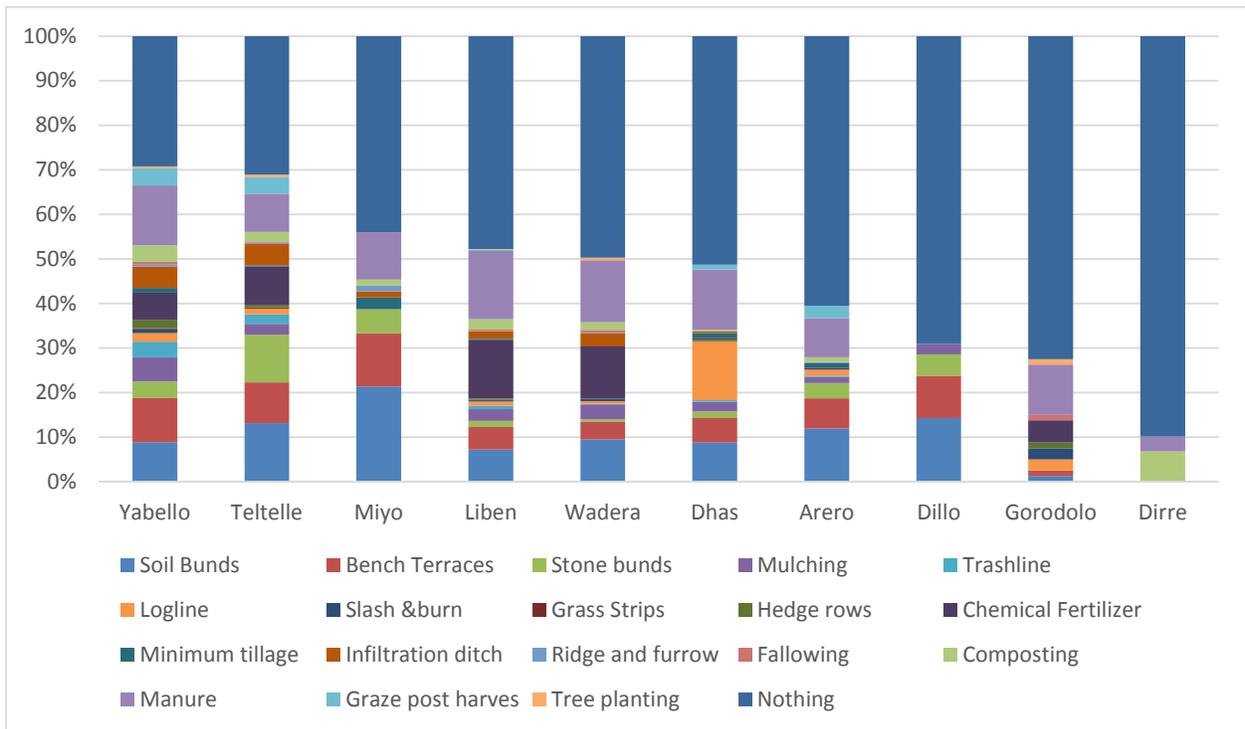


Figure 23--What management practices are being used on your field?

Source: LAND survey data

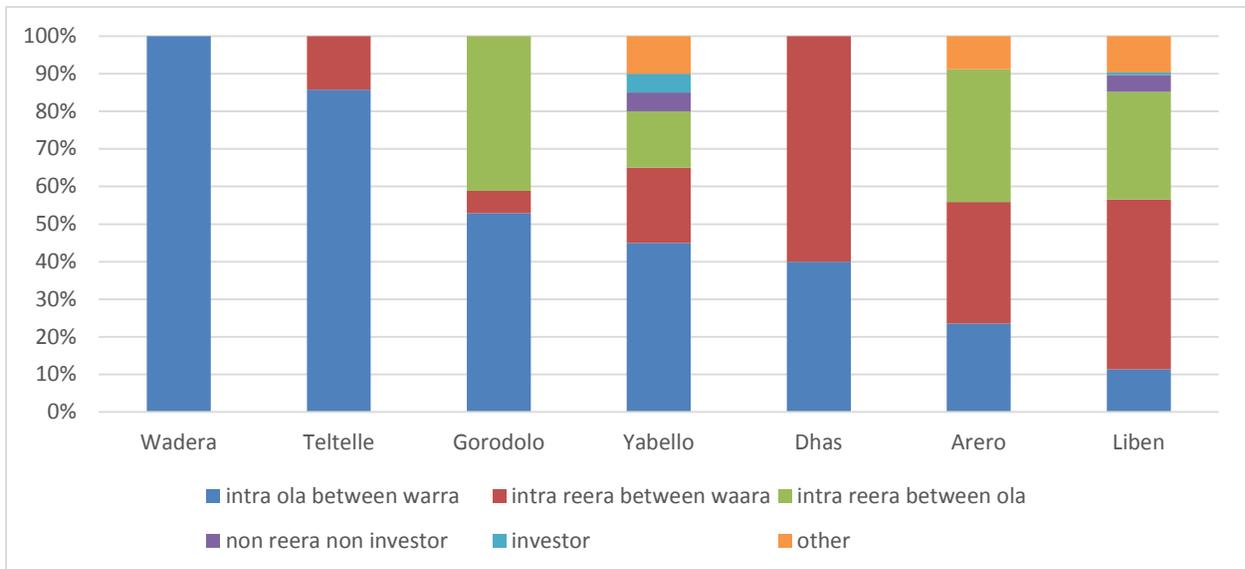


Figure 24-- What was the nature of the boundary conflict?

Source: LAND survey data

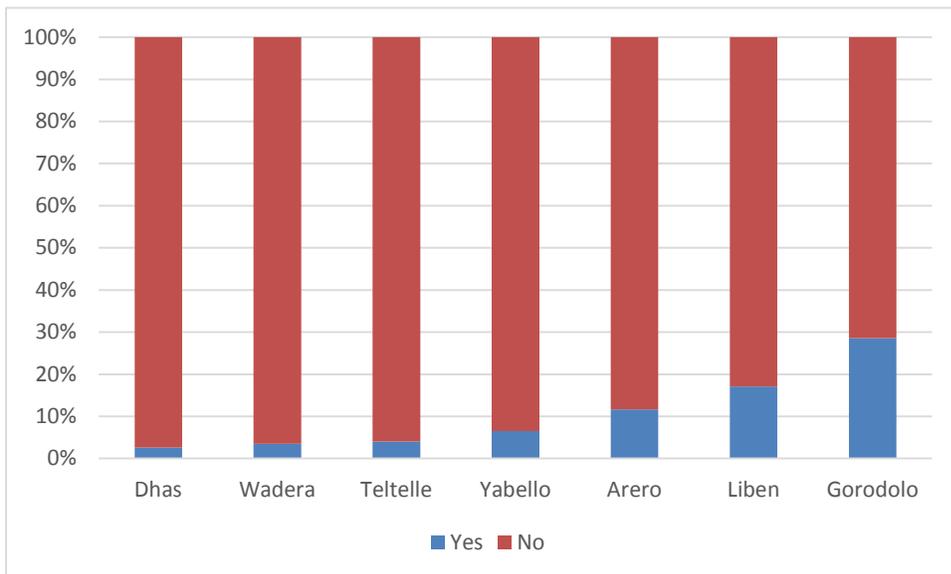


Figure 25-- Was anyone from this household involved in a conflict?

Source: LAND survey data

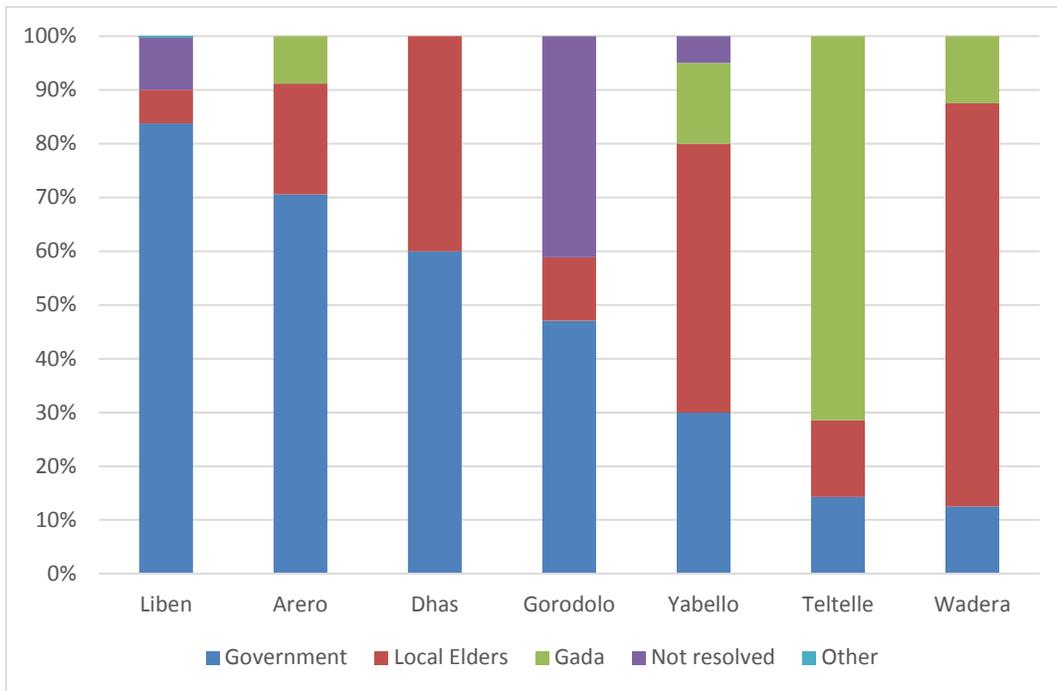


Figure 26--Who was asked to resolve the conflict?
 Source: LAND survey data