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USAID/ETHIOPIA LAND ADMINISTRATION TO NURTURE DEVELOPMENT (LAND)

Impact Evaluation Design Report

JULY 2014

This document was produced for review by the United States Agency for International Development. It was prepared by Cloudburst Consulting Group, Inc. for the Evaluation, Research, and Communication (ERC) Task Order under the Strengthening Tenure and Resource Rights (STARR) IQC.

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Prepared for the United States Agency for International Development, USAID Contract Number AID-OAA-TO-13-00019, Evaluation, Research and Communication (ERC) Task Order under Strengthening Tenure and Resource Rights (STARR) IQC No. AID-OAA-I-12-00030.

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ACRONYMS AND ABBREVIATIONS

ATE	Average Treatment Effect
CLR	Cluster Level Reliability
CLGE	Community Land Governance Entity
DD	Difference-in-Difference
GoE	Government of Ethiopia
H	Hypothesis
IBLI	Index Based Livestock Insurance
ICC	Intra-Class Correlation
IE	Impact Evaluation
IRB	Institutional Review Board
FGD	Focus Group Discussions
FTF	Feed the Future
KII	Key Informant Interview
LAND	Land Administration to Nurture Development
LTPR	Land Tenure and Property Rights
LTD	Land Tenure Division
M&E	Monitoring & Evaluation
MDES	Minimum Detectable Effect Size
MoA	Ministry of Agriculture
MUAC	Mid-Upper Arm Circumference
NGO	Non-Government Organization
PLI	Pastoral Livelihoods Initiative
PPS	Probability Proportionate to Size
PRIME	Pastoralist Areas Resilience Improvement and Market Expansion
RCT	Randomized Control Trial
RFP	Request for Proposals
SNNPR	Southern Nations, Nationalities, and Peoples' Region
STARR	Strengthening Tenure and Resource Rights
SSA	Sub-Saharan Africa

TLU
USAID

Tropical Livestock Unit
U.S. Agency for International Development

I.0 INTRODUCTION

This report describes an impact evaluation (IE) design for work being conducted under the ERC Task Order # AID-OAA-TO-13-00019 for USAID/Ethiopia's Land Administration to Nurture Development Project (LAND, 2013–2018), which is being implemented by Tetra Tech. This evaluation will focus on land tenure security impacts in Ethiopia's Oromia Region, particularly in the Guji-Borana pastoral zone.¹

To date, there does not exist one universally applicable model for formalizing and legalizing the tenure of pastoral communities. The USAID/Ethiopia LAND Project aims to adopt a locally appropriate model to protect the land and resource rights of pastoral communities. The Ethiopia LAND Project proposes an innovative approach to working with both customary pastoral communities – to increase land and resource tenure security, as well as regional governments – to develop policies and regulations that allow communal land rights to be recognized and certified. LAND represents an original program to strengthen land tenure security among pastoralists through a pilot formalization process. As such, it is important to document the impact of the new formalization approach on pastoral communities and households, including the program's effect on livelihoods, resilience and reduced conflict.

This impact evaluation proposes a framework for measuring the key development impacts of the LAND program in the Guji-Borana pastoral zone of Oromia. In particular, this evaluation seeks to assess the outcomes and impacts of interventions that fall under Component 4 of the LAND project, including formal recognition of customary land rights, improving communal land governance, as well as strengthening pastoral communities' capacity for land use planning and management and investment negotiations.

The overarching policy question that underlies this evaluation of LAND's Component 4 is:

To what extent does empowering pastoral communities with stronger land rights, improved land governance institutions, increased negotiation capacity, and better land use planning result in increased investment and equitable economic growth?

Based on the overarching policy question, a number of research objectives have been developed to focus the evaluation activities. Specifically, the evaluation will investigate the extent to which the package of interventions constituting Component 4 of USAID's LAND program generate the following outcomes and impacts:

1. Reduced incidence of community land expropriation without adequate consultation and fair and timely compensation;
2. Increased number of mutually beneficial contracts between communities and private sector investors;
3. Increased transparency, accountability, and representativeness of customary land governance institutions;
4. Improved land use planning and sustainable land management of communal lands;
5. Increased adoption of new or more sustainable economic (livelihood) strategies;
6. Increased or improved household/community assets, consumption, and/or investment;

¹ The LAND project is also being implemented in Afar and Somali Regional States. Although USAID is considering implementation of an impact of evaluation of LAND activities in Afar Region, this evaluation design is focused on LAND activities in Oromia Region.

7. Reduced incidence of unauthorized users encroaching on community land; and
8. Enhanced livelihood and welfare outcomes for minority or vulnerable groups, including women, the poor, agro-pastoralists, and youth within the targeted communities.

These eight evaluation objectives form the basis for a series of testable development hypotheses and indicators on the impact of LAND, as well as for measuring the magnitude of that impact. The evaluation will provide an evidence base for improved policy making and programming by testing the development hypothesis that pastoral and agro-pastoral communities with stronger land rights are able to more effectively connect with and benefit from livestock markets, including through partnerships with private sector investors (e.g. abattoirs). As such, the evaluation will enable LAND's program theory to be validated, and adjusted if required, before the project is implemented on a larger scale across the country.

What follows in this report is an exploration of the theoretical underpinnings of the proposed program intervention, the theory of change, and the impact evaluation design.

2.0 BACKGROUND

This section provides background information on the economic, ecological, geographic and social context of the Guji-Borana pastoral zone of Oromia, which represents the focus of the impact evaluation. It includes an overview of efforts to improve tenure security in Ethiopia. To ground the research, the discussion focuses on the development problem that LAND seeks to remedy and describes the Borana customary institutions and community governance structures that motivate the LAND interventions under evaluation.

Several African countries have taken positive steps to enhance the tenure security of pastoralists by securing customary rights to land (Flintan 2011). Projects in Niger have, under the Code Rural, adopted approaches that allow for the mapping of migration routes and the registration of household grazing parcels (Rota et al. 2009). In the Chad Basin region of northern Cameroon, pastoralists effectively maintain pastures and water sources as a secure common pool resource. This management pattern is respected by the national government, and migratory corridors are protected by national and international agreements (Moritz et al. 2013).²

Since the mid 1990's, Ethiopia has also made tremendous progress in reforming land policy and supporting land administration systems through the implementation of one of the largest, fastest and lowest cost land registration and certification reforms in Africa (Deininger et al. 2008). In the highland regions, where approximately 97% of all households have some type of land use documentation (whether 1st level or 2nd level certification³), research suggests that formalization has had an array of benefits, including increased agricultural investment and productivity, as well as reduced incidence of land-related conflict (Deininger et al. 2011; Holden et al. 2009).

Despite the success of certification efforts in the highland regions, little progress has been made to strengthen and support land administration systems in “lowland” areas that are home to a large number of pastoralists. At present, the national and regional legal frameworks make little provision for securing communal land rights for pastoralists or for settled agro-pastoralists (traditional pastoralists who have adopted sedentary agricultural activities within communal pastoral areas). This, coupled with administrative capacity constraints, means that the tenure rights of millions of Ethiopia's citizens remain insecure. As a result of this tenure insecurity in pastoral zones, incentives to invest in land and other natural assets are reduced, conflicts related to land continue, resources continue to be degraded, and women continue to face challenges managing and controlling natural assets, including land (USAID 2012).

Furthermore, the expropriation of pastoral lands in Ethiopia is of particular concern. In 2009 the Ministry of Agriculture created the Agricultural Investment Support Directorate to identify, demarcate and transfer land to local and foreign investors. By 2011 the Directorate had identified approximately 6 million hectares of land that would be made available to investors in order to expedite development of land for exports and industrial crops (USAID 2011). The Ethiopian Federal Constitution has the authority to expropriate private property in the public interest, provided it pays compensation prior to acquisition and in an amount commensurate with the value of the seized property. Pastoralists are

2 Another positive example comes from highland Bolivia, where pastoral communities have secure rights at the hamlet level which allows pastoral groups to control entry and use of scarce resources in customary ways (UNDP 2004).

3 First level certification refers to having a land registration certification. The second level adds a map to the first level procedures.

concerned about the risk of expropriation and the fear of losing their land due to expropriation by the state, since their migratory and herding patterns may coincide or intersect with land expropriated for commercial purposes (Cotula & Vermeulen 2009).

The claims of pastoralists to land and pasture are poorly recognized or upheld by government authorities. In some arid lowland areas, government authorities are said to have undermined pastoralist livelihoods by expropriating land used by pastoralists as dry season grazing areas for agricultural projects (USAID 2011). In Ethiopia, as in many other countries, many commons (communally managed areas) remain highly vulnerable, with land being allocated by governments for national parks and commercial agricultural investment on a regular basis. In particular this is true of the rangelands, where external interest in land for agriculture – and in its resources for other commercial ventures, such as tourism – has grown. Even the most progressive policies and legislation fail to provide adequate protection to many rangeland users and, most commonly, to the poorest and least powerful. At the same time, customary institutions that would have provided adequate protection in the past have been weakened due to both internal and external influences (Flintan 2012).

ENVIRONMENTAL AND SOCIAL CONTEXT OF THE GUJI-BORANA ZONE

The Guji-Borana zone is situated in the southern region of Oromia, Ethiopia, with elevation varying from 500 to 2500 m. The climate is largely semi-arid with relatively cool annual temperatures (19-24°C) and a mean annual rainfall ranging from 300 mm in the lowland to 1000 mm in the highland. The annual precipitation distribution is bimodal, with 60% during the *ganna* main rainy season (April to May) and 30% during the short rains (October to November). Vegetation in Guji-Borana mainly comprises a mixed savanna, which is dominated by perennial grasses (*Cenchrus*, *Pennisetum*, and *Chrysopogon sp.*) and woody plants (*Acacia* and *Commiphora sp.*) (Coppock 1994; Desta & Coppock 2002).

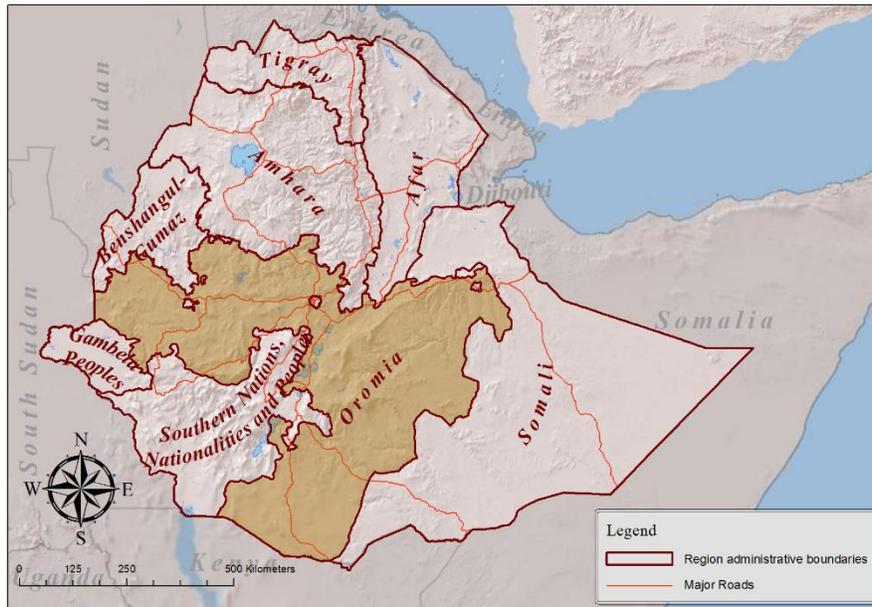


FIGURE 2.1. OROMIA REGION OF ETHIOPIA

Pastoralism and agro-pastoralism are the main sources of livelihood for both the Borana and the lowland Guji communities, and mobility enables pastoralists to opportunistically exploit diverse ecological conditions. Livestock herding in Guji-Borana generally falls in two categories (Solomon et al. 2007). One is home-based herding, which involves the herding of milking cattle with calves and small stock close to the encampments, known as *worra*. The other is satellite herding, which includes bulls and immature stock herded further away from the encampments, referred to as *foora*. These animals usually range more widely than milking cattle and small stock and have access to better forage (Homewood 2008).

These communities practice different forms of mobility, including agropastoralism, non-herding pastoralism, commercial pastoralism, and peri-urban pastoralism (Moritz 2010). These forms of mobility are usually associated with different tenure regimes and resource use patterns (Oba 2013).

Consequently, different households may have different numbers of livestock, different levels of engagement with markets, different types of livelihood diversification, and varying objectives for production (Catley et al. 2013).

Compared to the Borana area, the Guji area has a more diverse ecology, with wide ranging altitudes and climatic conditions. As a result, Guji has significant mineral potential and diverse plant and animal species. The suitability for various crops and livestock types also varies across different ecological zones. In the lowland areas, pastoralism dominates, while the highland areas support various cash crops, such as coffee and tobacco, and food crops, such as maize, finger millet, teff, and barley. Areas with altitudes above 1800 m mostly grow these crops, while the lowland areas grow them to a lesser extent but mainly practice pastoralism (Debsu 2009).

CURRENT CHALLENGES TO LAND USE IN THE GUJI-BORANA ZONE

As in other pastoral areas of Africa, pastoralists in Borana and Guji areas face cycles of drought, rangeland degradation, de-stocking of animals, rangeland recovery, and restocking of animals followed by a new cycle of drought and recovery. The ability to move livestock to different pastures is a key strategy for mitigating exposure to erratic rainfall, and reliable access to a wide range of pasture resources has long been essential to the viability and sustainability of such systems. In addition, various types of common-tenure regimes facilitate herd mobility (McCarthy et al. 2004). Pastoralists' traditional migratory lifestyle and knowledge of dryland resource management has allowed them to generally withstand drought and to maintain a healthy and biodiverse ecosystem in their communally-managed rangelands (Elias & Abdi 2010).

In the past, pastoralists had access to vast tracts of rangeland that were managed through customary institutions at different levels and for different resources. The sound management of rangelands was, and in some cases still is, promoted through norms of inclusion (and to a lesser extent exclusion) designed for pastoral activity. For example, these norms are called *seera marraa bisanii* – “the law of grass and water”. Resources are managed as common property with access derived in the first instance through being a member “of the group” (Cousins 2007).

Social capital, explained using lineage as a proxy, plays a crucial role in facilitating the establishment of and negotiation for non-exclusive forms of rights to grazing resources. Increased threat from climate change (rainfall variability) and the absence of insurance for the livestock increase the necessity to sustain inter-clan cooperation over the reciprocal sharing of the grazing commons (Beyene 2010).

Once viewed as the epitome of sustainable pastoralism, the Guji-Borana pastoral zone now confronts numerous challenges. Fundamental misconceptions about the pastoral production system in Ethiopia (as

in many other countries in Africa) have led to a general perception among policy makers that pastoral lands are underused and therefore should be developed. Such misperceptions have led to the political and economic marginalization of pastoral communities. Policies favoring externally-imposed development schemes have promoted the alienation and expropriation of pastoral lands in favor of large-scale commercial activities. Resource alienation and the curtailment of mobility has made pastoral households vulnerable to frequent droughts, food insecurity, and famine (Elias & Abdi 2010).

GUJI-BORANA CUSTOMARY INSTITUTIONS AND TERRITORIAL ORGANIZATION

Complex mechanisms have evolved to manage grazing systems and resolve conflicts within the Guji-Borana society over the past five centuries (Legesse 1973). Three principal and one subsidiary institution represent the building blocks of the indigenous political system. These institutions are the generational system (*Gada*, “the rulers”), the kinship organization (*Qallu*, “the electors and ritual leaders”), the supreme authority (*Gumi*, “the general assembly”), and the age organization (*Hariyya*, “the warriors”) (Legesse 2000). Such an indigenous political system has effectively regulated human population growth, settled disputes, interpreted and enforced resource-use rules, and redistributed wealth. The regulation of population movement is of special importance to the Borana as an ecological adaptation to a finite resource base (Helland 1980). Today, *Gada* has very limited power compared to government institutions, but it still has notable ritual significance.

The smallest unit of land and livestock management in the Borana grazing system is the *ola*.⁴ An *ola* is a collection of multiple households (*warra*) that represents a sometimes seasonal home camp or settlement.⁵ 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 system or structure. The *reera* is the smallest land management unit or “community” for the LAND project. Figure 2.2 below presents a graphical representation of the Guji-Borana customary territorial structure.

The next level up is a rangeland system known as a *dheda*. *Dheda* contain multiple *reera* and are central to the management of the Borana ethnic grazing system. There are six Borana rangeland or *dheda* systems that will be the target of the LAND intervention, including *Dida*, *Woyama*, *Dire*, *Malbe*, *Gomole* and *Golbo*.

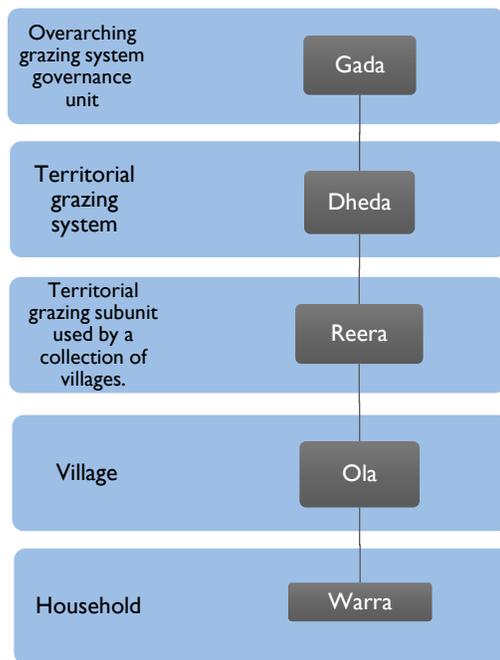


FIGURE 2.2 GUJI-BORANA CUSTOMARY TERRITORIAL STRUCTURE (HOGG 1990)

⁴ A *minh* is a house or dwelling. A *warra* is the household.

⁵ 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.

The *gada* system represents the overarching governance institution; it is the elected council of the Borana. The gada council's role in resource management and administration is in establishing rules that govern resource access. The gada council make decisions at a higher level on local resource use and determine the management of grazing and water resources⁶ (Ayana 2007). Changes are introduced based on a customary knowledge system and disseminated to the public through clan representatives. All clans have *hayyu*, legal experts who translate laws and regulations and settle disputes.

LAND will be working with Borana governance structures and community leaders at the reera, dheda and gada levels.

DEEP WELL COMPLEXES IN THE GUJI-BORANA ZONE

In addition to the customary spatial units, the Guji-Borana Zone is defined by a unique system of water point management and governance that plays a critical role in grazing-system sustainability. There are 8 permanent well groups in Borana, traditionally known as *tullas*. Tullas are a complex of deep wells that do not dry up even during times of harsh drought. They are located mostly in Dirre woreda, mainly in Dubuluk and Melbana areas (see map below). The traditional tulla wells are: Gofa Aba Rubo, El Gof, Ley, Melbana, Web, Gayo, Daas, Erder, and Gorille.

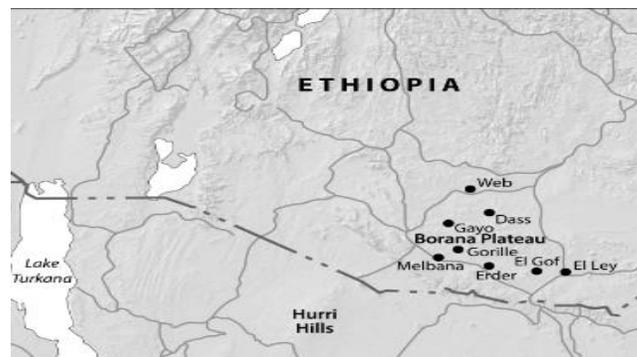


FIGURE 2.3. DEEP WELL COMPLEXES IN THE GUJI-BORANA ZONE (MCPEAK ET AL. 2012)

In addition to *tullas*, there are several other key water points for pastoralists; non-permanent wells are known as *eela*, and the *ola* own and use other shallow wells known as *adadi*. However, deep wells have different rules of access and ownership from other water sources. Theoretically, access to deep wells is open to all groups in the Guji-Borana Zone, although every Borana clan owns one of the tulla well complexes. The *tullas* and *eela* do not correspond to a *reera*, and it is difficult to know how many *reeras* actually use each well; multiple *reeras* might use one well when water is scarce.

Aba herrega ('father of the well') play a key role in supervising access to *tullas*, mobilizing users for *naniga* (watering trough) maintenance, and building fences around water sources. The *aba herrega* is the person who decides the order in which different community members will access the water. In general, seniority is a significant criterion for determining access to deep wells, although it has increasingly declined in importance. For other water sources, access is based on who watered first in the previous watering order, the distance they traveled, etc. For non-permanent wells, the *aba eela* is responsible for

⁶ Even though the gada system is not based on the clan system, the gada works closely with clan organization to implement its decisions. For example, clan leaders are represented in all political, legal, and economic deliberations of the gada council.

the upkeep of the well and the watering troughs. Both the *aba herrega* and the *aba eela* are determined by descent from the person associated with the founding construction of the well (McPeak et al. 2012).

To provide context for the evaluation, this section described the development problem that LAND seeks to remedy and introduced the Borana customary institutions and community governance structures that will be a focus of the LAND interventions under evaluation. The following section describes the LAND program and interventions under investigation; it contributes to the evaluation objectives and research hypotheses through a discussion of the program theory that underpins LAND.

3.0 LAND INTERVENTIONS AND THEORETICAL FRAMEWORK

INTRODUCTION

The information provided below presents a synthesis of what is known to date. LAND will capture a more detailed version of Component 4 interventions in their work planning exercise in early July. This information will be shared with ERC when it becomes available. In addition, LAND will share draft survey instruments and the profiles and governance assessments of the dheda intervention sites as they become available. We will update the LAND IE design document and survey instruments with this information.

OVERVIEW OF LAND⁷

USAID has invested significant resources in the development of livestock and rangeland improvement projects in the rangelands of Ethiopia, including through the Pastoral Livelihoods Initiative I (PLI I) and Pastoral Livelihoods Initiative II (PLI II) projects and the most recently awarded Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) Project. These projects have provided an important basis for the present formalization of pastoralist land rights under the LAND Project. This foundation consists of:

1. Participatory grazing unit definition based on customary institutions and practices;
2. Identification of spatial-temporal land use patterns in the Guji-Borana zone;
3. Identification of customary land and natural resources tenure among Guji and Borana ethnic groups;
4. Participatory grazing unit boundary identification within Guji and Borana areas.

These significant investments, however, have not resulted in the scope and scale of results sought by USAID's efforts to develop livestock production and improve rangeland conditions. The lack of results are attributed – in part – to the absence of formal recognition for communal land rights, as well as low capacity for effective land use planning and range management (USAID 2012).

The LAND project in Ethiopia is a new five-year intervention (2013-2018) designed to build upon the success of PLI I, PLI II, and PRIME. It has been designed to improve the security of land rights to promote investment and development among land users and reduce inappropriate expropriations. Based on Ethiopian constitutional provisions, and a regional government commitment to recognize pastoralist land use rights, the LAND Project is undertaking a focused land rights formalization process in concert with the USAID PRIME Project.

LAND activities will be implemented with and through the Ministry of Agriculture's Land Administration and Use Department (LAUD/MoA) at the national level. At a regional level, activities will be implemented with and through the regional land administration bureaus of Amhara, Oromia, Southern

⁷ From the Draft Component 4 Action Plan prepared by Tetra Tech / LAND Project – March 2014

Nations, Nationalities, and Peoples' Region (SNNPR), Tigray, Afar, and Somali, as well as the Harari Regional State and the Dire Dawa City Administrative Council. All LAND activities will be implemented under four components:

- LAND Component 1: Improve legal and policy frameworks at national and local levels;
- LAND Component 2: Strengthen capacity in national, regional, and local land administration and use planning;
- LAND Component 3: Strengthen capacity of Ethiopian universities to engage in policy analysis and research related to land tenure and train land administration and land use professionals; and
- LAND Component 4: Strengthen community land rights in pastoral and agro-pastoral areas to facilitate market linkages and economic growth.

Activities under Component 1 will further strengthen rural land legal and regulatory frameworks developed under USAID-supported previous projects. Technical assistance under Component 2 will focus on building capacity at the national and regional levels, improving land administration services delivery, and developing land use plans using cost effective methodologies. Well-trained and skilled land administration professionals are essential to achieving and sustaining the development impact of USAID's Land Tenure and Property Rights (LTPR) investments. LAND will employ a strategic mix of grants and technical assistance under Component 3 to strengthen the capacity of Ethiopian universities to develop undergraduate land administration curricula and summer short course degree programs for mid-level land administration officials to build land administration capacity sustainably beyond the life of LAND. Universities will also be supported to carry out research and evaluate Government of Ethiopia (GoE) policies promoting tenure security, increased agricultural production and food security, and sustainable management of land and natural resources.

Component 4 interventions include formal recognition of customary land rights, improving communal land governance, as well as strengthening pastoral communities' capacity for land use planning and management and investment negotiations. Component 4 represents the focus of the LAND IE and is described in more detail below.

LAND COMPONENT 4: INTERVENTIONS

Component 4 activities will be implemented across pastoral systems in Oromia, Afar, and Somali Regional States. However, the focus of this impact evaluation is initially on Component 4 activities implemented in six Borana rangeland systems in Oromia State from 2014-2015.

LAND will work with pastoral communities in pilot locations to establish community organizations and strengthen customary institutions to serve as a community landholding and governance entity (CLGE) in which certified community land rights will vest. The CLGE will represent the community before the government in dealings with investors and will ensure the benefits of LAND are equitably shared among all members of the community, including women and vulnerable groups, such as those transitioning out of pastoralism.

Component 4 has six consecutive, often parallel tracks (activity clusters). These are:

- I. **Component 4 Project Governance** – capacity building within the pastoral communities and coordination among the different players in securing pastoral land tenure. The main focus is on the dheda rangeland and reera sub-units;

2. **Oromia Rangeland Management Systems Description, Validation, and Institutionalization** – the confirmation of PRIME-based grazing system resource and boundary maps for six grazing units within the Borana/Guji zones of Oromia Region, and the institutionalization of these databases within a Knowledge Management System;
3. **Demarcation, Surveying, Registration, and Certification** of dheda grazing units once confirmed with Borana and Guji customary institutions and government authorities;
4. **Development of an Oromia Region Pastoralist Land Rights Regulation** that will acknowledge the dheda systems as the basis for the formalization of land use rights.
5. **Land Use Planning and Governance Strengthening Efforts** among each of the dheda grazing systems and reera.
6. **Targeted Communications** – public information and awareness activities.

Formal recognition of customary land rights and of customary institutions' authority to manage communal lands is expected to be the most effective mechanism for achieving sustainable, long-term economic growth in Ethiopia's pastoral areas. Nevertheless, there is also a need to strengthen pastoral communities' capacity for land use planning and management, investment negotiations, and to improve communal land governance by enhancing the transparency, accountability, and representativeness of customary land governance institutions. It is expected that the more informal measures to strengthen land tenure security will result in improved development outcomes even if formal tenure is not achieved

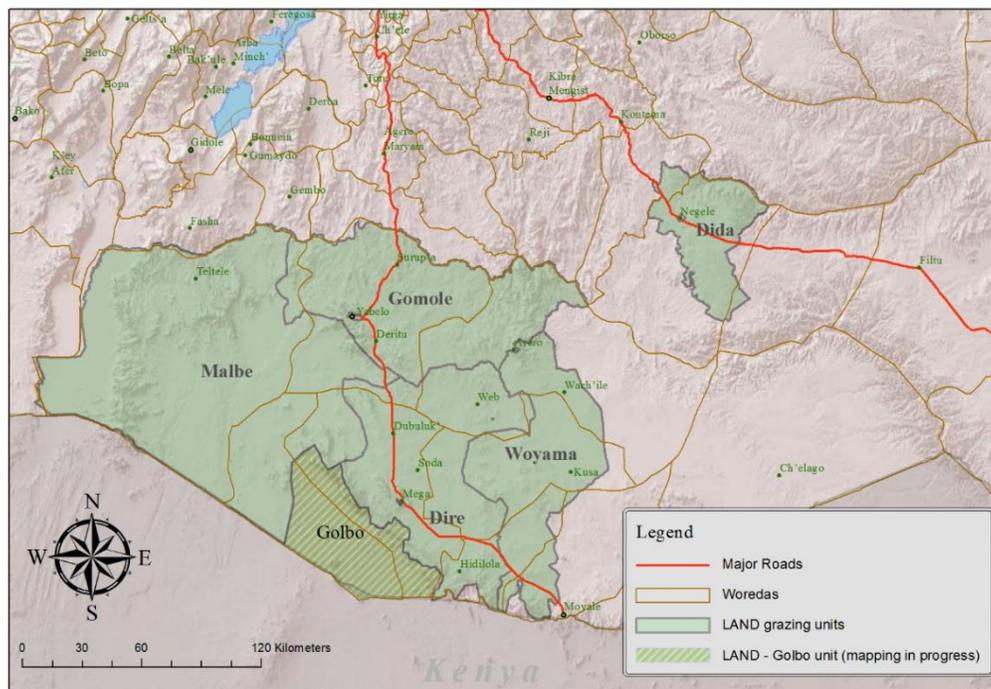


FIGURE 3.1. LAND TREATMENT SITES within the lifetime of the LAND project.

The six Borana rangeland systems, shown in Figure 3.1⁸, will be the main focus of land use rights formalization, certification, boundary definition and registration for LAND. Additional governance strengthening, land use planning, capacity building, and outreach and extension efforts will take place at the reera level within the broader dheda systems. In particular, the five dheda treatment sites in Borana Zone include: Woyama, Dire, Malbe, Gomole and Golbo. The LAND treatment site in Guji Zone is Dheda Dida, which is included because it is characterized primarily by ethnically Borana communities.⁹

The LAND program is motivated by a body of literature linking stronger land tenure and property rights with key development outcomes. The hypotheses and research questions investigated by the impact evaluation are driven by this theoretical framework and LAND Component 4's theory of change. The following section provides a detailed discussion of the theoretical framework and theory of change.

THEORETICAL FRAMEWORK

BENEFITS OF SECURE LAND TENURE

Numerous studies have demonstrated the positive impact stronger individual land tenure security has had 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 suggests that the low-cost land registration and certification that took place in the 1990's increased land productivity and welfare (Holden et al. 2009b), particularly for female-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 demonstrates 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. LAND is based on an assumption that the program theory linking tenure security to development outcomes at the individual level will translate to the community level. That being the case, the benefits derived from strengthening the customary rights of pastoral groups are expected to mirror many of the outcomes identified from strengthening individual rights, including increased investment and improved land management.

⁸ Sources: The country and regional administrative boundaries are from the Global Administrative Database <http://www.gadm.org/>. The road network is based on information provided by the LAND program team and the Africa Infrastructure Country Diagnostic. The elevation and shaded relief basemap is from ESRI http://goto.arcgisonline.com/maps/World_Shaded_Relief, and grazing unit boundaries were provided by LAND and PRIME program staff.

⁹ Profiles of these grazing areas covering demographic, cultural, and livelihood characteristics will be provided when the information becomes available from PRIME and LAND.

IMPROVED INVESTMENT, MANAGEMENT, AND LAND USE PLANNING

Secure tenure and clear assignment of rights – in conjunction with institutions to uphold and enforce those rights – provide incentives for people to undertake long-term investments by providing a sense of permanence and security (Besley 1995). Secure tenure promotes longer-term investments and planning in conservation and physical capital. This logic also applies when securing the use and management rights over communal resources, such as common pasture and grazing lands.

A lack of clearly defined property and land use rights can result in land that is degraded, overused, or otherwise poorly managed, resulting in lower output – low yields in the case of cultivated land and reduced livestock carrying capacity in the case of pasture. Where property rights are poorly defined, the resulting insecurity reduces farmers'/pastoralists' incentives to maintain and manage their land resources in a sustainable manner and narrows the planning horizon to focus on short term profits, which may favor nutrient mining and promote land degradation (Tenaw et al. 2009).

Strong tenure arrangements may help improve the governance and management of valuable natural assets in arid and semi-arid areas that are particularly prone to climate-related risks. At the same time, managing land and other assets provides a basis for strengthening local governance and improving the accountability of local leaders by encouraging the participation and oversight of a broad array of community members, including women, youth, and other vulnerable groups.

In Ethiopia's highlands, research has shown that both first and second level certification¹⁰ have resulted in benefits for women (Adgo et al. 2014; Holden et al. 2011) ranging from increased productivity to more active engagements in land rental markets. In the pastoral areas, where customary practices prevail, recognizing and accessing rights to land can be less straightforward. Unlike men who often enjoy customary and de facto use rights even if not legally enshrined, women and minority groups often lack the same recognition or enjoy the same rights in practice. Men and women generally have different responsibilities and tend to access and manage land resources in different ways due to traditions and status. Secure land tenure reduces the need to defend claims, which can be particularly important for women and minority groups whose rights might not be consistently recognized and defended (Joireman 2008).

Furthermore, strengthening tenure security is expected to benefit regional governments and the national government by creating incentives for local people, as well as for private-sector actors, to invest in the agricultural sector at various stages of the value chain and expand economic growth. In turn, expanded economic opportunity and economic growth may increase government revenue and household incomes and reduce local conflict. Developing strong linkages between pastoral and agro-pastoral communities, private sector investors, and the government may also help develop the pastoral sector and improve pastoralist livelihoods.

REDUCED INAPPROPRIATE EXPROPRIATION AND IMPROVED CAPACITY TO ENGAGE WITH PRIVATE SECTOR INVESTORS

Land that is not continuously farmed but instead used for grazing, shifting cultivation, collection of forest products or hunting is most vulnerable to expropriation and wrongful reallocation on a large scale (Anseeuw et al. 2012). Expropriation is an especially valid concern for pastoralists whose migratory and

¹⁰ The key difference between first level and second level certifications is the detail of spatial information captured in the certificate. Unlike first level certification where land was identified primarily by field markings and location relative to other characteristics (i.e. next to a road), second level certification uses geographic information system (GIS) to delineate the land and assigns latitude and longitude coordinates to the boundaries.

herding patterns may coincide or intersect with land the state wishes to designate for commercial purposes – particularly land with high agricultural potential in valleys and along rivers (Cotula & Vermeulen 2009). Officially recognizing pastoral land rights is expected to reduce the risk of losing access to land by providing some degree of formal legal protection and procedural guarantees to communities. In cases where expropriation occurs, formal land rights should provide communities with a means to seek redress and fair compensation.

Some pastoral and agro-pastoral communities experience difficulty developing commercial agricultural capacities, adding value within agricultural product chains, and expanding into new agricultural sectors. The reasons for their limited economic opportunities include lack of access to inputs, credit, tenure insecurity, and unequal bargaining power. As described above, tenure security provides a level of certainty that motivates long-term planning, investment in physical capital, and increased access to financial support through more formal documentation of their capacity to repay. Creating positive market linkages between pastoral and/or agro-pastoral communities and investors provides a strategy to allow communities to leverage their land-based assets in order to promote rural economic growth and development, for example through collaborative contracts.

In addition to supporting community investments on communal lands, formalization of pastoral land claims that allows for the transfer of rights (i.e. alienation) to a third party can help communities engage with the private sector. The extent to which local land users enjoy secure land rights is key to protecting them from arbitrary dispossession and providing them with an asset for negotiation (Cotula 2006). Where land has high agricultural production potential or commercial value - but where communities lack the capital, knowledge, and management capacity to exploit this - formalized title provides an asset to strengthen communities’ negotiating power (Cotula & Vermeulen 2009). From the community point of view, clear and defensible claims to land provide leverage to negotiate arrangements

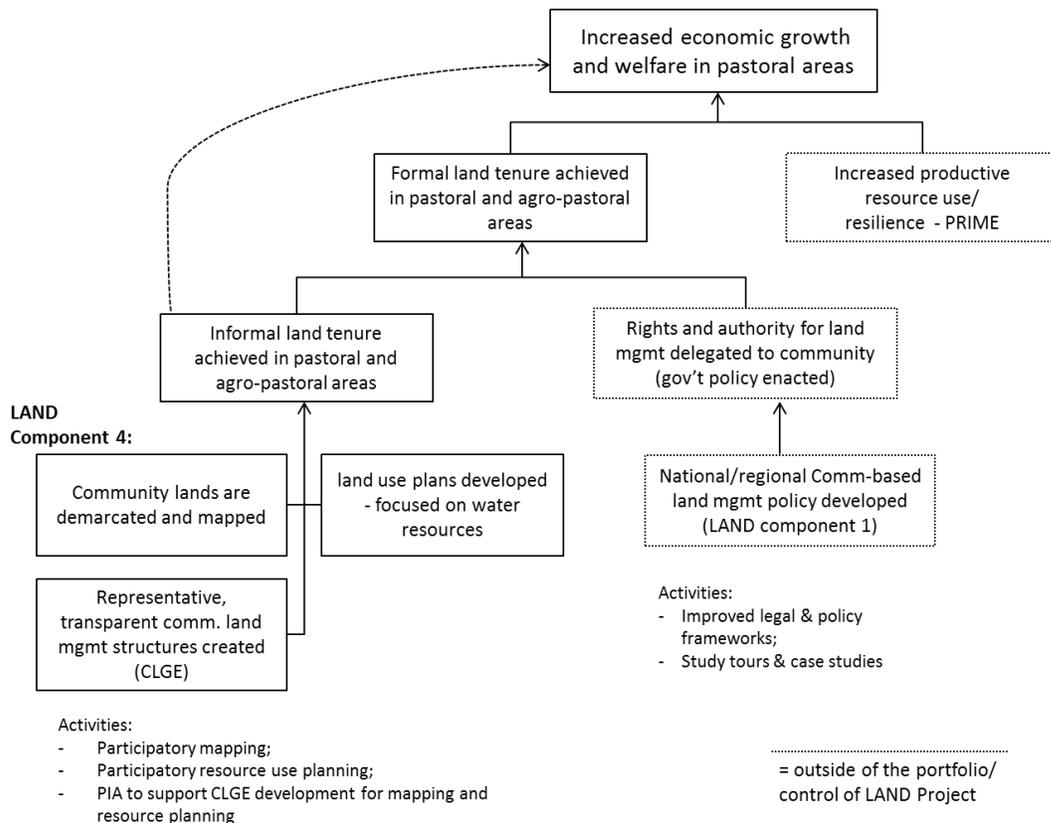


FIGURE 3.2. VISUAL REPRESENTATION OF THE LAND COMPONENT 4 THEORY OF CHANGE

with private investors that are in the community's best interest.

For private investors, there are also benefits to clear identification of legitimate right holders. A recent survey showed that 57% of firms in Ethiopia reported access to land as their main obstacle. Both large and small investors need assured rights to the land and property in which they invest (Toulmin 2009). Ensuring a stable, predictable, and relatively transparent business enabling environment for investors is also important to generating higher and more sustainable levels of economic growth.

Overall, LAND Component 4 is based on the assumption that by formally recognizing the customary land use rights of pastoral communities, those communities and individuals will enjoy stronger land tenure security, thereby opening the door for economic and social development. Drawing on the body of literature described above, the theory of change for Component 4 is depicted in Figure 3.2. This theoretical framework and theory of change form the basis for the hypotheses tested by the impact evaluation.

Through strengthened tenure security, communities should be better able to (i) make long-term planning and investment decisions allowing them to increase current production, as well as respond to market signals to produce alternative goods, and (ii) negotiate with the private sector to invest in livestock value chains that will directly benefit their livelihoods and food security. It is anticipated that this intervention will create a positive feedback effect, whereby better market linkages lead to better access to inputs and more market opportunities, which in turn increases private-sector interest in developing livestock value chains, which then leads to improved private sector interaction with communities and further market linkages.

Drawing on this theoretical framework and theory of change, the subsequent chapter lays out the research hypotheses that the impact evaluation is designed to test.

4.0 HYPOTHESES, DATA SOURCES, & INDICATORS

This impact evaluation tests a number of research hypotheses that follow from the evaluation objectives and program theory guiding LAND. The evaluation has the scope to rigorously assess the program's impact on indicators measured at the household level, but, because of LAND's program design that targets a small number of communities, it does not have the power to identify community-impacts measured only at the dheda and reera levels. Indicators measured at higher levels will be analyzed through qualitative methods.

RESEARCH HYPOTHESES (H)

Specific hypotheses in this IE include:

At the community level:

- *H-1.* Communities receiving Component 4, LAND intervention (land use rights formalization, certification, boundary definition, registration and governance strengthening) will have lower community-wide incidence of conflicts.
- *H-2.* Communities receiving Component 4 LAND intervention perceive improved transparency, accountability, and representativeness of customary land governance institutions.
- *H-3.* Communities receiving Component 4 LAND intervention will have improved land use planning and sustainable land management of communal land.
- *H-4.* Communities receiving Component 4 LAND intervention will have a reduced incidence of community land expropriation without adequate consultation and fair and timely compensation.
- *H-5.* Communities receiving Component 4 LAND intervention will have improved rangeland and natural resource conditions.
- *H-6.* Communities receiving Component 4 LAND intervention will have greater capacity to negotiate mutually beneficial contracts between communities and private sector investors.
- *H-7.* Communities receiving Component 4 LAND intervention will perceive greater tenure security and protection of their community grazing land.
- *H-8.* Communities receiving Component 4 LAND intervention will have a reduced incidence of unauthorized users encroaching on community land.
- *H-9.* Communities receiving Component 4 LAND intervention will invest more in improving the condition of their land, water and livestock resources.

At the household level:

- *H-10.* Households in communities receiving the LAND Component 4 intervention will have improved livelihood and welfare outcomes.
- *H-11.* Households in communities receiving the LAND Component 4 intervention will invest more in improving the condition of their land, water, and livestock resources.

DATA SOURCES

To test these hypotheses, the evaluation will utilize six sources of community and household level data to investigate customary land governance, tenure security, rangeland conditions, land-use conflict, livelihood outcomes, etc. These data sources include:

1. Household survey data - The survey will be stratified to target female-headed and agro-pastoral households;
2. Focus group discussions - The evaluation will collect data from focus group discussions with respondents identified through purposive sampling (Tongco 2007). The sub groups of interest include women, agro-pastoralists, and resource-constrained individuals, including young men (youth);
3. Key informant interviews with aba gada (council chair for the gada), aba reeras (grazing sub-unit managers), aba eelas (semi-permanent well managers) and aba herregas (permanent well managers); these interviews will provide data on shifting perceptions, attitudes, and outcomes regarding the security, governance, and condition of land and water resources.
4. Participatory mapping at the reera level by active herders, community elders, and ola leaders;
5. Focus group discussions with rangeland managers (aba dhedas). Focus group discussions will be held with aba dhedas across the 9 grazing systems involved in the LAND IE. This data will provide important contextual and perception data on overall rangeland management, governance, and ecological conditions.
6. Secondary or administrative data on land expropriation, contracts between communities and investors, as well as maps and studies commissioned and created as part of LAND and PRIME. This data will be used to better understand the background and context and help generate more precise parameter estimates for the power calculations, survey sampling plan, and survey questions. These data sources include: the Ethiopian Census 2007, Oromiya Livelihood Zone Reports, IBLI Household Survey Results from the Borana Zone, and GIS and remote sensing data from PRIME.

Aggregating these data across sources is an uncomplicated task. Figure 4 depicts the data sources collected at each customary spatial unit.¹¹

¹¹ LTD and USAID/Ethiopia determined that a lower level village or ola level survey was not warranted for the purposes of the impact evaluation as this level of customary governance is not a focus of the LAND program. Instead, USAID is placing a premium on mapping exercises and qualitative data collection. Therefore, the evaluation will not capture measures for some conflict, governance, and collective action indicators at the ola level.

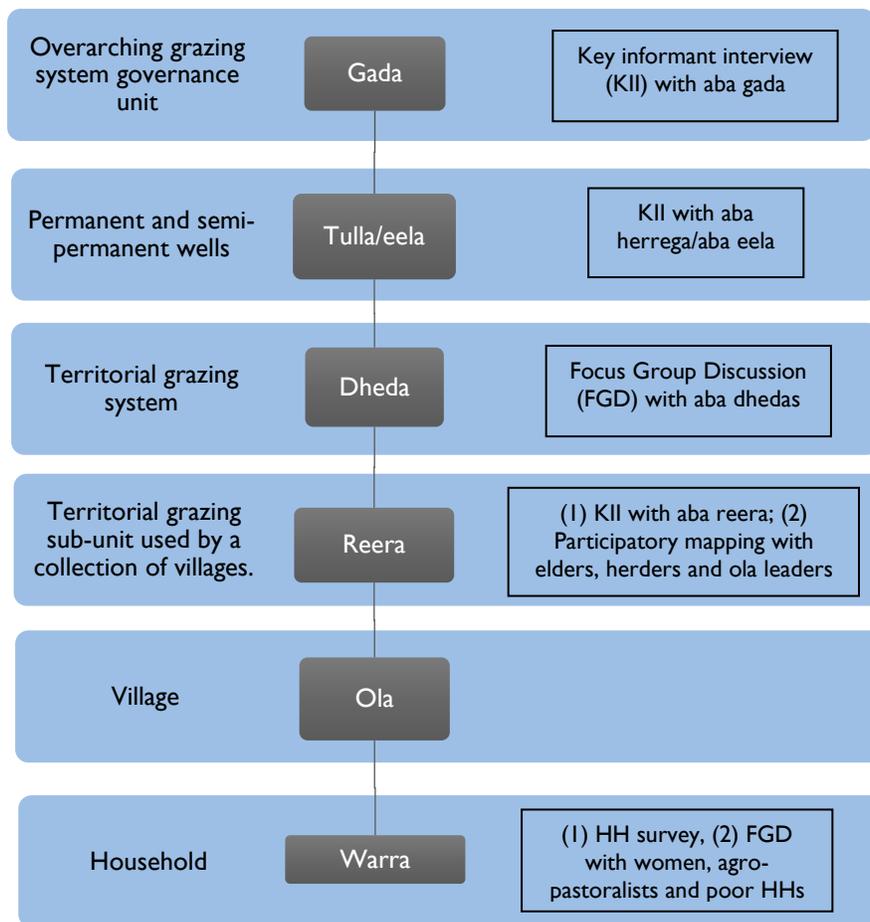


FIGURE 1 | FIGURE 4. DATA COLLECTION SOURCES BY CUSTOMARY SPATIAL UNIT INDICATORS

Tables HI through HII detail suggested indicators to test the eleven hypotheses listed above. The tables provide specifics on outcome indicators plus corresponding details on data sources, measurement, and other considerations. Note that these outcome indicators will continue to be refined as the IE design process moves forward.

COMMUNITY IMPACTS (DHEDA/REERA)

H-1: COMMUNITIES RECEIVING COMPONENT 4, LAND INTERVENTION (LAND USE RIGHTS FORMALIZATION, CERTIFICATION, BOUNDARY DEFINITION, REGISTRATION AND GOVERNANCE STRENGTHENING) WILL HAVE LOWER COMMUNITY-WIDE INCIDENCE OF CONFLICTS.

Indicators:

- A. Prevalence of conflicts between rival pastoral groups
- B. Improved relationships between previously conflicting groups
- C. More positive and frequent interactions between previously conflicting groups
- D. Number of previously existing land and natural resource conflicts
- E. Improved access to water, pasture, and fuel wood
- F. Improved access to markets and public services
- G. Improved perceptions of security and peaceful environments
- H. Improved freedom and security of movement
- I. Reduction of existing land and natural resource-based conflicts
- J. Enhanced protection of vulnerable populations through conflict resolution
- K. More satisfactory resolution of conflicts
- L. Enhanced effectiveness and frequency of collaboration between diverse conflict resolution actors

Notes:

- 1) Resource access will be disaggregated by dry and rainy seasons
- 2) These indicators will be disaggregated by type of conflict/dispute. LAND Component 4 is not expected to have the same impact on all forms of land-related conflict. For example, boundary-related disputes may increase in the short term as a result of issuing customary land certificates.

Data sources:

- A. Household survey
- B. Focus group discussions with women, agro-pastoralists, and poor households including youth
- C. Key informant interviews with aba reeras
- D. Reera level participatory mapping with active herders and ola leaders
- E. Focus group discussions with aba dhedas
- F. Key informant interviews with aba herregas and aba eelas

H-2: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL HAVE MORE TRANSPARENT, ACCOUNTABLE, AND REPRESENTATIVE CUSTOMARY LAND GOVERNANCE INSTITUTIONS.

Indicators:

- A. Perceptions of improved transparency, accountability, and representativeness among HH respondents
- B. Perceptions of improved transparency, accountability, and representativeness among reera officials
- C. Satisfaction with governance process used to create community natural resource management plans
- D. Increased participation of women and vulnerable groups in community land governance
- E. Satisfaction with rules related to grazing, water, and cultivation/settlement patterns
- F. Assessments of fairness and transparency of rules related to grazing, water, and cultivation/settlement patterns
- G. Satisfaction with enforcement mechanisms for rule violations

Notes:

- 1) Specific rule questions relate to maintenance activities and seasonal restrictions on access

Data sources:

- A. Household survey
- B. Focus group discussions with women, agro-pastoralists, and poor households, including youth
- C. Key informant interviews with aba reeras

H-3: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL HAVE IMPROVED LAND USE PLANNING AND SUSTAINABLE LAND MANAGEMENT OF COMMUNAL LAND.

Indicators:

- A. Presence of land use plans
- B. Presence of management strategies for improving rangeland conditions
- C. Evidence of the implementation of land use plans and new management strategies

Notes:

- 1) This will include an analysis of management strategies during and following shocks, such as drought, feed scarcity, water scarcity, and animal disease.

Data sources:

- A. Key informant interviews with aba reeras
- B. Focus group discussions with aba dhedas
- C. Key informant interviews with aba herregas and aba eelas
- D. Key informant interview with aba gada

H-4: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL INVEST MORE IN IMPROVING THE CONDITION OF THEIR LAND, WATER, AND LIVESTOCK RESOURCES.

Indicators:

- A. Community kalo¹² fencing
- B. Development of reliable water sources
- C. Improved water management
- D. Planting of supplementary sources of forage and food for livestock
- E. Removal of invasive bush species
- F. Provision of veterinary facilities

Notes:

- 1) Information regarding water investments will be disaggregated by dry and rainy season.

Data sources:

- A. Key informant interviews with aba reeras
- B. Reera level participatory mapping with active herders and ola leaders
- C. Focus group discussions with aba dhedas
- D. Key informant interviews with aba herregas and aba eelas
- E. Key informant interview with aba gada

H-5: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL HAVE GREATER CAPACITY TO NEGOTIATE MUTUALLY BENEFICIAL CONTRACTS BETWEEN COMMUNITIES AND PRIVATE SECTOR INVESTORS.

Indicators:

- A. Contracts that provide fair and adequate benefits to communities
- B. Enhanced capacity of communities to engage and negotiate with government and investors

¹² Kalo is an area set aside for calves that can also include weak or sick cows.

C. Community perceptions of empowerment and capacity

Data sources:

- A. Key informant interviews with aba reeras
 - B. Focus group discussions with aba dhedas
 - C. Key informant interview with aba gada
-

H-6: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL HAVE A REDUCED INCIDENCE OF COMMUNITY LAND EXPROPRIATION WITHOUT ADEQUATE CONSULTATION AND FAIR AND TIMELY COMPENSATION.

Indicators:

- A. Frequency and size of community land expropriation
 - B. Evidence of adequate consultation during expropriation process
 - C. Evidence of fair compensation
-

Data sources:

- A. Key informant interviews with aba reeras
 - B. Focus group discussions with aba dhedas
 - C. Key informant interview with aba gada
 - D. Household survey
 - E. Focus group discussions with women, agro-pastoralists, and poor households, including youth
-

H-7: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL HAVE A REDUCED INCIDENCE OF UNAUTHORIZED USERS ENCROACHING ON COMMUNITY LAND.

Indicators:

- A. Household perceptions of greater security from encroachment
 - B. Household reporting of encroachment by other pastoral groups/farmers
 - C. Leaders' perceptions of greater security from encroachment
 - D. Leaders' reporting of encroachment by other pastoral groups/farmers
-

Data sources:

- A. Household survey
 - B. Focus group discussions with women, agro-pastoralists, and poor households, including youth
 - C. Key informant interviews with aba reeras
 - D. Focus group discussions with aba dhedas
 - E. Key informant interview with aba gada
-

H-8: COMMUNITIES RECEIVING COMPONENT 4 LAND INTERVENTION WILL HAVE IMPROVED RANGELAND AND NATURAL RESOURCE CONDITIONS.

Indicators:

- A. Grass/herb coverage in the understory
 - B. Bush encroachment
 - C. Subjective perceptions of past, present, and future rangeland condition
 - D. Proportion of different rangeland types
 - E. Natural resource depletion and water availability
 - F. Soil erosion
-

Notes:

- 1) Bush encroachment will be measured by the presence/absence of invasive bush species in the household warra herding area.

Data sources:

- A. Household survey
 - B. Focus group discussions with women, agro-pastoralists, and poor households, including youth
 - C. Key informant interviews with aba reeras
 - D. Reera level participatory mapping with active herders and ola leaders
 - E. Focus group discussions with aba dhedas
 - F. Key informant interviews with aba herregas and aba eelas
 - G. Key informant interview with aba gada
-

HOUSEHOLD IMPACTS

H-9: HOUSEHOLDS IN COMMUNITIES RECEIVING THE LAND COMPONENT 4 INTERVENTION WILL HAVE IMPROVED LIVELIHOOD AND WELFARE OUTCOMES.

Indicators:

A. Assets (Feed the Future (FTF))

- Livestock holdings (# female, # male)
- Livestock value
- Tropical Livestock Unit (TLU)
- Size of household farmland
- Urban property
- Consumer durables and agricultural assets

B. Expenditures (FTF)

- Food, clothing, tea, sugar, coffee, and tobacco
- Health
- Education

C. Food security and nutrition (FTF)

- Prevalence of underweight children
- Prevalence of households with moderate to severe hunger

D. Income/prevalence of poverty (FTF)

- Livestock income
 - Sale of butter, milk, hides
 - Increased milk production
 - Sale of animals

- Crop cultivation
- Sale of fuel wood
- Off farm income from trade/wage labor

E. New or more sustainable livelihood strategies

- Pure pastoralism
 - Number of satellite (foora) camps
 - Duration of stay at satellite camps
 - Communal warra grazing land management strategies

- Crop cultivation
 - Household farmland management strategies

- Agro-pastoralism
-

Notes:

- 1) These indicators will be disaggregated by subgroups of interest: women, agro-pastoralists, poor households, including young male representatives.
- 2) The overarching indicators used to test this hypothesis overlap with Feed the Future indicators.

Data sources:

- A. Household survey
 - B. Focus group discussions with women, agro-pastoralists, and poor households, including youth
-

H-10: HOUSEHOLDS IN COMMUNITIES RECEIVING THE LAND COMPONENT 4 INTERVENTION WILL INVEST MORE IN IMPROVING THE CONDITION OF THEIR LAND, WATER, AND LIVESTOCK RESOURCES.

Indicators:

- A.** Improved veterinary care for livestock
 - B.** Planting of supplementary sources of forage
 - C.** Labor contribution to developing and maintaining local wells and water points
 - D.** Individual kalo fencing
 - E.** Developing soil conservation or water harvesting structures for cultivated land
 - F.** Household farmland management strategies
-

Notes:

- 1) These indicators will be disaggregated by subgroups of interest: women, agro-pastoralists, poor households, including young male representatives
-

Data sources:

- A. Household survey
 - B. Focus group discussions with women, agro-pastoralists, and poor households, including young male representatives
-

CONTROL VARIABLES

Indicators:

- A.** Household demographics
 - Household size
 - Years cultivating (if applicable)
 - Education
 - Highest level of education attained
 - Number of males completing/in primary
 - Number of females completing/in primary
 - B.** Access to bank services, insurance, cellphone services, and markets
 - C.** Development support from donors, NGOs, etc.
 - D.** Climate and elevation data
 - E.** Relative livestock; grain price
 - F.** Distance to roads and markets
 - G.** Population density
 - H.** Resettlement sites with food aid and crop cultivation
-

Data sources:

- A. Household survey
 - B. Key informant interviews with aba reeras
 - C. Secondary and administrative data
-

5.0 RESEARCH & SURVEY METHODOLOGY

The impact evaluation team recommends using a Difference-in-Differences (DD) design that compares Borana treatment areas to lowland Guji control areas. The strengths and limitations of this design and different options considered are discussed below.

Difference-in-differences (DD) is a strategy that uses data with a time and control group dimension to control for unobserved and observed fixed confounding factors between treatment and control groups, such as differences in wealth, education or experience with agropastoralism. DD is one of the most frequently used methods for impact evaluation. In the context of the LAND IE, a DD method will compare the changes in outcomes over time between the Borana areas that are enrolled in the LAND program and the lowland Guji areas that are not involved in LAND. Given the small number of sites and the inability to randomize the LAND program across these sites, an RCT is not feasible for an evaluation of LAND. DD represents the next best evaluation technique for analyzing the impact of the program.

The difference-in-differences method is implemented as follows. The “first difference” in the difference in differences method represents the before and after effect in the treatment group; this controls for factors that are constant over time for the LAND treatment areas. The “second difference” represents the before and after difference in the control group to control for outside time-varying factors. Finally, the first difference is subtracted from the second difference to generate the estimate of the treatment effect.

Using Guji lowland areas as a control group for the Borana treatment areas appears to be the most suitable approach for creating a counterfactual. A literature review of Oromia customary land institutions indicates that the Guji and Borana are most similar in terms of the use and adherence to the shared system of Gada customary laws (Jalata 1995), which are different from the customary laws and institutions in other neighboring communities, for example in the Somali or Afar regions. Since a primary objective of the LAND project (and key outcome of interest for this impact evaluation) is to strengthen customary land governance institutions, it is important to find a comparison group whose customary institutions are as similar as possible to those of the Borana. Furthermore, the overlap between PRIME and LAND programming in Borana areas eliminates the use of Bale, Kereyu, or Itu areas (where PRIME is not operating) as controls, because the treatment effects of LAND could not be disentangled from those of PRIME. Since PRIME is working in both Guji and Borana – but LAND is only in Borana – the evaluation’s inferences will be focused on the marginal benefits from LAND programming. This does not enable a “clean” inference about the effect of LAND, because we cannot generalize outside of an intervention package that combines LAND and PRIME; however, it is a better methodological alternative than using the Bale, Kereyu, or Itu areas or other neighboring pastoral communities with different customary governance structures.

LAND IE TREATMENT AREAS: BORANA RANGELAND SYSTEMS

- Dheda Dida
- Woyama

- Dire
- Malbe
- Gomole
- Golbo¹³

LAND IE CONTROL AREAS: GUJI RANGELAND SYSTEMS

- Wadera
- Golba Genalle
- Golba Dawa

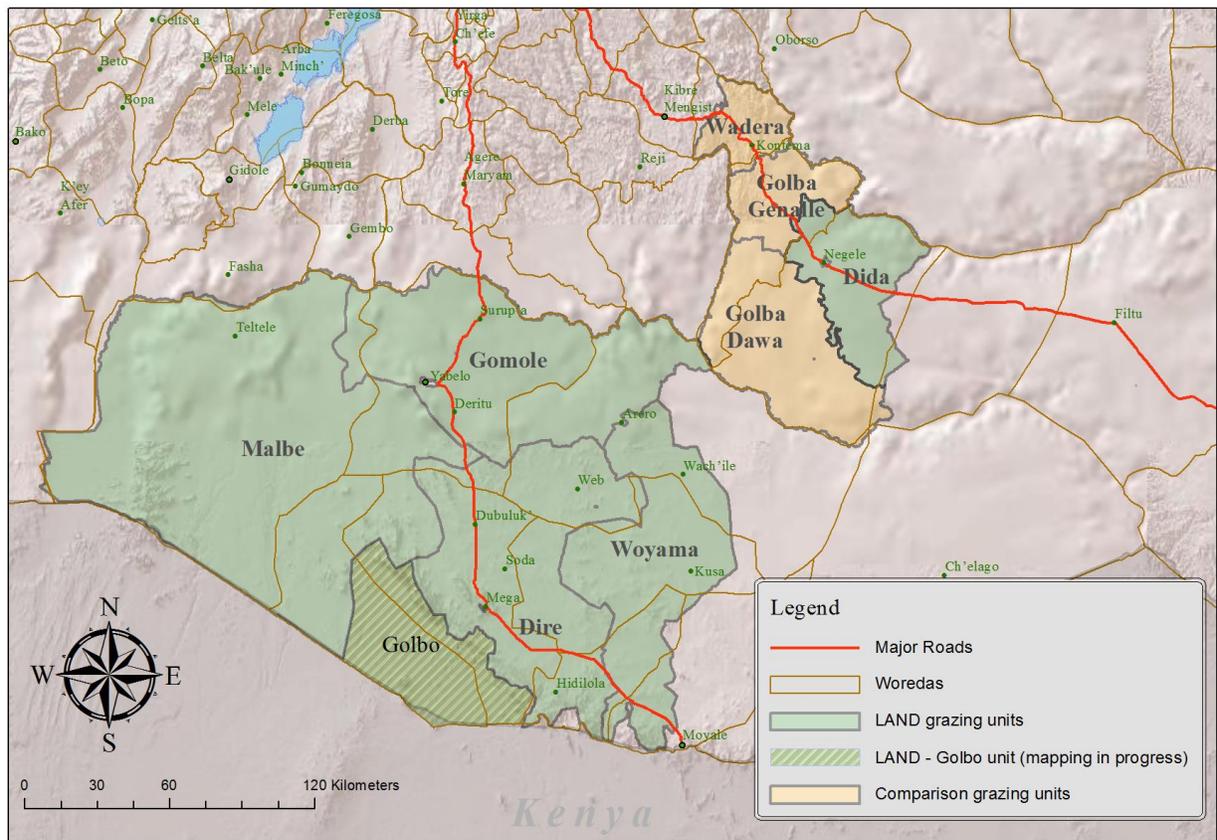


FIGURE 5.1 LAND IE TREATMENT AND CONTROL AREAS

LIMITATIONS OF DIFFERENCE-IN-DIFFERENCES

DD requires stronger assumptions than randomized selection. It is based on the assumption that the most important omitted variables are time invariant. In particular, the key identifying assumption for DD is the equal or common trends assumption, which states that the counterfactual trend behavior will be the same in the Borana treatment and Guji control groups in the absence of the LAND intervention. This is a strong assumption. The DD strategy is valid if the LAND treatment is the only factor that induces a deviation from common trends for tenure security, livelihoods, and economic growth – as well

¹³ The sub-units or reeras for this system have not yet been mapped. PRIME expects to complete this mapping by early/mid August. If the IE team does not have a defined list of reeras for this system by the end of July/early August, this system will need to be excluded from study.

as other factors of interest to the evaluation. Although the treatment and control areas can differ before the implementation of the LAND program, this difference must not be reflected in different time trends for key indicators. Therefore, the risk to the validity of this DD design is that it will not be able to effectively control or eliminate differences between the treatment and control groups that change over time (Abadie 2000).¹⁴

Several techniques are used to test the validity of the equal trends assumption. These include comparing changes in outcome in treatment and control units before program implementation and/or performing a placebo test with a placebo or “fake” control group. Unfortunately, this study will not have access to data from additional control groups or multiple time periods beyond the baseline, midline, and end line. Although these data limitations constrain our ability to use preferred techniques to check the equal trends assumption, the evaluation will be able to perform a placebo test with false outcomes to assess the viability of the common trends assumption. In particular, the team will estimate the impact of LAND in the Guji control group on an outcome that we expect LAND to change – such as improved customary land governance - to verify whether the assumption holds.

MATCHED DIFFERENCE-IN-DIFFERENCES

To improve comparability between the treatment and comparison groups, the researchers will also conduct the treatment analysis using matched difference-in-differences estimation. In addition to assessing the overall treatment effect using the 6 grazing systems involved in LAND, the evaluation will also conduct the difference-in-differences method in conjunction with matching to compare treatment households that are most similar to control households. This will reduce the total number of households involved in the study and will have implications for the power calculations. Nevertheless, if this method reduces variation in the measures of interest, it will generate more precise estimates of a local average treatment effect between a subset of treatment and control households.

The steps for this process are as follows. First, baseline data on observed characteristics will be used to match treatment and control households. Second, difference-in-differences estimation will be used to estimate a change in the outcomes for the matched units. Finally, these double-difference estimates across the matched units will be averaged out after weighting for household size to determine the treatment effect.

HOUSEHOLD SAMPLING METHODOLOGY

The household survey will be conducted in a subset of communities in the eligible control and treatment grazing units. This will be a Large N survey involving approximately 4000 households. The indicators measured by the household survey are noted above in Section 6. We propose modeling the LAND IE household survey on the 2012-2014 Index Based Livestock Insurance (IBLI) household survey¹⁵, which was implemented in the Borana Zone of Oromia.

¹⁴ Discussions of DD limitations in the literature include: endogeneity of interventions (Besley and Case 2000); isolation of specific behavioral parameters (Heckman 2000, Blundell and MaCurdy 1999); linearity assumption (Athey and Imbens 2002); and large standard errors (Bertrand et al. 2004).

¹⁵ Quantitative IBLI indicators include: Increased consumption expenditure (overall and specifically on food); Increased food security (reduced reliance on food aid and reduced malnutrition); Increased asset holdings; Increased uptake of education services; Increased diversity of livelihood activities; Increased financial saving; Increased empowerment of women; Improved well-being of older people and children; Social tensions, conflict, and insecurity; and Changes to household mobility. Qualitative IBLI indicators include: Subjective poverty; Attitudes to health and education; Market supply and price fluctuations; Livelihood systems and shocks; The empowerment of women and household decision-making processes; Inter-generational relationships; and Informal transfers; Migration patterns.

Given the design of the LAND program, the reera system of grazing system governance represents the key focus of community selection for the impact evaluation. The logical structure for the LAND IE's community and household sampling involves (1) sampling ola within reera involved in the LAND program (with probability proportionate to size) and (2) sampling households (or warra) from reeras.

Basic steps in the sampling methodology:

- Step 1: **Olas** are selected from within **reeras** with probability proportionate to size (PPS)
- Step 2: **Warras** or households will be selected from within **Olas**

At the household level, the evaluation will assess differential treatment effects for female- vs. male-headed households and agro-pastoral households. The large N household sample will be stratified to provide coverage of these key sub-groups, thereby enabling the analysis of heterogeneous treatment effects. Focus group discussions will be conducted with female-headed households, agro-pastoralists, and poor households, including young males. In carrying out the impact evaluation, investigators will give particular attention to examining the heterogeneity of impacts among particular subgroups and disaggregated by the following where applicable:

- Female- vs. male-headed households
- Agro-pastoralists
- Poor households
- Youth

The IE Design Document will be updated with more information on the specifics of the household sampling methodology – including the generation of sampling frames and weights – following consultations with the data collection firm.

The household and community surveys will be collected through a cloud-based mobile data collection effort. This approach will promote data sharing and transfer between the evaluation team and implementing partners to ensure that the results of the data collection are communicated to communities as quickly and efficiently as possible. While there is additional up-front effort required to program the questionnaire and train staff and enumerators on the use of phones, an electronic data collection approach reduces data entry errors and improves the quality of the data (Caeyers et al. 2010).

RANGELAND CONDITION MAPS

Woody plants encroachment on the rangelands in Borana, Ethiopia has been one of the major threats to pastoral livelihoods (Oba et al. 2000; Tefera et al. 2007a). It is estimated that the increasing woody plant density and cover have reached the encroached condition (over 2500 tree equivalents per hectare) on over half of the Borana rangelands, where high value herbaceous forage plants have been significantly suppressed (Gemedo-Dalle et al. 2006). The abundance of woody plants is found to be aggravating deterioration on rangeland productivity, as they are negatively related to the ecological condition index or weighted palatability composition, while positively related to bare ground (Tefera et al. 2007b).

In our study, each household's reported value of rangeland condition information will be used for interpolation. Our GIS and ecology specialist will produce one set of approximately 17 maps of invasive plant species to assess the condition of bush encroachment throughout the study area at the baseline, and another two sets of 17 maps each for midline and end line. The 17 species that will be mapped by the study are listed below in Table 5.1.

The evaluation team will use data from the geo-referenced household survey to generate maps of rangeland conditions using the kriging method. Kriging is a geo-statistical tool used to spatially interpolate unknown values given limited known values. The method assumes that the unknown value at a specific location will be more likely to be influenced by the known values that are closer to its location. Typically, at a limited number of chosen sample locations, measurements on the variable are available, and prediction (interpolation) of the variable is required at non-observed locations. Kriging analysis involves estimation and modelling of spatial correlation. By generating three sets of maps for the baseline, midline, and end line using the kriging method, we can get the spatial distribution of the bushes (the least desirable species identified by pastoralists in earlier studies) throughout Guji-Borana zone, thus allowing us to evaluate the trend of bush encroachment in space and time.

TABLE 5.1 INVASIVE PLANT SPECIES OF GUJI-BORANA ZONE

Species Borana Name	Species Scientific Name
Saphansa gurracha	Acacia mellifera
Saphansa diima	Acacia senegal
Sigirsoo	Acacia reficiens
Waangaa	Acacia oerfota
Calloo	Acacia sp.
Waaccuu	Acacia seyal
Fullenssa	Acacia drepanolobium
Riiga (Caacannee)	Acacia horrida
Hammareessa	Acacia brevispica
Dabbasoo	Acacia hockii
Hammeessa	Commiphora schimperi
Hiddii gaagee	Solanum somalense
Hiddii waatoo	Solanum incanum
Buutiyyee	Ormocarpum trichocarpum
Siltaachoo	Commiphora corrugata
Hoomachoo	Commiphora habessinica
Jirimee	Dichrostachys cinerea

6.0 POWER ANALYSIS

This section describes the power calculations for the LAND IE. Here, power refers to the probability of detecting an impact if one does exist; the associated power calculations indicate the sample size required for an evaluation to detect a given minimum desired effect size (MDES). For the LAND IE, the research team will measure impact at the household level.¹⁶

The evaluation team consulted with USAID/Ethiopia and the Land Tenure Division about what they would judge to be policy-important results for the indicators. According to USAID/Ethiopia and USAID/LTD, 10-15% positive impacts in the treatment versus control groups represent success for the LAND program. In this study, the Minimum Detectable Effect Size (MDES) ranges from 2% to 49%, depending on the indicator under investigation. As such, the study will have the power to determine whether the program was successful in generating the desired treatment effects of 10-15% for many – but not all – of the key indicators of interest.

We draw on data from the 2012 Borana IBLI survey to inform our power calculations for key variables related to this study. The presence of calibrating data improves confidence in the accuracy of our estimates for several parameters of the power calculations. Correspondingly, it improves our confidence in the effect sizes expected from our power calculations.

Given an absence of ola level data, we will not be able to improve the precision and power of the study through pre-sampling matching on ola characteristics across treatment and control reera. As such, we conduct more conservative estimates of the power calculations by ignoring the panel nature of the data. This means that we expect the study will be able to detect finer-scale impacts than we currently estimate.

The LAND IE treatment assignment is not random. However, our selection of DD as the estimation strategy implicitly assumes that the interventions are as good as random, conditional on group fixed effects. By relying on DD, we are making the strong assumption that our Guji comparison group represents an appropriate control group, such as one would find in an experimental study. On the basis of these assumptions, the power calculations were obtained using the Optimal Design software package (Raudenbush et al. 2011; Spybrook et al. 2011).¹⁷ The factors that determine the power of a study do not differ between an experimental and non-experimental design.

The discussion that follows assumes a power of 0.80 and estimates what will be the minimum detectable effect size (MDES) of LAND's interventions under alternative scenarios for the number of olas and households included in the sample.

¹⁶ The evaluation will also collect a large amount of qualitative and mapping data. The power calculations in this section are focused on quantitative survey data collected through the household instrument.

¹⁷ We also conducted the power calculations “by hand”. The results were similar to the Optimal Design software but marginally more optimistic. Optimal Design is able to conduct more complex analysis that takes group or cluster effects into consideration. Therefore, we chose to present the results of the more conservative Optimal Design estimates.

BOX 6.1. KEY POWER CALCULATION PARAMETERS

The following describes the key parameters used to conduct the power analysis and sample size requirements for this impact evaluation.

α (alpha) is the Type I error and is also referred to as the p-value in statistics. Generally speaking, this is the probability of concluding there was an impact when no impact actually exists. Typical values of α are 0.1, 0.05, and 0.01 with lower values indicating greater confidence in results (that is, less chance of concluding there is a program effect when there is none).

β (beta) is the Type II error. Generally speaking, this is the probability of not concluding there was an impact when in fact an impact does exist. The sample power is equal to $(1 - \beta)$. Typical values of β are 0.1 and 0.2. Lower values of β indicate greater confidence in the results. Stated differently, lower values of β are associated with greater power.

CLR (Cluster Level Reliability) is an estimate of measurement error and is used to correct for the precision of outcomes measured at the ola level.

σ^2 indicates that the evaluation is a fixed effect, versus a random effect, design. This means that we do not believe the ola in the study are necessarily representative of all ola in Ethiopia.

J is the number of ola in each arm of the impact evaluation design. There are two arms in this impact evaluation – the treatment arm and control arm.

Minimum Detectable Effect Size (MDES) - often represented by δ - is the magnitude of impact that can be detected for a given sample. The units of measure for δ are standard deviations from the mean. For example, if referring to household income and the average value is \$1000 per household with a standard deviation of \$100, then a value of $\delta=0.5$ implies that incomes of \$1050 or more are expected as a result of the intervention. In general, the smaller (larger) is δ the larger (smaller) will be the required sample size since a smaller (larger) impact will require a larger (smaller) sample size in order to detect.

η is the number of households sampled per ola.

Power is the probability of detecting an impact if one has occurred. The power of a test is equal to 1 minus the probability of a *type II error*, ranging from 0 to 1. Popular levels of power are 0.8 and 0.9. High levels of power are more conservative and decrease the likelihood of a type II error. An *impact evaluation* has high power if there is a low risk of not detecting real program impacts, that is, of committing a type II error.

Power calculations indicate the sample size required for an evaluation to detect a given minimum desired effect. Power calculations depend on parameters such as power (or the likelihood of Type II

HOUSEHOLD-LEVEL OUTCOMES

This design represents a two level cluster design with outcomes measured at the person or household level. The first level is the ola and the second level is the measurement level (households). The power calculations for the Level II Design do not assume a panel survey or the taking of repeated measurements, in which the same households are re-surveyed over the lifetime of the study. A panel survey increases the power of the study. In practice, we are planning to conduct a household panel across the three rounds of data collection.

The power calculations are based on the following standard parameters:

- $\alpha = .05$
- $\sigma^2 = 0$ (fixed effects)
- $J=100, J=150, J=200, J=250, J=300$

In addition to these parameters, to estimate the household-level MDES requires information on the degree of correlation between households within a village or the intra-class correlation (ICC). The assumption here is that units within a group are correlated, which means that we do not gain completely new information from each additional unit surveyed; or, alternatively, that calculations treating these units as independent will overstate the precision resulting from the sample. This “loss” of information has to be taken into account in the power calculations through the ICC. A higher ICC indicates greater correlation between households and less new information from each additional household surveyed. Therefore, the MDES will increase with higher ICC values.

We use the 2012 Borana IBLI survey to calculate expected ICC for a number of indicators. The ICC for these indicators ranges from .02 to .29 and have an average ICC of .09. Thus, based on these ICC estimates from the 2012 Borana IBLI survey, we use an average ICC of .10 for our power calculations; an MDES for ICC of .30 is also provided for reference to illustrate the loss in power as ICC increases.

Table 6.1 provides the MDES under different assumptions about the sample size. While the standard parameters stay fixed, we alter (1) the number of households surveyed (N) from 10-30, (2) the number of olas involved in each arm of the LAND program from 100-300, and (3) the ICC from .10 to .30.

TABLE 6.1. SUMMARY OF MDES UNDER VARIOUS ASSUMPTIONS							
Olas per arm	Power	Alpha	N	ICC	MDES	ICC	MDES
50	.80	.05	10	.10	.25	.30	.35
50	.80	.05	15	.10	.23	.30	.33
50	.80	.05	20	.10	.22	.30	.33
50	.80	.05	30	.10	.20	.30	.32
100	.80	.05	10	.10	.18	.30	.25
100	.80	.05	15	.10	.16	.30	.24
100	.80	.05	20	.10	.15	.30	.23
100	.80	.05	30	.10	.14	.30	.23
150	.80	.05	10	.10	.14	.30	.20
150	.80	.05	15	.10	.13	.30	.19
150	.80	.05	20	.10	.13	.30	.19
150	.80	.05	30	.10	.12	.30	.18

Source: Authors' calculations

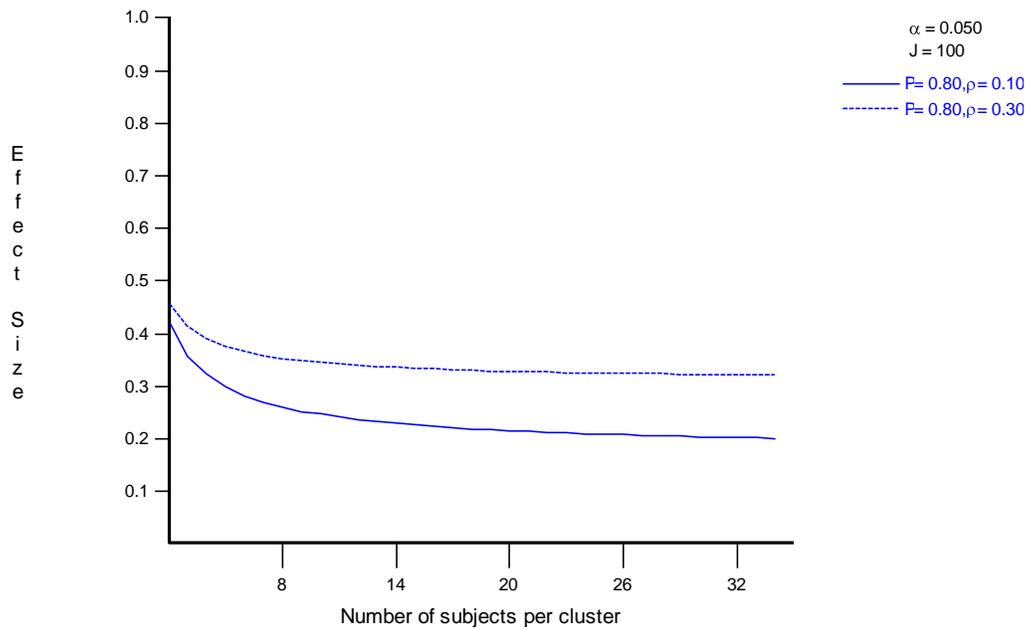


FIGURE 6.1 RELATIONSHIP BETWEEN MDES AND HH SAMPLE SIZE, TOTAL OLA=100

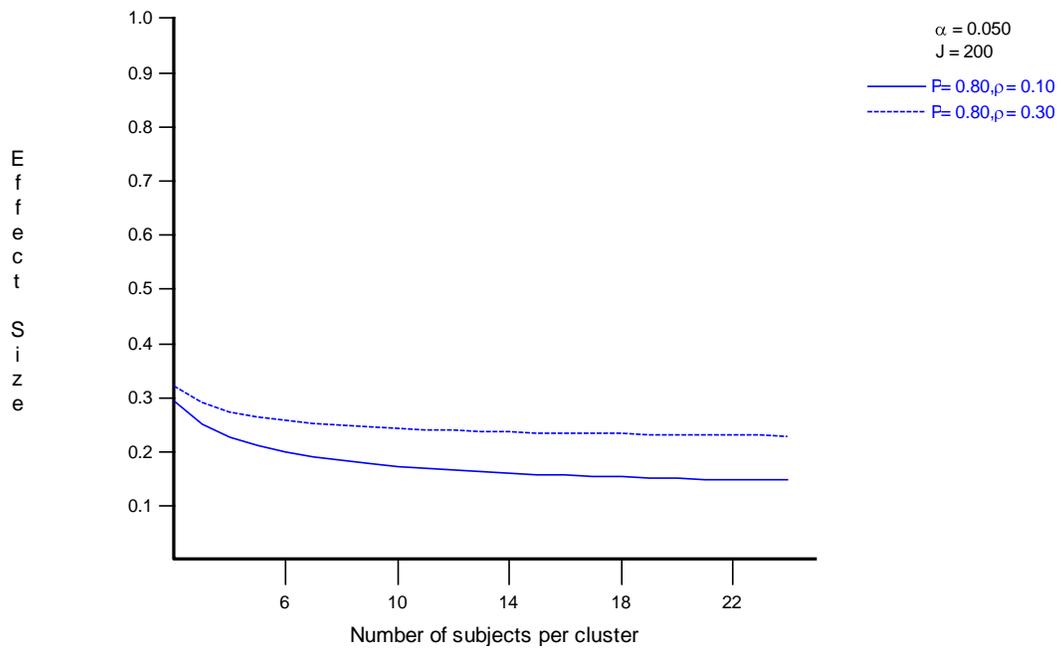


FIGURE 6.2 RELATIONSHIP BETWEEN MDES AND HH SAMPLE SIZE, TOTAL OLA=200

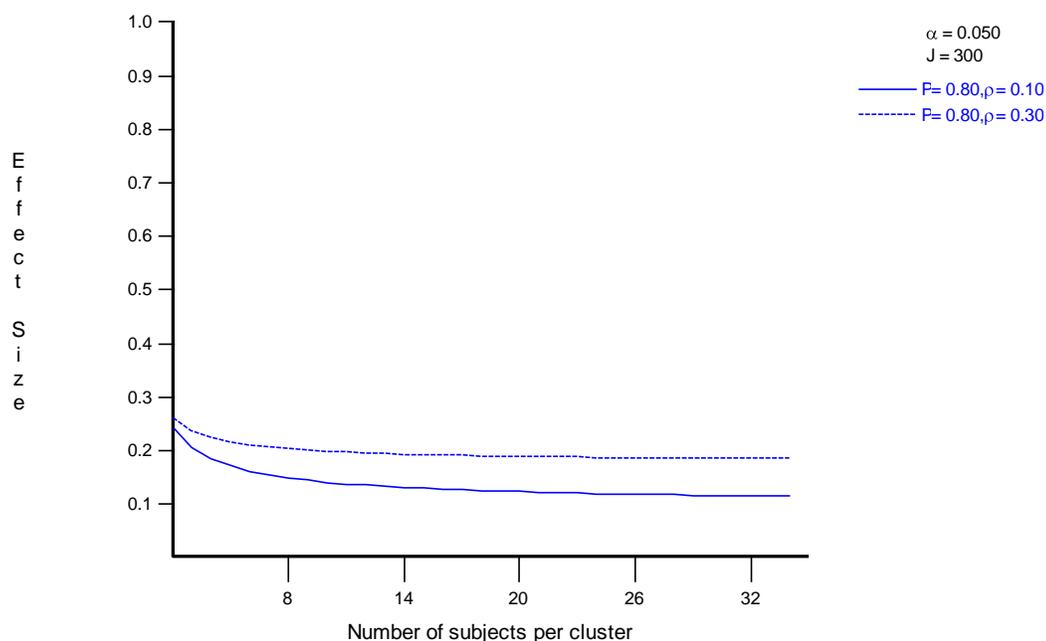


FIGURE 6.3. RELATIONSHIP BETWEEN MDES AND HH SAMPLE SIZE, TOTAL OLA=300

Table 6.2 summarizes the sample implications from the ola- and household-level analyses.

TABLE 6.2. SUMMARY OF VILLAGE AND HOUSEHOLD MDES UNDER ALTERNATIVE SCENARIOS				
Ola per arm	Households / ola	MDES	Total sample for two-arm design	
		Household	Ola	Households
50	10	0.25	100	1000
50	15	0.23	100	1500
50	20	0.22	100	2000
50	30	0.2	100	3000
100	10	0.18	200	2000
100	15	0.16	200	3000
100	20	0.15	200	4000
100	30	0.14	200	6000
150	10	0.14	300	3000
150	15	0.13	300	4500
150	20	0.13	300	6000
150	30	0.12	300	9000

Source: Authors' calculations

** Model and parameter assumptions: i) power =0.80 (=1- β), ii) α =.05, iii) CLR=0.7 (for village),

DETECTING A POLICY RELEVANT EFFECT

In this section, we use the MDES found in the power calculations to estimate the expected program effect size for 7 outcomes of interest at the household level to determine whether the study will have the power to determine treatment effects in the range of 10-15%. These indicators come from the 2012 Borana IBLI survey. It is important to note that we expect the standard deviation of variables to be lower in the LAND IE due to the proposed sample size for the research, which is greater than 2,000 HH. This will have important implications for the estimated treatment effect, because a lower variance translates into greater power and the ability to detect a smaller treatment effect. Put differently, the estimates below should be seen as conservative.

In particular, we estimate LAND's detectable treatment effect for the following indicators (where the mean for each indicator is μ and the standard deviation is σ) described in Section 4 above:

- Household consumption ($\mu = 1375$, $\sigma = 964.5$)
- Tropical livestock unit (TLU)¹⁸ ($\mu = 14.8$, $\sigma = 22.11$)
- Household income ($\mu = 10,896$, $\sigma = 10,567$)
- Livestock share of income ($\mu = .61$, $\sigma = .38$)
- Satellite camp use ($\mu = .37$, $\sigma = .97$)
- Mobility during the short dry season ($\mu = 2417$, $\sigma = 1499$)
- Mid-Upper Arm Circumference (MUAC) ($\mu = 14.55$, $\sigma = 1.75$)

Specifically, using the mean (μ) and standard deviation (σ) of each indicator, we calculate an estimate of the LAND's program effect using standardized MDES of .33, .23, .16, and .13 for household level outcomes. These estimates were taken from averages of the range of MDES displayed above in Table 9.1 for treatment and control households for each of the two study arms (control, treatment).

As discussed above, USAID would consider the program successful if it moved key indicators by 10-15%. Our power analysis indicates that the study will be able to detect this level of change across several key indicators. Using the Household Consumption estimate of $\mu = 1375$ and $\sigma = 964.5$, a mid-range MDES of .20, and the standard power calculation parameters described in Box 9.1, this study can detect approximately a 14% change in household consumption; if the MDES were .13, the study would be able to detect approximately a 9% change in household consumption.

However, using the TLU estimate of $\mu = 14.8$, $\sigma = 22.11$, and assuming a mid-range MDES of .20, this study can detect approximately a 29% change in a household's TLU; if the MDES were .13, the study would be able to detect approximately a 19% change in a household's TLU. Therefore, the study will mostly likely be underpowered to detect the desired 10-15% change in the TLU indicator.

Furthermore, the MDES for sub-groups of interest that represent less than 50% of the population will be higher – such as women and agro-pastoralists. As a result, the study may be unable to conduct a thorough analysis of quantitative heterogeneous effects analysis through the IE's quantitative analysis. To the extent possible, we will examine the differences between women and men, and between purely

¹⁸ TLU represents a common unit whereby different species of different average size can be compared and described. The standard used for one Tropical Livestock Unit is one cattle with a body weight of 250 kg.

pastoral and agro-pastoral households, through an econometric approach, and we will rely heavily on the qualitative methods to investigate heterogeneous effects among other sub groups of interest.

Table 6.3 summarizes the results of the power analysis.

TABLE 6.3. POWER ANALYSIS SUMMARY				
Variables	μ	σ	MDES	Estimated detectable effect for LAND
TLU	14.8	22.11	0.33	7.3 (49%)
			0.23	5.1 (34%)
			0.16	3.5 (24%)
			0.13	2.9 (19%)
HH Consumption	1375	964.5	0.33	318.3 (23%)
			0.23	221.8 (16%)
			0.16	154.3 (11%)
			0.13	125.4 (9%)
HH Income	10,896	10,567	0.33	3487.1 (32%)
			0.23	2430.4 (22%)
			0.16	1690.7 (16%)
			0.13	1373.7 (13%)
Livestock share of income	0.61	0.38	0.33	0.13 (21%)
			0.23	0.09 (14%)
			0.16	0.061 (10%)
			0.13	0.05 (8%)
Satellite camp use	0.97	0.38	0.33	0.13 (13%)
			0.23	0.09 (9%)
			0.16	0.06 (6%)
			0.13	0.05 (5%)
Mobility during the short dry season	2417	1499	0.33	494.7 (20%)
			0.23	344.8 (14%)
			0.16	239.8 (10%)
			0.13	194.9 (8%)
MUAC	14.55	1.75	0.33	0.58 (4%)
			0.23	0.40 (3%)
			0.16	0.28 (2%)
			0.13	0.23 (2%)

7.0 CONCERNS AND CONSIDERATIONS

This section describes factors that present risks to the validity of the research inferences and evaluation methodology, as well as additional concerns raised by the implementing partners regarding the sensitivity of the research.

LOSS OF VALID GUJI CONTROL AREA

PRIME will continue working in the three Guji areas that will serve as the control areas for the LAND IE. Since PRIME is also working in the Borana rangeland systems involved in the LAND treatment, PRIME's involvement in the Guji zone does not harm the research inferences. However, PRIME has expressed interest in implementing some or all of LAND's interventions in the Guji systems. This has serious implications for the study, as PRIME's implementation of LAND's interventions in the control areas would compromise the comparison groups and jeopardize the integrity of this evaluation.

Based on consultations with PRIME and LAND, USAID Ethiopia and LTD have assessed the threat of this risk to the validity of the research and have determined that there is a low risk of PRIME implementing all LAND Component 4 interventions in the Guji Zone during the period of the impact evaluation. We will continue to monitor this issue.

LIMITATIONS OF DIFFERENCE IN DIFFERENCE

The proposed method to identify the impact of LAND Component 4 is Difference in Differences (DD). This method assumes that time trends are similar in the comparison and treatment groups before the intervention takes place and that the time trajectory will remain constant. That is, the time-varying factors are assumed to be the same between the treatment and comparison groups. If this does not hold true due to factors, such as conflict or shocks, that differentially affect the treatment and control groups, the impact estimates may be biased.

To help mitigate this weakness in the design, the estimation strategy will combine matching with DD to improve the comparability between treatment and control groups and will include covariates to control for factors that may influence the trajectory of the treatment groups over time. Moreover, supplementing end line DD regression analysis with time-varying geo-spatial information (i.e. on rangeland condition, market access, etc.) can reduce bias and improve the quality of estimated impacts.¹⁹

BUNDLED INTERVENTIONS

¹⁹ Inconsistent standard errors due to serially correlated time series data is a prevalent criticism of DD (Bertrand et al. 2004). We are using a very basic DD set up of two groups and two periods which does not present the same threat from serial correlation that is found in multi-period data. In addition, through cluster level random effects, our model specification will explicitly take into account the inconsistent standard errors from grouped data.

PRIME will continue to implement in the Borana and Guji grazing systems that will serve as the treatment and control areas for the LAND IE. The simultaneous rollout of the LAND interventions and PRIME interventions will make it impossible to tease out the specific treatment effects of LAND. Instead, the research inferences will be of a bundled treatment effect – LAND + PRIME programming versus PRIME alone. Moreover, LAND itself represents a bundle of interventions, as described above in Section 2.0. As a result, it will not be possible to attribute a treatment effect to any particular activity of Component 4.

STRENGTH OF INFORMAL TENURE INTERVENTION

LAND has expressed concerns that changes in the security of pastoral land rights due to informal tenure interventions may not be large enough to detect through the IE. The argument is that the formal certification of pastoral communal land use rights will increase pastoral land rights security, not the mere demarcation of the boundaries. Since the major source of tenure insecurity is from external sources rather than from inter- and intra-pastoral community sources, informal boundary mapping and governance interventions that promote agreement among pastoral communities on their boundaries are not expected to yield much added security. Moreover, the LAND team has also expressed concerns that PLI II and PRIME's work in bringing the communities together to agree on their grazing boundaries and resource mapping may have already achieved most of the security informal land tenure may offer.

Despite these concerns, LTD and USAID Ethiopia are interested in investigating the informal tenure interventions, in particular improved community land governance, through the impact evaluation. To better capture the effect of informal tenure and governance activities versus formal certification, LTD has requested the inclusion of a midline data collection in the impact evaluation design, contingent on available funding. The midline data collection would occur directly before formal certification – approximately 2-3 years into the study. Thus, the phased approach of the baseline, midline and end line data collection would promote the study's ability to assess the added effect of formalization versus the informal tenure strengthening activities.

INSUFFICIENT SAMPLE SIZE

There are a large number of indicators and the size of sample required to detect impact will depend on the parameters of those indicators (i.e. mean and variability) along with the expected impact. A given sample size may be sufficient to detect program impact for one set of indicators but not for another.

MATURATION

Some of the impacts may take a much longer time period to materialize than what is currently available in terms of time between the baseline and end line data collection. To allow for this, the survey data will collect information on anticipated changes for key proximate outcomes in cases where enough time will not have passed to measure a meaningful change in a more distal development indicator. For example, perceptions of land tenure security are measured in addition to some of the more long-term impacts – such as investment and livelihood improvements – that are expected from improved tenure security.

POLITICAL SENSITIVITIES

PRIME has expressed concern regarding the potential for the evaluation to generate conflict between Guji and Borana areas because the evaluation may raise awareness that Guji is a “control” area that is not receiving the same level of benefits as Borana areas. To alleviate these concerns, the evaluation will

work closely with LAND and PRIME partners to highlight the messaging that the evaluation is a research tool to improve rangeland and development outcomes and to ensure that the baseline data is shared with both Guji and Borana respondents.

Moreover, the questions asked of individual respondents will be designed in a neutral, culturally-appropriate, and non-leading way such that respondents in control areas do not feel they are being excluded from possible benefits of the LAND project. The questionnaires will also be written in ways that avoid direct Guji-Borana comparisons and minimize potential controversy.

HUMAN SUBJECT PROTECTION

All data collection activities will adhere to professional and ethical standards for the treatment of human subjects. The evaluation team will submit the proposed impact evaluation to the Institutional Review Boards (IRB) at Clark University. The IRB is an ethics body in charge of overseeing and monitoring research activities involving human subjects. The IRB's main role is to ensure that research procedures do not pose more than negligible risk to the participant subjects and to assess the adequacy of safeguards to protect subjects' rights, welfare, and dignity. Researchers are required by the IRB to: (1) inform the subjects about the purpose, risks, and benefits of the study so that they can make an informed decision about whether or not to participate in the research and (2) protect the anonymity of subjects and the confidentiality of the data.

The evaluation will conform to the legal and other requirements governing research with human subjects in Ethiopia. Although there is no formal IRB requirement in Ethiopia, or official regulations regarding conducting household surveys, it is common practice to receive a letter of approval for conducting the survey from the relative ministry (Ministry of Agriculture) and from the local government (Oromia State Government).

Given sensitivities over land issues, the evaluation team will also work closely with the LAND and PRIME implementing partners to ensure local leader and community buy-in and understanding of the research prior to community entry and data collection.

Furthermore, the research team will provide training to all enumerators and qualitative researchers to ensure they understand these principles. Upon completion of research activities in the field, the data will be maintained in a way that adheres to general IRB principles. All analyses and publications will respect the anonymity of respondents; no identifying information will be used in reports or presentations. The mode of analysis will follow econometric standards for survey research, the aim of which is to make general claims about the participant and non-participant populations, not specific claims about identifiable individuals.

SPILLOVERS

This refers to the case when the comparison group may be affected by the treatment even though they themselves were not directly treated. Comparison groups can be compromised because of activity in treatment areas. This may have a geographic component (i.e. spatial spillovers as a result of being close to the border of a community whose grazing unit boundaries are being certified) or could be non-spatial in nature (i.e. members of the comparison group hear what is going on and press to have their grazing areas certified, as well). The implication of spillover would be downward pressure on LAND's effect size.

ATTRITION

This refers to a reduction in HH sample size in the context of a panel due to migration and the inability to locate the same respondents at the midline or end line data collection. The remedy for this problem is to oversample and to collect additional contact data during baseline that can be used to locate respondents in future waves of data collection. Given the nature of pastoralists in the lowland regions, a non-negligible attrition rate is expected.

8.0 IMPACT EVALUATION TIMELINE AND TEAM COMPOSITION

The baseline data collection for the household and community survey will be implemented from mid-August to mid-October 2014. A midline data collection is tentatively scheduled for mid-August – mid-October 2016, and the end line for mid-August – mid-October 2018. Midline and end line will be used to assess the same features of tenure security, land governance and livelihoods as the baseline surveys, although the midline may employ a condensed survey methodology. During these three periods, data from focus groups and interviews will also be collected. To avoid seasonal effects, the baseline, midline and end line surveys should be conducted at the same times each year, if feasible.

Table 8, on the next page, provides a detailed timeline for the LAND IE Baseline data collection.

Table 8. LAND Impact Evaluation Activity Timeline.

Activity	2014											2015	2016				2017	2018			
	F	M	A	M	J	J	A	S	O	N	D		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4
IE Design Report - draft			■	■	■																
IE design 3 rd party review and revision						■															
Survey instrument development				■	■	■	■														
Issue RFP for data collection, proposal review, and survey firm selection				■	■	■															
IRB application process					■		■														
Survey translation and device programming					■	■	■														
Develop sampling methodology and field work logistics plan					■	■	■														
Survey programming					■	■	■														
Country approvals, initial setup and electronic device shipping					■	■	■														
Pre-testing/Finalize survey instrument						■	■														
Enumerator training							■	■													
BASELINE DATA COLLECTION							■	■	■												
Translation of qualitative information, data cleaning, produce baseline dataset								■	■												
Baseline data report										■											
MIDLINE DATA COLLECTION														■	■						
END LINE DATA COLLECTION																			■	■	
End line data report																				■	

IMPACT EVALUATION TEAM

We propose the following composition of the Impact Evaluation Team:

Pastoral Subject Matter Expert: John McPeak (Syracuse University, Cloudburst Group)

Ethiopian Customary Land Tenure Expert: Dejene Debsu (Emory University, Cloudburst Group)

Rangeland Ecology and Mapping Expert: Chuan Liao (Cornell University, Cloudburst Group)

Baseline Field Manager: Aleta Haflett (Consultant, Cloudburst Group)

Survey Firm: TBD

9.0 DELIVERABLES

BASELINE REPORT

We plan to complete a baseline report by December 31, 2014. The baseline report will provide rich descriptive data on communities in the study area and will flag any potential imbalances across treatment groups. The baseline report will also include a data analysis plan for the impact evaluation (created after examining the distribution of variables in the baseline survey).

FULLY DOCUMENTED DATA SET AND CODEBOOK

Following the baseline data collection, we will deposit a fully documented data set and codebook for the quantitative data sources, with all identifiers removed, with USAID by mid-January 2015.²⁰ This data set and codebook can then be made public.

IMPACT EVALUATION REPORT

We will prepare impact evaluation reports within three months of the receipt of the midline and endline survey results. The impact evaluation report will report the effects of the treatments versus controls on each of the outcomes of interest. In addition to investigating average treatment effects, the report will also include a discussion of heterogeneous treatment effects. The analysis in the impact evaluation report will follow the plan outlined in the baseline report.

JOURNAL ARTICLES

The evaluation team expects to publish at least two peer-reviewed journal articles within one year of the completion of baseline data collection.

PRESENTATIONS

The evaluation team will draft at least two presentations for different audiences (e.g. policy makers, academics etc.) based on the evaluation research.

DISSEMINATION

All reports, data, survey instruments are subject to review by LTD and the USAID Ethiopia Mission prior to release. When cleared for public release, documents and data will be available on the LTPR portal (<http://usaidlandtenure.net/>) and will also be submitted appropriately to the USAID Development Experience Clearinghouse (DEC).

We plan to share the results via presentations to a variety of stakeholders, including development partners and academic audiences. Given approval from USAID Mission and LTD, the evaluation team will collaborate with the implementing partners to ensure that the data will be presented to local stakeholders and communities in a culturally appropriate manner. Results will be shared with development experts in the US, including a presentation at USAID in Washington, D.C. In addition, we

²⁰ Assuming the evaluation adheres to the scheduled midline and end line timeframe, the documented data sets for the mid-line and end line surveys would be ready by January 2017 and January 2019, respectively.

will present the results at academic and policy conferences, as well as publish at least two peer-reviewed journal articles based on the research.

The Oromia Regional Pastoralist Advisory Committees (OPAC) and Zonal Pastoralist Advisory Committees afford the LAND project an opportunity to help communities build bridges between formal government administration and customary rangeland management systems/institutions. The OPAC will play a major role as a conduit for public information and awareness surrounding the IE baseline activity.

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