INDIGENOUS INSTITUTIONS IN RESOURCE AND RISK MANAGEMENT AMONG BORANA PASTORALISTS OF SOUTHERN ETHIOPIA

By

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DECLARATION AND APPROVAL

Declaration

This thesis is my own original work and has not been submitted to any University for the award of any degree or diploma.

Waktole Tiki Uma

Signature.....Date.02/10/02

Approval

This thesis has been submitted with our approval as University supervisors

Prof. A.A Aboud

Signature.....Date.2nd October, 2002

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Signature.....Date.2/10/2002

DEDICATION

To my wife, Ayelech Teshome
And
Children, Bontu, Bilise and Hinsene Waktole

ABSTRACT

Pastoral societies have indigenous institutions that govern the behaviour of each member of the society and enhance solidarity and efficient utilization of common property resources. Borana pastoralists have well known indigenous institutions that enabled them to operate in resource-scarce region of Borana zone for centuries but have of late been eroded by modern innovations. This study examined the extent to which indigenous institutions are still functioning in resource and risk management among Borana pastoralists of southern Ethiopia. The study was necessitated by a need to provide information on and reassert the importance of indigenous institutions in the planning and implementation of pastoral development. The broad objective was to investigate the roles, status and prospects of indigenous institutions in resource and risk management. One hundred household heads were interviewed in a survey. Two group discussions and 10 key informants were interviewed to complement the data from household survey. The data analyses involved both qualitative and quantitative procedures. In the quantitative procedures, frequency tables, measures of central tendencies and dispersion, chi-square, cross tabulation, correlation and regression analyses were used. The results show that livestock species diversification and availability of labor for herding are the two most important aspects of risk management. The analysis shows that over the years indigenous institutions have become weak and less effective in risk management. Such institutions are no longer able to effectively manage natural resources. Mobility has dramatically declined because of land annexation, settlement, cultivation and the new government structure. The traditional mutual assistance has also become ineffective. Resource use conflict in the area is frequent. The existing government institution at local level, Pastoral Association, has not taken full responsibility. Privatization, contrary to communal ownership, is also becoming more common. These problems are aggravated by the inability of the indigenous institutions to respond in timely manner as they used to do. Empowering the indigenous institutions to enable them to assume greater responsibility for the management of natural resources and provision of services to mitigate risk is urgently needed.

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CHAPTER ONE

INTRODUCTION

Pastoral societies have adhered to certain organizational and institutional practices which govern the behavior of each member of the society and enhance solidarity and efficient utilization of common property resources (Bonfiglioli, 1993). Across Africa, pastoral systems are facing crises as the increasing human population places a growing demand on the shrinking resources (Scoones, 1996). The area available for livestock grazing is declining due to crop expansion and the expropriation of grazing land for other public and private uses.

The Ethiopian pastoral areas account for about 61% of the country's total area and 6-10% of the total population of the country or about 6 million people live in such areas (Said, 1994). Pastoralism accounts for 40% cattle, 75% goats, 25% sheep, 20% equine and 100% camels found in the country. Borana pastoralists are part and parcel of Eastern Africa pastoralists in general and those of Ethiopia in particular. They have been operating in the present day Borana zone of Oromia Regional State, Southern Ethiopia, for centuries. As indicated by Coppock (1994); Helland (1998) and Bassi (1996), Borana pastoralists have complex, but effective indigenous institutions by which they attempt to regulate human population growth, settle disputes, interpret and enforce resource use policies, and redistribute wealth.

One of the most significant Borana indigenous institutions is the *Gada* system, which is all embracing and has important ritual, political, resource management and judicial aspects attached to it (Helland,1998). The *Gada* subsumes all the indigenous Borana institutions in

an integrated Borana worldviews and infuses those pragmatic institutions with the authority and legitimacy that they require to be effectively operational (ibid.). The other institutions include the Borana indigenous religious institution (Qallu), and resource management councils such as well councils *(Kora Ella)* and grazing councils *(Kora dheda)*. Therefore, it is hardly possible for other institutions to survive without the *Gada,* or that the *Gada* will retain its importance in their absence.

The weakening of traditional institutions, like the *Gada* system, has a great effect on risk and resource management of the pastoralists (Desta, 1999). Pastoralism has been found to be the best alternative production system for the area, compared to sedentary agriculture and other activities due to climatic, ecological, and moisture conditions of the area. The traditional indigenous institutions have enabled the pastoralists to survive in this harsh and highly variable environment. However, the effectiveness of these institutions is now in question and the pastoral system is finding it difficult to sustain itself.

1.1 Statement of the Problem

In the struggle for survival, Borana pastoralists have encountered many problems, of which drought, population pressure, and resource use conflict are major ones. In the past few decades, the vast investments poured into livestock and pastoral sector in the area have failed to achieve their objectives because of the excessive technical definitions of the activities, and the indifferent participation of pastoralists. The breakdown of the indigenous institutions and the attitude of the development proponents towards the pastoralists including downplaying of traditional indigenous knowledge are blamed for the pastoralists

exposure to more risks and deteriorating resource bases of Borana. Most of the externalities associated with resource management are also attributed to the decline of the indigenous resource management systems such as the Gada. The political instability in the area has aggravated the risks. However, there is hardly empirical research done to show extent of this problem. This study examined the impact in the declining use of indigenous institutions on the problems of resource and risk management.

1.2 Objectives

The broad objective of this research was to investigate the roles, status and prospects of indigenous institutions in resource and risk management among Borana pastoralists. The specific objectives were:

1. To investigate the role of traditional indigenous institutions in resource and risk management, in terms of: (a) defining access to and use of grazing and water resources; (b) herd rebuilding after crash; (c) availability of labor for herd management; and (d) conflict resolution.
2. To investigate the past and current status of indigenous institutions and determine the changes that have taken place among the institutions, and their consequences on the demographic, social and economic issues in the last few years.
3. To make some recommendations to policy makers and decision makers

1.3 Research Questions

Research questions for specific objective 1 are:

1. How did traditional indigenous institutions in the past influence the definition of access and use of grazing and water resources as means of resource and risk management?
2. How did the indigenous institutions influence the conflict resolution mechanism among Borana pastoralists?
3. How did traditional indigenous institutions in the past influence herd building after crash as a means of risk management among the Borana pastoralists?
4. How did the indigenous institutions influence the availability of labor for herd management as a means of risk management among Borana pastoralists?

Research questions for specific objective 2 include:

5. What are the possible changes that have occurred to indigenous institutions and their implications on demographic, social, and risk and resource management systems of the society?
6. Are there discrepancies between indigenous resource management systems and those of government sponsored pastoral associations?
7. Are the new institutions that are emerging in pastoral development actually playing the role of the *gada* system?

1.4 Justification

Borana zone has been considered to be the most potentially productive part of the pastoral areas in Ethiopia. However, the system is under constant pressure of natural disasters such as drought, and the development programs in the area have not improved the life of the

people. As said in the statement of the problem, the decline or the downplaying of the roles of indigenous institutions in planning and implementation of pastoral projects has resulted in failure of most of the development efforts.

This study provides information on and reasserts the importance of indigenous institutions in planning and implementation of pastoral development. This is expected to help narrow down the perceptual gaps between the community and development agents. It is also expected to increase the potential success of the development projects, and hence pastoral self-sufficiency.

1.5 Description of the Study Area

1.5.1 Geographical Location and Topography

The study area, Borana administrative zone, is located in the southern part of Ethiopia (see fig.1). It is one of the twelve administrative zones of Oromia regional state. The zone shares international boundary with Kenya to the south. Southern Ethiopian people regional state borders Borana Zone from the west and northwest, while Bale administrative zone of Oromia borders it from the north and northeast. Somali Regional State from east and southeast borders it.

The altitude of the zone generally decreases from the north to the south and from east to west (ORDPB, 1998). According to this document 62.5% of the zone has an altitude below 1500m above sea level. This includes lowland districts such as Liben, Moyale, Dire, Arero,

Teltelle, Odo Shakiso, Galana Abaya and part of Yabelo. The rest is located above 1500m above sea level. This study was conducted in Dire and Yabelo districts of Borana. Didahara is in yabelo district while Gayo is in Dire.

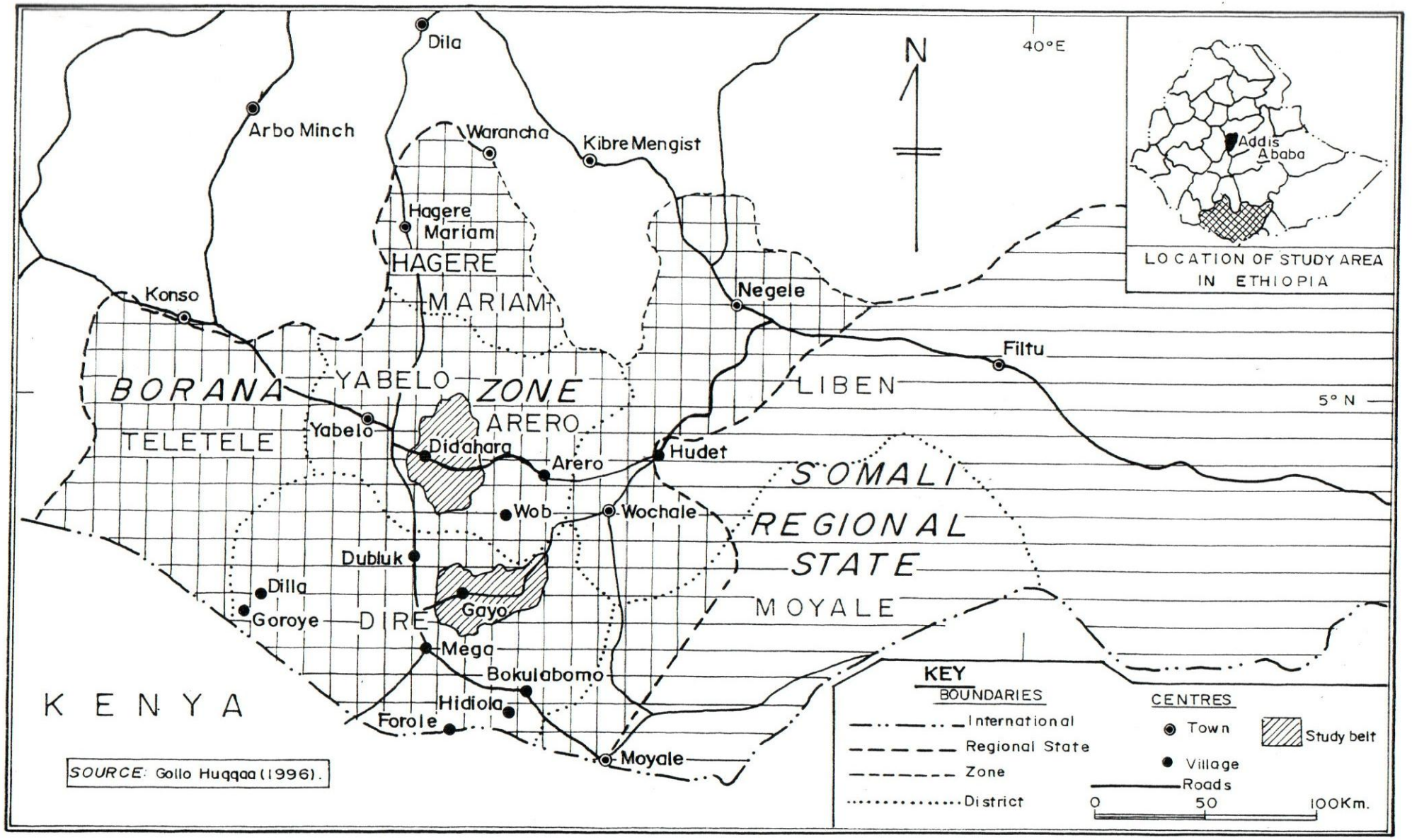


Fig. 1: Geographical Location of Study Area.

1.5.2 Soil and Land Use

Soil is one of the natural resources of paramount importance to man. According to ORDPB (1998), 12 soil types are identified in the Borana administrative zone. Of these, chromic and orthic luvisols make 29.65%, orthic acrisols 14.73%, calcaricand eutric fluvisols 12.63%, chromic eutric and calcic cambisols cover 8.5% of the zone. Most of the soils are largely of poor quality for sustainable development of crop production and irrigation purposes (ORDPB, 1998).

Only 3.4% of the land is moderately cultivated under rainfed peasant cultivation of grains. High forests are found in the northern highland districts and cover 3.5% of the zonal area. The woodland area covers 2.5% of the zone while 34.4% of the zone is covered by bush and shrub vegetation. This includes the lowland districts and part of Hagere Mariam. The rest (51%) of the zone is covered by open bush shrub or wooded grassland (ORDPB, 1998). The above figures indicate that more than 85% of the zone is suitable only for pastoral production system.

1.5.3 Climate

The Borana Zone climate varies from arid to humid temperate lands and from hot lowland to highland. The ORDPB (1998) classified the zone into four major climatic types. Arid and semi-arid climatic conditions characterize eastern and southwestern parts of the zone, comprising 59.4% of the total area of the zone, with high temperature, and low and erratic rainfall. The second climatic type is classified as tropical climate, comprising 12% of the zone, with moderate temperatures of 15-20 degree Celsius and rainfall of over 680mm. The

warm temperate climate is the third climatic type. This covers 27% of the zone. The fourth climatic type covers the rest of the zonal area with more soil moisture and suitable climate for abundant forest cover. The six lowland districts (Yabelo, Liban, Arero, Moyale, Dire and Taltele) are found in arid and semi-arid climatic regions. The South part of Hagere Mariam district also experiences semi-arid climatic conditions.

1.5.4 Population Size and Distribution

Based on 1994 population and housing census of Ethiopia, the 1996/97 population of the zone was estimated to be 1,536,054 of which 90.54% were rural residents (ORDPB, 1998). Out of this, 50.9% were male while 49.1%were female. The population is unevenly distributed in the zone. The six highland districts, which constitute 27.65% of the total area of the zone, are inhabited by 71% of the total population. On the other hand, the lowland district with 72.4% of the total area of the zone supports only 29% of the total zonal population with sparse distribution. The discrepancy in the distribution of the population between the highland and lowland of the zone is the result of the difference in qualities of the physical environment and natural resource potential and their consequences on different economic activities.

1.5.5 Infrastructure Development and Social Services

Transportation plays an important role in enhancing economic development of any society. In Borana zone the only available means of transportation are road and air transport which started recently (ORDPB, 1998). However, there is no network of roads crossing one another and connecting different districts of the zone. The major road in the zone is asphalt

road that crosses Hagere Mariam, Yabelo, Dire and Moyale districts. It is part of the road that connects Addis Ababa to Nairobi. The gravel road is 597 km long. It reaches Negele, capital of the zone, after crossing Bore and Adola districts and then extends from Negele to Mega. These are the two types of all weather roads in the zone. Generally roads are poorly developed in the zone. Air transport is available at Negele airport, capital of the zone twice week.

The role of postal services in facilitating domestic and international information exchange is vital. Its importance in the rural areas where electronic communication is more difficult is unquestionable. In Borana zone, out of the 12 districts, Teltelle, Uraga, Arero and Galana Abaya districts do not have postal services. The rest of the districts have postal services even though not satisfactory. While the four districts named above have no any kind of telecommunication service the rest have the no telecommunication service, located at respective district towns.

Electricity is provided by Ethiopian Electric Light and Power Authority to Negele, Moyale, Adola, Bore and Shakiso towns. The rest of the towns either get irregular power supply from their respective municipalities or do not have access to power at all. Concerning bank services, only 7 towns out of the 12-district towns have branches of the Commercial Bank of Ethiopia.

1.5.6 Relevance of the Study Area to the Research

The study area is characterized by arid and semi-arid climates. The soil characteristics and erratic nature of rainfall are more suitable to extensive and mobile pastoral production system than settled agriculture. The absence of infrastructure combined with the sparse population make resource and risk management difficult for the formal institutions that lack the knowledge of the local conditions and facilities. This is why the indigenous institutions are more relevant to society than the formal government institutions. As a result, the study area provides an ideal situation to study the roles indigenous institutions play in resource and risk management.

CHAPTER TWO

LITERATURE REVIEW

2.1 Preamble

Pastoral risks

These are calamities through which pastoral households or groups will lose their access to or control over the resources from which they derive benefits. These risks include drought, famine, theft or cattle rustling, ethnic conflict, lack of market for their livestock and livestock diseases.

Indigenous institutions

Institutions are regulatory systems of formal laws, informal conventions and norms of behavior. According to Berkes (1989), institutional arrangements are defined as the rules and conventions, which establish peoples' relationship to resources, translating interests into claims and claims into property rights. According to Jentoft (1997) institutions are defined as bodies which consist of cognitive, normative and regulatory structures and activities that provide stability and meaning to social behavior.

Swift (1996) on the other hand, defined institutions in pastoral societies as "those which exist without comprehensive formal recognition by the modern state; they are the habitual ways, not established in written law in which a pastoral society manages its every day affairs. "

The Borana indigenous institutions that were main focus of this research are the gada system and resource management councils, which are indigenous to the Borana pastoralists. This definition is in line with Swift's definition of pastoral institutions.

Resources

A resource is any continuation of economically, socially and culturally useful supplies of natural, cultural and human commodities that can be utilized for the benefit of the society (Rees, 1990). The most important resources that the Borana pastoralists depend on and use communally are grazing and water resources. The clear management system is also available for these two resources.

Resource management

Resource management involves control on the amount, timing, quality and availability of the resources. Resource management should aim at enhancing environmental quality. Utilization of resources over time in a given community should employ a technology that is consistent with the political and social institutions at the time (Ibid.).

Pastoral Household

Swift (1988) defined pastoral household as one in which at least half of the household gross revenue comes from livestock or livestock-related activities. Similarly, Fowler and Moorehead (1992) defined pastoralists as producers who derive over 50% of their household gross revenue (the total value of marketed production plus the estimated value of subsistence production consumed within the household) from livestock or related activities. In both cases, the basic idea is the dependence of producers on livestock for their

subsistence. Producers depend on natural pastures for their livestock feed and production in an uncertain environment. Borana pastoralists also derive their livelihood from livestock and livestock products. They are also involved in other activities such as cultivation, and wage labor.

2.2 Water Management

Water is a scarce resource in Borana zone of southern Ethiopia. The principal sources of water in the zone are wells (Mengistu, 1998; Bush, 1995,). A Well Council carries out the overall management of wells appoints *abba hirega*[1] (father of the watering order) who ensures controlled use of water by herders, thereby maintaining "peace of Borana" (Oba, 1998; Bush, 1995; Helland, 1980; Mengistu, 1998). Mengistu (1998) argues that the rules and regulations for different sources of water are also different.

Floodwater is free for everybody. However, Helland (1980) observed that priority of use is given to *warra* (home based lactating and weak animals), and neighbors. Water from ponds, called *haro*, is regulated much more than flood water and needs fencing thorny bushes and regular upkeep and maintenance (Mengistu, 1998, Helland, 1980).

Wells require more care and regulation of use rights. Helland (1980) argues that control of utilization and maintenance of wells is the concern of all Borana. Ownership and access to wells are complex. Every well belongs to a clan who identifies *abba ella*, father of the well. According to Mengistu (1998), there is an inherited relationship between *abba ella* and his well caretaker, called *Konfi*. The *Konfi* is an inherited title and responsibility for

[1] The vernacular names are explained in the Glossary in Appendix 1.

the wells can be transferred to the caretaker if the father of the well is not present. The clan elders called *jarsa gosa* keep the holder of the *konfi* under constant scrutiny (Mengistu, 1998). A Borana customary rule, *aadaa seera Borana*, is the guideline for this. The daily routine at the well and the allocation of watering orders and rights are supervised by *abba hirega*, father of watering order. Access to water, especially the wells, means indirect access to pasture. Controlling water access means indirectly controlling access to pasture because the wells and pastures are under the control of Borana local institutions (Mengistu, 1998). Bassi (1997) shows that Borana management system mainly controls and regulates ownership of and access to permanent water points especially wells, rather than the pastures themselves. However, following development efforts by government and non-governmental organizations, this effective management system is changing (Kassa, 2000). No specific clan controls the water sources developed by these organizations, and people who might otherwise be excluded from community resources as punishment for their wrongdoing have free access to these water points. This aggravates misuse of resources and overgrazing (Kassa, 2000).

2.3 Herd Management

In respect to Borana herd management system, the head of the household is responsible for decision-making. Even though a single family or household is regarded as the basic unit for livestock ownership and production, most of the management is done cooperatively with the *olla* (encampment) which comprises 10-30 related households (Mengistu, 1998). Herd splitting is the common practice in Borana herd management system. The first division is home based, *warra*, which mainly comprises lactating cows, other weak and sick animals

(Coppock, 1994; Mengistu, 1998; Bush, 1995). They are kept near the homestead and brought back home for milking and are kept in enclosure during the night. The second division is the satellite herd called *forra,* comprising dry cows, bulls and other strong animals (Coppock, 1994; Mengistu, 1998; Bush, 1995). The splitting of herds require labor allocation in a family to different livestock management activities. The *warra* herds always have priority over the *forra* herds regarding both access to water and pasture (Bassi, 1997).

Children and young men predominantly carry out the herding. Young children usually keep small stocks and *warra* herds while young men or older boys often tend *forra* herds. Herding in *forra* camp relatively requires more labor and mobility. Therefore, strong family members especially boys are involved (Coppock, 1994; Mengistu, 1998).

A related issue in Borana herding system is the watering. This is a labor-intensive work and is carried out cooperatively by herders. Most of the wells which are the only source of water in dry seasons, are deep and require10-40 people to operate (Mengistu, 1998). The men form a line to pass the water up in small baskets from the deep well (Helland, 1980). As a result, herd owners must allocate labor and cooperate to water individual herds.

2.4 Pastoral Risks

Pastoralists face many risks and utilize the different strategies to cope with the risks (Swallow, 1994). Desta (1999) indicates pastoralism as high return and high-risk business. This goes to show that the environment in which they operate is highly uncertain. They mostly depend on the factors beyond their control. When rainfall is sufficient and pasture

and water are available as required, the business is attractive. When there is drought the business shrinks fast. According to Swallow (1994), pastoralists face three major types of risks, namely environmental risks, property risks, and market risks. Environmental risks include rainfall failure, drought, temperature changes, conflict with wildlife, livestock and crop diseases. Pastoralists face property risks affecting their animals as a result of severe environmental conditions such as drought, lightning, diseases, theft, loss of access and/or control to grazing areas by absentee herd owners, commercial ranchers, wildlife conservation and small holder agriculturists (Lane, 1991). Variability in the prices of inputs, outputs and consumer goods create market risks. Lack of quality or competence of the livestock in the market, change in market prices, and variation in market conditions are some of the market risks pastoralists face.

To manage those risks, pastoralists employ different strategies that have evolved over a long period of time. These include mobility, herd accumulation, herd species diversification and wealth redistribution or resource sharing after drought or any other calamities. Activity and income diversification and labor employment are also used to some extent. According to Helland (1997) the Borana pastoralists have the helping mechanisms that vary from voluntary mutual assistance between two parties to the clan based obligatory assistance. The voluntary resource sharing include food sharing (milk, meat and crop, temporary loan of milking animals) and the obligatory resource sharing is clan restocking by contributing reproductive animals. The most popular form of voluntary assistance is called *dabar*e, the mechanism of distributing milking animals from the relatively self-sufficient family to the needy. It is also a kind of risk spreading over the geographical area for the giver family.

The obligatory clan assistance is known as *busa gonofa*. This is the restocking mechanism to assist the clan members who have lost their herds in natural calamity such as drought, diseases etc. However, strategies like mobility, resource sharing and accumulation of wealth are not as effective as they used to be. Clan leaders can not force the people to contribute and poverty has affected almost all pastoralists.

2.5 Borana Socio-Political Institutions

Borana are a branch of Oromo people whose language belongs to the Cushitic subfamily common to northeast Africa (Legesse, 1973). Most of the Oromo groups speak closely related dialects of Oromo language and share a common cultural heritage.

According to Legesse (1973), the Borana society is stratified into two distinct, but interwoven systems of peer group structure for males. One of these is age set (*hiriya*) in which members are recruited on the basis of age. Each set consists of similarly aged males born in the same eight-year period who share a corporate identity that evolves over their lifetimes (Coppock, 1994). Age sets take their timing from the *gada* (Borana socio-political institution), but have nothing to do with generation; very simply, all the male babies born between one *gadamojji*[2] ceremony and the next, are grouped into one set (Baxter, 1978). The members of each age set share a series of basic and collective military, economic, political and ritual duties, with a rite of passage occurring between stages.

According to Legesse (1973), the duties performed by different age sets are different. Accordingly, young boys are herders while young men are warriors and livestock raiders. Mature men who have served as warriors are eligible for herd ownership and marriage while older men assume ritual and political duties. The system prevents marginalization of any group since all the groups have the right to pass through all stages of the system. The question is, does this system work now a days? If it is not working, what is its implication on Borana resource base and resource management system?

The *gada* system on the other hand is the system in which males are recruited into generation classes (l*uba*) on the basis of genealogy (Legesse, 1973; Baxter, 1978; Coppock, 1994). The Borana *gada* system is a complex, elaborate and all embracing social institution, which is concerned with the relations within and between generations, but which more fundamentally is about how the Borana should live their lives (Helland, 1998; Kamara, 2000; Huqqaa, 1996). Helland (1998) also argues that the *gada* subsumes all other institutions such as institutions for natural resources management, council for resolution of conflicts and maintenance of peace and institutions for mutual assistance and redistribution of wealth in an integrated Borana worldview. It infuses these pragmatic institutions with authority and legitimacy, which they require to be effective. According to Helland (1998), it is hardly possible for these institutions to exist without the *gada.*

There are about eleven *gada* classes, which are in a perpetual state of being created every eight years. Thus the members of *luba* have a similar status of genealogical relatedness, but not necessarily a similarity in age, and they collectively pass through a series of *gada*

[2] This is the retirement ceremony that every father of gada passes through and takes place every eight years.

grades that lasts eight years in duration (Coppock, 1994; Baxter, 1978). All Borana males therefore have a position in age set and *gada* grades. They are simultaneously in the process of passing through a segment of the age set and a certain *gada* grade (Legesse, 1973; Coppock, 1994).

Females obtain an ancillary position in a *gada* grade through their fathers and later through their husbands, but have no position in the age sets. The reason why they are not direct participants and its implication on the social and economic life of the community is not clearly stated in any literature.

Regardless of the age of the father, his infant sons enter the grade system forty years (five grades) behind. The eleven-gada grades quoted from Baxter (1978), Coppock (1994), and Legesse (1973) are as follows:

1. ***Grade I*** (*dabballe*) includes all the sons born to men currently in power (grade VI). They have a feminine appearance in terms of hairstyle and dress.
2. ***Grade II*** called junior *gamme* includes children born to men in grade VII. This group is eligible to be herders of small ruminants and calves.
3. ***Grade III*** (senior *gamme*) includes 16 year old initiates from grade II who are old enough to herd cattle on *forra* and participate in hunting and raiding. Infants born to men in grade VIII make this group.
4. ***Grade IV*** and V (*kusa* and *raba*) include 24-year-old initiates from grade III who can be mature warriors or raiders. Junior *raba* after age 32 can marry. These two grades include sons born to men in grades IX and X.

5. ***Grade VI*** (*gada* grade) includes members who can be elected to the position of *gada* councilors. The initial age ranges of entry into this grade is from birth to 45 years and thus include infants born to men in final grade (XI). The senior elected members of the *gada* council act as upholders of the "peace of Boran" philosophy by serving as a Supreme Court members for conflict mitigation and as leaders for ritual prayers and sacrifice.
6. ***Grades VII*** through X cover 27 years and are collectively referred to as y*uba*. Men in grade VII also have important ritual and political duties in *gumi-gayu*, the assembly of multitude in Borana
7. ***Grade XI*** is the terminal and sacred grade and is called *gadamojji*. This grade is followed by full retirement.

At each stage of the grades there are some rules and regulations that govern the behavior of the members and define their duties and rights. To perform their obligations, there are restrictions generally imposed on members. Baxter (1978), Coppock (1994) and Legesse (1973) also explain these. Accordingly: (1) No man is allowed to father a child before the age of 40 years; (2). No man is allowed to marry before the age of 32 as indicated above and the two grades in the age ranges 24-32 and 32-40 are junior and senior warriors; (3) Junior men in *gada* grade (VI) are also not allowed to father children and senior men in this grade are allowed to father sons only. Legesse argues that there must be either infanticide or adoption systems practiced by the society if these rules are accurately to be observed.

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How the rules assisted in resource and risk management of the community and changes that have occurred to these rules will be the focus of this research, to see how the changes affect the resource and risk management of the community.

2.6 Religious Institution

The Borana follow indigenous religious beliefs. Islam and Christianity were introduced very recently (Coppock 1994). According to Borana elders, God sent down the two great *qallu* (religious leaders) and revealed in emblematic form, the basic values and institutions of Borana society, including the generation sets (Baxter, 1978). Each of the *qallu* is a ritual figurehead of one of the exogamous moieties (ibid.). *Qallu* is considered as their supreme spiritual leader, who taught the Borana how to sacrifice animals and instructed them in the "peace of Boran" or *nagaa Borana* (Coppock, 1994, Baxter, 1978). The peace of Borana consists not only of preventing internal strife and fostering active cooperation between men, but also maintaining proper relationships between men and God, so that the blessings from the latter, which are manifested particularly in rain and fertility of stock and women, continue to flow (Baxter, 1978). The importance of peace of Borana is also invoked in all aspects of collective decision making and shapes debates and consensus according to traditional values of wellbeing and law. It helps to ensure that internal disputes are settled in an egalitarian manner without violence. Criminals are punished through exclusion from public resources and payments of cattle as a fine for their wrongdoing (Coppock, 1994).

To the Oromo of which Borana pastoralists are part, the Supreme Being that they call *Waaqa* (God) is the creator of all things and the source of all life. *Waaqa* has appointed to

every being its place in a cosmic order of which He is a guardian (Asafa, 1993). Sin is simply breaking of this cosmic order. For this every individual is supposed to observe the rules and regulations of the community so that Waaqa will not punish him for the sins. Christianity and Islam have been introduced to the area. According to Huqqaa (1996) Borana introduced new rules during the 1996 gumi gayu assembly[3] to exclude the converts who have changed their names from Borana social security system. This means the converts should not change their name if they want to benefit from the Borana clan assistance.

Today, most of these rules and regulations do not seem to operate as effectively as they used to do. This research attempts to find out these changes and their concomitant effects.

2.7 Borana water and grazing management structures

The structures for grazing and water management among the Borana pastoralists are given in figure 2 below. The grassroots level of grazing management starts at the encampment level headed by the father of the encampment called *abba olla*. A number of encampments make *arada* and there is a council of elders called *Kora arada* at this level responsible for grazing management. The next higher body is *dheda* council. Resource use conflicts may be solved at lower levels or referred to the next structure. The final decision-maker above the *abba gada* is *gumi gayo*, the assembly of the multitude. Water management structure starts from *abba hirega* and goes up as shown in the structures given in figure 2. The resource use conflicts cases can be taken either to *abba gada* or *qallu* who are found near

[3]This is the assembly of the multitude in boran and is the law making organ

the settlement. (More explanation of these terms can be found in the glossary, in appendix I, adapted from Leus, 1995).

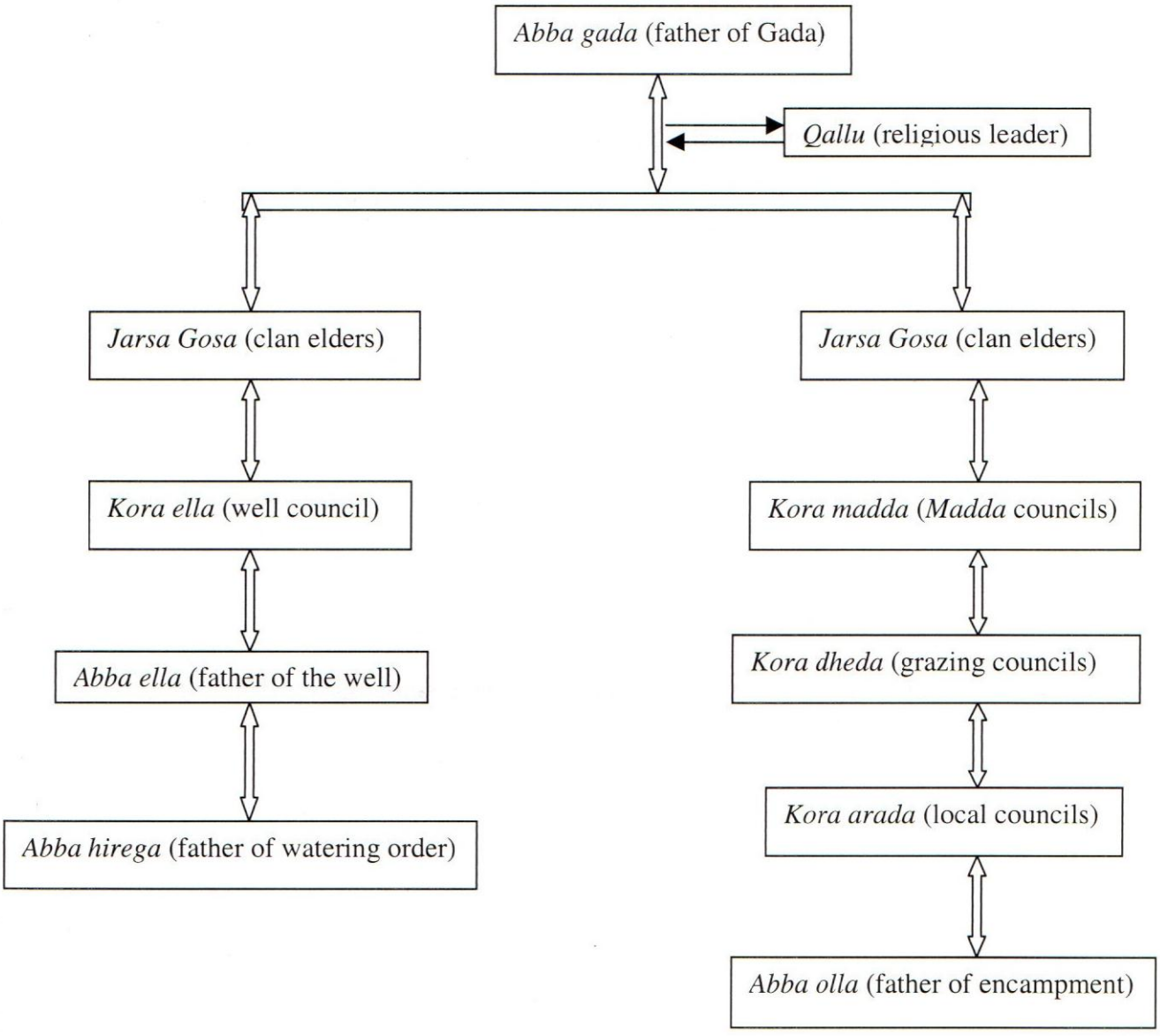


Figure 2. Borana water and grazing management structures

CHAPTER THREE

CONCEPTUAL FRAMEWORK

The conceptual framework for this study is based on specific objective 1 of the research, and so involves six interrelated factors in resource and risk management among the Borana pastoralists. These are: (1) indigenous institutions; (2) herd rebuilding and resource sharing among the society in times of and after crises, to rescue the affected members of the society; (3) access and use of grazing and water resources; (4) labor availability; (5) conflict resolution among resource users; and (6) risk management ability of the society (see fig. 3).

***Indigenous institutions*:** These include social, economic, and resource management institutions that exist in Borana. These are g*ada* system the all-inclusive, Borana belief systems and resource management councils. These different institutions are dependent on one another for the proper functioning of the system and the strength or the weakness one affects the other in the same direction.

Herd rebuilding: This is the redistribution of animals to restock pastoralists who have lost their herd in natural disasters such as drought. It is either giving milking cows on temporary bases or gifts for the recipient.

Change in access to grazing and water resources: Borana pastoralists have been using these resources communally. However, individual resource uses are becoming common. The pastoralists have started to appropriate the communal resources for private use. The

communal ownership is changing to private ownership. This change in access rights to resources restricts the movement of herds and effective use of common property resources (CPR) and has ecological and resource management implications. To measure the changes occurred to the resource tenure, cultivation, ownership of water points and owning grazing enclosure at individual level were used as indicators

Labor availability: Pastoral production is labor intensive. The decline of indigenous institutions will weaken the control mechanism the system has been using to control the younger members of the society and deploy labor for herding as the need arises. When the traditional values, belief systems and bond among family members weaken, the likelihood of young generations migrating to urban centers becomes high. This affects the labor available or herding especially the mobile way of herding. The number of family members available at a pastoral area measured this phenomenon.

Conflict resolution: The decline of indigenous institutions is also assumed to contribute to the conflicts among resource users in pastoral areas. Conflict may take place between clan members or between different clans and ethnic groups. It has negative impacts on the resource and risk management of pastoralists. The respondents were asked to score how serious the conflict is in their local area.

Risk management: pastoralists use different strategies to mitigate the risks of loosing their property to different natural disasters such as drought. Risk management ability of the

household in this research is measured using indicators such as wealth the individual could maintain, and herd accumulation.

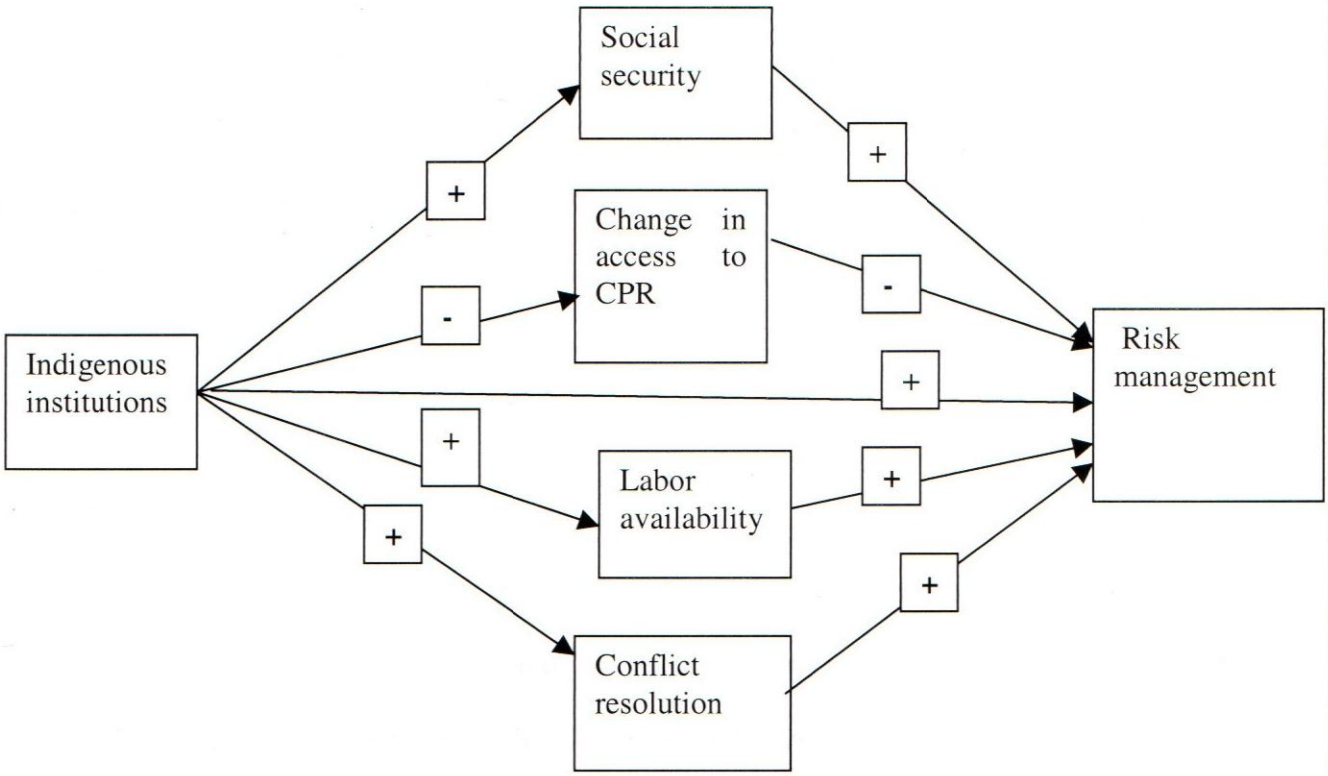


Figure 3. Conceptual Model (developed for this study)

The positive signs show the complementary relationships between the two variables in the direction of the arrow. For instance, the model indicates a positive relationship between indigenous institutions and risk management, implying that the stronger or the more effective the indigenous institutions, the higher the ability for the household/community to manage risks.

Other relationships are those that exist between labor availability and risk management. The positive sign shows that the more the labor available, the better the pastoralists' ability to manage risks.

CHAPTER FOUR

METHODOLOGY

4.1 Data Collection Methods

For the purpose of this research, both primary and secondary data sources have been used. The secondary data were collected from books, journals, and other research publications related to pastoralism and pastoral institutions. Libraries at Egerton University, Addis Ababa University, regional and federal government offices of Ethiopia, and research institutions have been used to access the publications.

4.2 Research Design

Primary data were collected through sociological survey method using a structured questionnaire that was administered to the selected households. The unit of analysis for the sociological survey is the household. The structured questionnaire that contained both open and close-ended questions for survey (Appendix II) was pretested to ensure validity and reliability. Two Borana young men assisted the researcher in conducting the interviews.

4.3 Focus Group Discussions and Key Informants Interviews

Two focus group discussions were conducted to collect information on how the Borana institutions have been operating in resource and risk management, how effective they are and on the changes of resource use patterns. The groups were also asked to predict the future of these institutions and propose solutions to the problems that have been identified. Six individuals participated in each group discussion. They were selected based on their

unique but common knowledge of the community. Questions that helped as a guideline were structured and used. This method was used to supplement the questionnaire survey especially in addressing objectives 1(a, d) and 2. Key informants' interview and group discussion guidelines are presented in appendices III an IV respectively.

Ten Borana elders, five from Didahara and five from Gayo sites were selected and interviewed as key informants to complement the above mentioned methods. The knowledge of the respondent about the community, age, duration at the area as a resident and positions in the local administrative and religious institutions were used as the main criteria for selection of the respondents. In addition, the current and retired a*bba gadas* (father of gada) and *qallu* (Borana religious leaders) were interviewed to complement the information from survey and group discussions.

4.4 Sampling Procedures

For the survey, after selecting the two research sites (Didahara and Gayo), the individual households were selected through simple random sampling technique. Households beyond 12kms radius from the center of the pastoral associations, where the researcher was based, were excluded from the sampling frame. The exclusion was necessary because of transport problems. A sample size of 100 households, 50 from each site were randomly selected and interviewed using the structured questionnaire.

Sample size determination

The sample size for this research was determined based on the formula given by Nassiuma (2000), and Kaewsonthi and Harding (1992). According to the authors sample size can be drawn either with replacement or without replacement. When it is drawn with replacement, the formula is given as

$$n' = \frac{Z_{\alpha/2}}{d^2} P(1-P)$$

Where n' is the desired sample size

z= confidence interval (95%)

p= the variability of the characteristic to be measured

When there is no reasonable estimate for p, p=.5 is recommended

d= the level of accuracy(10%) for this case

by substitution n'=96

When the sample is drawn without replacement, the formula is given as follows:

$$n = \frac{n'N}{N-1+n'}$$

Where n is the desired sample size

N =the population estimate (1400 for this research)

Substituting the above

96*1400/1400-1+96= 90, which is the required sample size.

Assuming 10% contingency (90+10), a sample size of 100 was taken from 1400 households. Thus, 50 households were taken from each of the two sites.

Specific research sites

Of the two sites Didahara had experienced more external development interventions, and is considered culturally and institutionally less intact. Didahara, 30kms away from Yabelo town was the first site selected.

Gayo was the second research site selected. It is about 115kms away from Yabelo town and 40km from Mega, district town of Dire. Gayo is considered as the heartland of Borana. Some elderly people including the most senior *abba gada (*father of g*ada*) say that Gayo is the nucleus of Borana culture and has less external development intervention compared to other places in Borana. It is also the place where gumi-gayo (assembly of the multitudes) takes place every eight years. It is difficult to find the Borana pastoral system that is not affected by external interventions. But it is possible to find places that are relatively less affected.

The above two sites were selected to compare the extent that the traditional indigenous institutions are operating in resource and risk management.

4.5 Data Analysis

Data analysis involved both qualitative and quantitative analyses. Qualitative analysis was used for the data collected using key informants and focus group discussions. This was based on narrative description.

The quantitative analysis applied descriptive and analytical procedures. The data collected from the field, using questionnaire was coded and entered into computer for analysis. Statistical Package for the Social Sciences (SPSS) computer program was used in the analysis. In the descriptive analysis, frequency distributions, means and standard deviation have been applied. In analytical procedures, Chi-square analysis was used to address objective number one, to determine relationships between the dependent variable and each of the independent and intervening variables. Regression and correlation analyses were used for triangulation purpose. Questions were constructed for some of the variables based on the Likert scale(Bryman and Cramer, 1997) and scored appropriately. For some variables, indexes were constructed to fit them into the analyses. This procedure helped to apply the variables into regression and correlation analyses.

CHAPTER FIVE

RESULTS AND DISCUSSIONS

The thesis results and discussion are presented here to reflect on the seven research questions listed in section 1.3 of this thesis. These will be preceded by the socio-economic characteristics of the respondents. The research questions address the two objectives of this study.

Thus the following eight sections are presented in this chapter:

(1) Socio-economic characteristics of the respondents;

(2) influence of the local indigenous institutions on the definition of access and use of grazing and water resources as means of resource and risk management;

(3) influence of the local indigenous institutions on conflict resolution mechanism among Borana pastoralists;

(4) influence of local indigenous institutions on herd building after crash as means of risk management among the Borana pastoralists;

(5) influence of local indigenous institutions on the availability of labor for herd management as a means of risk management among Borana pastoralists;

(6) the changes that have occurred to indigenous institutions, and their implications on demographic, social, and risk and resource management systems of the society;

(7) discrepancies between indigenous resource management systems and that conventional government sponsored pastoral associations;

(8) the role of the emerging institutions in pastoral development, vis-à-vis the *gada* system.

5.1 Socioeconomic Characteristics of the Respondents

The socioeconomic characteristics of the respondents are presented and discussed below. These include gender, wealth status, family size, level of education, and religious affiliation of the respondents.

5.1.1 Gender

Out of the one hundred-sample size, 86 percent of the respondents were headed by males and 14 percent were headed by females. At both sites the samples were drawn within a 12km radius from the center of Pastoral Associations where the researcher was commuting to the encampment (*ollas*). All of the females in the sample were widows. The big age difference at marriage is the main contributing factor to the high number of widows. In Borana marriage is for life and separation or divorce are difficult if not impossible. The 86 male respondents are married at least to one and at most to three wives.

5.1.2 Wealth

Respondents were asked to rank their wealth status based on their livestock holding per household. Accordingly, 5%, 42% and 53% were found to be wealthy, moderately wealthy, and poor respectively. Majority of the wealthy respondents were male (86%) while majority (85%) of the moderately wealthy class were male and majority of the poor category were male. The wealth status of female headed household constitutes 7.1% wealthy, 42.9% moderately wealthy and 50% poor households.

The common perception that wealth status among pastoralists is dependent on gender of the household (hh) head has been disapproved by this study. This might be because of the following reasons: (1) The effect of the drought on herd has affected both sexes, and so reduced the wealth difference, or (2) the widows could have maintained the wealth of their husbands. An attempt was made to compare the wealth category across the sites. Accordingly, 4%, 48% and 48% were wealthy, moderate and poor respectively for Didahara, and, 6%, 36% and 58% were wealthy, middle and poor respectively for Gayo. Of the total respondents 5%, 47% and 53% were wealthy, moderate and poor respectively. This implies that the current poverty level among the Borana is high.

5.1.3 Family Size

The overall family sizes of the respondents ranged from two to eighteen with a mean of 7.82 people in the household and a 4.06 standard deviation. The wealthy households had a mean family size of 8.8 with a standard deviation of 7.26. The middle class respondents had a mean family size of 8.55 with standard deviation of 4.6 while mean family size for the poor was 7.15 with 3.1 standard deviation. The mean family size for male respondent was 8.14 with 4.22 standard deviation while the mean female headed family size is 5.86 with 1.99 standard deviation. The mean family size of the female-headed household was less than that of the male-headed households with minimum variation for the female headed households.

5.1.4 Education

Ninety five percent of the respondents had never been to school while the remaining 5% of the respondents were school dropouts. The highest level of education reached was grade five. All of the respondents who had been to school were male.

5.1.5 Religious Affiliation

As for the religious affiliation, 98% of the respondents followed the local traditional religion, whereas 2% were Muslims. The respondents expressed concern about their children being converted to other religion in schools. After conversion such youth were not obedient to the local rules that also involved many rituals.

Table 1. Demographic and Socioeconomic Characteristics

Characteristics	Description	Frequencies	%
Gender of the hh head as one of the characteristics	Male	86	86
	Female	14	14
Wealth status of the respondent	Wealthy	5	5
	Moderately wealthy	42	42
	Poor	53	53
Education	Never been to school	95	95
	Has been to school	5	5
Religion	Follow traditional rel.	98	98
	Follow Islam	2	2

Source: This study, 2002

Table 2. Family Size by Wealth and Sex

	Wealth category	Mean	Standard deviation
Mean family size by wealth category	Wealthy	8.80	7.26
	Moderately wealthy	8.55	4.60
	Poor	7.15	3.10
Family size by sex of the household head	Male	8.14	4.20
	Female	5.86	1.99

Source: This study, 2002

5.1.6 Summary of the socioeconomic characteristics

From the above results, women headed 14% of the households. These were widows. Illiteracy level was quite high in the study area with 95% of the household heads having no formal education. Their mobile way of life and absence of mobile schools in the area contributed to the problem. A high proportion (98%) were followers of the indigenous religion. This showed that the Borana pastoralists still had a strong inclination towards indigenous institutions. The poverty level was high in the study area, as 53% of the household were in the poor category. Livestock mortality due to drought left them with no alternative sources of income to restock, and hence succumbing to poverty.

5.2 Influence of the Local Indigenous Institutions on Access and use of Grazing and Water Resources and Risk Management

This section discusses the roles that the indigenous institutions play in water and grazing management and changes that have occurred to communal ownership in terms of private water tanks, grazing reserves, and cultivation. Mobility as a traditional risk management strategy is also discussed. Finally, relationships among indigenous institutions, change to communal ownership and risk management were tested using crosstabs, chi-square and correlation analyses.

5.2.1 Water Management

There are three different sources of water in Borana with different use rights and management systems. These are classified as occasional sources, temporary sources and wells (Helland 1980). The classifications are based on the types of rights regulating the access and use, and degree of reliability of the particular source. The rights to a given source are positively related to the reliability of the source. The three kinds of water sources and their management system are discussed below based on information from group discussions and key informants' interview.

***Dambala*:** This is floodwater available during and immediately after rains. It can be used for animal and human use. There is no strict rule to control it. The use is proximity based and not priority to use. Water is supplied on the basis of first come first served principle. According to key informants and the result of focus group discussions, nobody is allowed to use other water sources until the *dambala* water is finished. This is to minimize water wastage. Since it is surface water that is exposed to evaporation it should be used first.

***Haro*:** This is a water pond constructed on flood catching site and fenced to protect it from misuse and pollution. It has its owner who scratches the ground first for digging and an official of watering order called *abba hirega.* As long as *dambala* water is available, pond will not be open for use. During watering, to void contamination and extravagant use of water, they construct meri[4], watering trough. Users have the obligation to fence, clean and

maintain the pond (group discussions). It is used by adjacent *ollas* called *reera*. Its use is not clan based. However, any person in the Borana land can use according to the rules set by the host community.

Ella: Wells are the most reliable source and the most controlled in Borana. They are mostly used in dry seasons for both human and animal requirement. As indicated in the literature part of this paper, wells are owned and used at clan level. But there is an individual owner for each well, the man who scratches the ground first. There is also father of the watering order, *abba hirega* to each well. The responsibilities of father of the watering order include coordinating people to fence, clean and maintain the wells, and arrange and supervise the watering order. The decision to dig up new well is made at clan level. This decision includes the heads of cattle will be required, how to go about, who will provide heads of cattle to slaughter and so on. After the decision, the actual work starts at a selected place assumed to have water. Sometimes an individual can start digging and then report to the clan. This individual will be the owner of the well. The order of slaughtering an animal will influence the watering order for the first and second persons. It is impossible to arrange the watering order for all people based on the order of animals slaughtered because of the large number of animals required to excavate a single well. As a result the watering order will depend on seniority (*angafumma*) which considers both generation and age, giving more importance to generation seniority.

[4] Meri is a hedge or fence of trees and branches around the edge of the water pond which makes a kind of trough for the animals to drink from and it prevents them from entering and destroying the pond.

If the water is getting scarce, then the most junior members of the clan will move far in search of water. The watering day depends on availability of water. When there is shortage of water, cattle are watered every third day. Each of these three watering days has its own *abba oba*, the father of the watering day. Accordingly, the owner of the well will be the father of the watering day on the first day. On this day, next father of the watering day, person who has respectful relation ship with the owner will water his animals. This is called *sunsuma*. The source of this respectful relation is complicated and requires more research. Next to *sunsuma,* in-laws of the owner will water their animals.

On the second day, the man who slaughtered animal after the owner during the excavation will be the father of the watering day of the second day and water his animals first. The second place on this day is for clan leaders, *hayu*. On the third day, the third person to slaughter an animal for the labor force during the excavation will take the position of the father of the watering day. The rest of the clan members will be allocated on the three watering days based on their seniority irrespective of the order in which they slaughter animals. *Qallu* (religious leader) and *abba gada* are given second place wherever they are. However, if *qallu* and *abba gada* happen at the same water point, then *qallu* will take priority. *Qallu* is a religious leader and considered close to *Waaqa*. In the event of death of a Borana family member, priority will be given to the herds of the mourning family for three days. This family is not required to send labor for watering. The clan members do it. There is priority in watering the animals. Calves and equine are given the first place. They are also watered every day. Next to them, *warra* (home based) herds will be watered because they include milking cows, weak and sick animals that need to travel to the

homestead. The third place is for dry herds that stay away from home. Small stocks can drink simultaneously with the dry herds but have their separate trough. Camels are given the last priority.

The cash economy has been introduced to the excavation of wells. Previously Borana used to slaughter even more than 200 heads of cattle to excavate a single well. Currently they have started to sell the animals either to buy food to use during the digging up of the well or use the money to hire labor for digging the well. This way, they can excavate a well using 30-50 heads of cattle (group discussion at Gayo).

The excavation of traditional wells requires thorough investigation of water availability and the skill for digging. Wells are designed to allow animal access to the watering trough called *naniga*[5]. The animals access this point through a long pass made by cutting the ground. This is called *dargula*[6], including the space around n*aniga*. If the well is very deep, then the Borana Oromo devise another mechanism to make it easy to get the water. This is by preparing *facana*[7]

5.2.2 Grazing Management

Grazing management in Borana is based on cumulative knowledge of the range resources, assessments and distribution of rainfall. In Borana the year is divided into two rainy and two dry seasons.

[5] It is a canal for watering animals with water that comes either from facana or directly from the deep well.
[6] It is the entrance of the well and an excavated basin at the well head.

According to Oba (1998) 60-70% of the annual rainfall is expected during *ganna* (march-may) and 30-40% during the *hagaya* (October-November). The interim cool season between *ganna* and *hagaya* is called *hadolessa.* The *hagaya* season is followed by a long dry season called *bona hagaya (*December-March).

The grazing lands are divided into dry and wet season grazing areas based on the above seasons. Because of water scarcity a large portion of the land is classified as a wet season grazing area, even though the trend is changing due to development of water points everywhere. The lands near the permanent water points especially wells are reserved as dry season grazing lands. During the long dry seasons or droughts, the areas are overstocked and overgrazing follows.

Access to grazing land is gained by virtue of being Borana. Any Borana has the right to graze his animals anywhere in Boranaland, but should observe the local resource use rules and regulations that might be specific to the area in addition to the general resource use customary laws of Borana. Land is a common property, at least concerning use right. However, the current division of Boranalands into "*ganta* and *qatana*", which are lower than the Pastoral Association (PA) in the government administration system, have put this free movement in question. Grazing management is a territorial based practice that starts from encampment (*olla*) level and goes to the highest territorial division called *madda.* There are intermediate territorial divisions such as *arada* and *dheda. Madda* has water as

[7] Facana is the hole dug near the well. When the water is first taken from the well it is poured into the facana. It helps to cut short the line of men required to get the water from the deep well.

well as pasture. It is self-contained resource management unit. Except *madda* other territorial resource management units may or may not be self-sufficient in terms of water and grazing resources. The main difference comes in having permanent water points. Every territorial unit has its own resource management council. Accordingly, there is *Kora dheda* (grazing council at *dheda* level) and *Kora arada* (*arada* council). Elders and clan leaders, *hay*u, head the councils. The legitimacy of the power of *hayu* is all over Borana territory. According to Bassi (1996), the local leaders acquire the legitimate power from their positions in the two Borana institutions (*qallu* and *gada).*

The smallest unit, encampment (*olla*), has its own leader called *abba olla*. The *abba olla* will represent his encampment (*olla*) in the higher levels of the management system especially *arada* meeting and reporting the results to the encampment members. He is the most respected person in the encampment and the first person to appeal to. He is the one to mobilize his village for any cooperative work required at *olla* or higher territorial units. Such work includes fencing of grazing enclosures, and fencing and maintenance of ponds etc. the issues that can not be solved at *madda* level will be referred to the *gada* council. According to my key informants, the *gada* council had selected groups of people to punish criminals. There was death penalty in Borana system even before the colonization of Borana Oromo by Abysinian army in 1897. It was repealed by the colonial rule of Minelik the II. The severe penalty after death is exclusion from resource use or payment of 30 heads of cattle. Even though the Borana system is clan based rather than territorial, the territorial aspect is becoming more dominant. The structure for the resource management is given in Figure 2.

Some problems of resource management

The traditional rules and regulations of resource use have been losing their importance from time to time. The development interventions that introduced individual ownership of water have a tremendous effect on grazing management. In the Borana system, the main control system is water point rather than grazing land. People who have developed their own water points have now more power than others do and access the resources. The clan leaders are also losing their fairness and authenticity. The wealthy people influence them using their economic power. Corruption is now becoming commonplace among the local leaders. This is in terms of local drinks and nepotism. Clan leaders allow some people to settle at wrong places or use the resource without the agreement of the society.

5.2.3 Changes to Access and use of Water and Grazing Resources

Being Borana was a sufficient condition if not necessary to get access to pasture and water. With the decline of the productivity of the range resources and development intervention by governmental and non-governmental organizations, many changes have been taking place in the way common property resources have been managed and used. At the beginning *kalo*[8] was started as group enclosure for calves. Still the most popular form of enclosure is in-group that comprises two or more adjacent settlements. However, immigrants from other areas can use the reserve grass according to the rules set by the host community. For example, according to group discussion with key informants, if the community has reserved the grass for calves below the age of one year, then the immigrants can not graze with other

[8] Reserved grass for calves and other weak and sick animals for dry season grazing.

species or calves above the specified age. The Borana pastoralists learned enclosing pasture as a reserve for dry season from the agro-pastoral Guji group (Helland, 1998). Currently a new form of enclosure has been introduced. This is closely related with the ownership of private water points and cultivable lands. The privately owned water points are cisterns developed by the rich pastoralists with the assistance of NGOs operating in the area. People who own these water points fence them in the pretext of keeping the catchment clean. In the process, they enclose large pieces of land and use the pasture privately. As indicated by Helland (2002), the introduction of cement-lined water tanks in the Borana rangelands has stimulated private investment by rich herd-owners in water development. Security of tenure and protection of the catchment areas feeding the tanks encourage the owners to fence the area. As a result, large parts of the free ranges of Borana are being removed from common access. There is another undeclared form of reserved grass ownership. This is by fencing lands surrounding the cultivated land and using them privately. Enclosing the grazing land is mostly in a group except for those around private water points and croplands.

Table 3. Change from Communal use of resource to Individualistic use

Site	Resources adopted at individual level	# of HHs adopted	Min. # of years adopted	Max. # of years adopted	Mean years	Std.
Didahara	Grazing reserve	48(96%)	1	32	19.52	8.50
	Water point	28(56%)	4	11	6.68	2.02
Gayo	Grazing reserve	39(78)	1	25	8.02	6.83
	Water point	2(4%)	3	4	3.50	0.71

Source: This study, 2002

As shown in Table 3, the intensity of the grazing reserve (*Kalo*) is higher at Didahara than at Gayo. There is a great difference between the means of the two sites; Didahara being the higher. The average year grazing reserve established at Didahara is 19.52 years with a standard deviation of 8.5 whereas the mean years grazing reserve established at Gayo is 6.68 with a 2.02 standard deviation. This shows that grazing reserve has a relatively long history in the first site. Didahara is relatively closer to town. It is also closer to Guji where they learned the idea of enclosing pasture. Concerning the ownership of private water points the difference between the two sites might be because of the following two reasons. The first one is that Didahara has been host to many NGOs that have been working on water development. The role of Cooperative Assistance and Relief Everywhere (CARE Borana) was big in the development of water points at individual level. This organization gives subsidy to pastoralists who want to develop their own water points. The second possible reason is the difference of the two sites in terms of water availability. Didahara is devoid of any permanent source of water whereas Gayo is relatively the most blessed area with deep wells. As a result, there may not be incentives for Gayo residents to construct cisterns.

At Didahara 96% of the respondents have either group or private grazing reserve whereas at Gayo, only 56% of the respondents have either of the reserve. The trend shows that the older the enclosure the higher the number of people who enclose the pasture. This combined with the shrinking grazing lands because of bush encroachments and annexation is becoming a great threat to access common property resources stunting mobility. It is also

attracting a number of people and livestock and encouraging permanent settlements. This in turn has its impact on the environment.

5.2.4 Cultivation

The Borana had considered cultivation inferior to pastoralism for a long period of time. The elders say that livestock keeping has been the best production system for the Borana. The trend has been changing from time to time since the occupation of Boranaland by Minelik army in 1897. However, cultivation was intensified after the demise of the feudal system in 1974. According to key informants, the following reasons have forced them to cultivate.

Droughts have affected the number of cattle owned per household and hence milk production. As a result, the viability of pastoral production and its capacity to feed the family has declined. The fluctuation of cattle and crop prices, the fast response of cultivation after drought, poverty and hardship of long distance travelling to buy food are some of the reasons that have forced them to cultivate. The Borana pastoral production could not help people who had lost their cattle in drought and they started cultivation as an alternative. At the same time they have learned the importance of cultivation to supplement the income from livestock. The means and standard deviations for years the individual household started cultivation and number of hectares cultivated are given in Table 4.

Table 4. Cultivation by Number of Years and Hectares

Site		# of households	Mini.	Maxi.	Mean	Std.
Didahara	Years cultivation started	43	1.0	30	15.26	8.68
	Hectares cultivated	43	0.3	5	1.06	0.92
Gayo	Years cultivation started	20	2.0	10	5.90	2.02
	Hectares cultivated	20	0.2	2	0.94	0.49

Source: This study, 2002

According to Table 4, 86%(43) of the Didahara respondents cultivate whereas 40%(20) of the Gayo respondents cultivate. There is also much difference between the means for the years' cultivation started. It can be observed from the Table that Didahara people are more involved in cultivation than the Gayo. This shows that there are more changes to the ways in which common property resources are used at Didahara. There is also a tendency to fence large tracts of land around the cultivated land. The cultivator uses this fenced area exclusively for grazing. Helland (2002) expresses his concern about the effect of fencing around the cultivated land on the access rights to common grazing areas. Fencing and claiming exclusive rights to the land is becoming increasingly common (Helland, 2002). There is a tendency of privatization that is not amicable with pastoralism. However, it is evident that cultivation is introduced as a coping mechanism to the multifaceted problems they are facing. Cultivation has an impact on the management of common property resources and legitimacy of indigenous institutions in resource and risk management since it advocates for private ownership contrary to pastoralism.

Cultivation takes place in valley bottoms. This area is also the most important place for pasture. As a result it competes with livestock production. It also curtails the routes of

mobility to grazing areas and water points. Even though cultivation has a positive contribution to enable the pastoralist to survive, its sustainability under the erratic and insufficient rainfall is doubtful.

5.2.5 Status of Mobility as Risk Management

Herd mobility is the main strategy used by pastoralists to manage risk and use the range resources communally and efficiently. Herd mobility takes two forms in the Borana pastoral system. The first one is mobility of the satellite herds called *forra*, which includes bulls and dry herds. The second form of mobility is the movement of the family and whole herds that occurs when there is acute drought or conflict. In both cases the respondents were asked to give their view on the future of mobility in general and the satellite herds in particular. The results are given in Tables 5 and 6. According to these results, 81% of the respondents said the distance the satellite herds move is decreasing. Only 19% said the distance is not decreasing. The respondents have given different reasons for the decline in the distance satellite herds move from the semi-permanent settlement in search of pasture and water. The reasons are given in Table 7. These include land annexation 47%, population growth and settlement 41%, ethnic conflict 23%, cultivation 9%, and other reasons 15%. These other reasons are division of Borana land into Pastoral Associations, absence of water and pasture in the remote *forra* areas, ranching and the declining trend of Borana customary laws to force the excess herds to move. The percentage is more than 100 because one respondent could speak of more than one reason that has contributed to the decline of the distance the herds move. Land annexation is closely related to the government regionalization policy that gave most part of Liban and Moyale districts to

Somali regional state. The long dry seasons and development of water points in most of the Boranalands have reduced the differences between the dry and wet season grazing areas.

Table 5. Perception of Change in Distances to Satellite Camps (Forra)

	Frequencies	%
Forra distance decreased	81	81
Not decreased	19	19
Total	100	100

Source: This study, 2002

Table 6 shows that 79% of the respondents said mobility in general is decreasing in Borana. There are a number of reasons that have contributed to the decline of mobility. According to Borana elders, mobility of herd and the whole family is compatible with a pure pastoral production system. However, the Borana have started cultivation. At the same time, they have started enrolling their children in the few schools available. Furthermore, there are few social services such as human and animal clinics that are not mobile. The solution for this was movement of part of the herds with few family members. This is declining because of the reasons indicated above.

Mobility has been the best method of risk management. It also has been the best way to utilize the range resources timely and efficiently. With the above constraints on the mobility, and absence of a viable alternative production system that can fit to the ecology of Borana, the crises that might affect the system could be serious.

Table 6. Perception of Change in Pastoral Mobility

Mobility	Frequencies	%
Decline	79	79
Continue with no change	17	17
Increases	4	4
Total	100	100

Source: This study, 2002

Table 7. Reasons for the Decline of Distance to Forra

Reasons	Frequencies	%
Land annexation	47	58.00
Population growth and settlement	41	50.62
Conflict	23	28.39
Cultivation	9	11.11
Water point development	3	3.70
Others	15	18.52
Total	138	

Source: This Study, 2002

5.2.6 Relationships between Indigenous Institution and Risk Management

5.2.6.1 Crosstabs and chi-square

Table 8 shows that 12 households out of 21, of the Didahara respondents who have managed risk well are those who have said the indigenous institutions are effective. For Gayo site, 10 household heads out of 14 respondents who have managed the risk well said the institutions are not effective. However, there is no enough statistical evidence to conclude that there is a relationship between risk management and effectiveness of the indigenous institutions at this level given the low value of the Chi- Square and non-significance levels for both sites.

Table 8. Crosstabs for Risk Management and Indigenous Institutions

Site	Risk management	Indigenous institution		Total
		Not effective	effective	
Didahara	Poorly managed	6	8	14
	Managed moderately	9	6	15
	Well managed	9	12	21
	Total	24	26	50
Gayo	Poorly managed	9	7	16
	Managed moderately	14	6	20
	Well managed	10	4	14
	Total	33	17	50

Didahara chi-square value=1.23, p=0.539 and Gayo chi-square value=1.004, p=0.605
Source: This study, 2002

5.2.6.2 Correlation

Correlation: Didahara Site

Correlation analysis was done based on the variable in the conceptual model in Figure 3. The result shows that the effectiveness of indigenous institutions and risk management ability has a weak positive relationship and not statistically significant. The results are given in Table 9. This might be an indication of the inability of the indigenous institutions to deal with the multifaceted and highly prevalent risks in the pastoral areas. Change in access rights to CPR is positively related to risk management. The enclosing of pasture lands for private use, cultivation and private water points have positive implications to improve household capacity to manage risks. However, the removal of these resources from communal uses has a negative implication for the general public. Participants of group discussion at both sites expressed this idea.

Appropriations of resources for private use jeopardize the principle of communal ownership. It also aggravates conflict among Borana that is considered an anomaly. Additionally it blocks the mobility routes, the main risk management strategy. Helland (2002) agrees. He says that pastoralists who have managed to get private resources will increase their production. However, he does not deny the effect of the removal of land from communal use on the rest of the community who could not appropriate the land for private use. This removal of lands from communal use may exclude considerable parts of Borana population from the resources they need for their survival, which is not in compliance with the indigenous management system of communal ownership. The indigenous drought coping mechanisms such as mobility is no more effective partly because of changes in access to grazing and water resources. As a result, the strategies currently employed at household level seem more effective than the group strategies. However, private ownership is neither efficient nor sustainable in arid or semi-arid rangelands. This result put the popular belief about the ability of indigenous institutions to manage risk in question. Didahara is adopting more of the household specific strategies than group oriented ones.

Table 9. Correlation Matrix: Didahara Site

	Age of respondent	Family size	Effectiveness of inst.	Species divers.	Change in access to CPR	TLU received	Conflict resolution
Age of respondent	1.0						
Family size	.264*	1.0					
Effectiveness of inst.	.015	-.245*	1.0				
Species divers.	.107	.416**	-.20	1.0			
Change in access to CPR	-.129	.145	.053	.288*	1.0		
TLU received	.113	-.043	.134	-.112	.202	1.0	
Conflict resolution	.086	.067	.137	.175	-.162	.039	1.0
Risk management	.106	.536**	.17	.552**	.161	-.221	.071

*P <. 05, **p <. 01, ***p<. 005
Source: This study, 2002

Correlation: Gayo Site

As seen from Table 10, the effectiveness of indigenous institutions has a positive but weak and statistically non-significant relationship with risk management for this site also. The relation between change in access to common property resources and indigenous institution is also weak. The most important thing here is the negative relationships between change in access to common property resources and risk management. This means the appropriation of grazing lands for private use, removal of resources from communal use to private affects risk management capacity of the society negatively at this site.

Table 10. Correlation Matrix: Gayo Site

	Age of respondent	Family size	Effectiveness of inst.	Species divers.	Change in access to CPR	TLU received	Conflict resolution
Age of respondent	1.0						
Family size	.539***						
Effectiveness of inst.	-.080	-.042					
Species divers.	.064	.145	-.071				
Change in access to CPR	-.174	-.212	.018	-.090			
TLU received	-.114	-.105	.023	.003	.145		
Conflict resolution	.226	.310*	.118	.219	-.188	-.138	
Risk management	-.066	.224	.068	.628***	-.220	-.160	.367**

*P <. 05, **p <. 01, ***p<. 005
Source: This study, 2002

Correlation: the two sites combined

The samples for the two sites were combined and the correlation analysis was done. As the results in Table 11 show, there is no much difference from the two sites discussed above. The relationship between indigenous institutions and risk management is weak and statistically non-significant. The same is true for change in access to resources and indigenous institutions. However, the results for combined sites show that there is positive

relationship between risk management and change in access to common property resources though statistically non-significant. This is in line with the result for Didahara site.

Table 11. Correlation Matrix: Combination of the Two Sites

	Age of respondent	Family size	Effectiveness of inst.	Species divers.	Change in access to CPR	TLU received	Conflict resolution
Age of respondent	1.0						
Family size	.373**						
Effectiveness of inst.	-.006	-.148					
Species divers.	.159	.342**	-.106				
Change in access to CPR	.067	.145	.069	.243*			
TLU received	.033	-.054	.066	.-053	.145		
Conflict resolution	.178	.202*	.227*	.075	-.076	.004	
Risk management	.103	.483**	.109	.586**	.138	-.194	.205*

*P <. 05, **p <. 01, ***p<. 005
Source: This study, 2002

5.2.7 Summary

In summary the following were the findings: (1) weak and statistically non-significant relationship between risk management and indigenous institutions, (2) more inclination towards privatization than communal ownership, which challenges the capacity and authority of indigenous institution in resource and risk management, as there is no rule in

Borana system that govern private ownership. (3) the traditional risk management (mobility) is declining. These finding answer to the first study question, in that the roles indigenous institutions play in risk and resource management is much weakened.

5.3 Influence of the Local Indigenous Institution in Conflict Resolutions

In the following section the influence of the local indigenous institutions on the traditional conflict resolution mechanisms and so their implications on resource and risk management are discussed. The occurrence of conflict and the causes are also discussed.

5.3.1 conflicts and the Borana

Borana pastoralists have a culture of peaceful co-existence. The principle is based on "*Nagaa Borana*" meaning peace of the Borana. For this, they try to prevent or at least minimize the occurrence of conflict among Borana in particular and with others in general. However, resource scarcity and individualism that pastoralists are learning through time has put this peaceful resource sharing in question.

According to Table 12, 46% of the respondents have encountered resource use conflict of which 69.6% was among the Borana themselves, and 10.9% was with the management unit of the resources. Only 19.6% of the conflicts occurred with non-Borana. This implies that resource use conflict among the Borana is increasing.

The causes of the conflicts are also different. Watering order was considered a cause of conflict by 43.48% of the respondents, whereas 34.78% of them said pasture was the cause.

Land grabbing presented 10.87% of the conflict. As it can be observed from Table 12, the main causes of the conflict are pasture and water that account for 89.11%.

In Didahara 72% of the conflict was on water whereas at Gayo 70% of the conflict was on pasture. This shows that there is a difference in the availability of resources across the sites. Gayo is known for its permanent wells. This might reduce water scarcity and hence the conflict on water. However, Didahara has no permanent sources of water except ponds that are either machine dug or constructed by hand.

Table 12. Occurrence of Conflict, Causes and those involved in Conflict

	Description	Number	%
Encounter conflict	Yes	46	46.00
	No	54	54.00
Conflict with	Borana	32	69.56
	Non-Borana	9	19.57
	Clan leaders	5	10.87
Conflict cause	Watering order	20	43.48
	Use of pasture	16	34.78
	Water and pasture	5	10.87
	Land grabbing	5	10.87

Source: This study, 2002

5.3.2 Wells related disputes and resolutions

Wells are not merely economic objects in Borana. They are viewed as central social institutions around which Borana society is organized. It is for this reason that well related disputes are considered more seriously. According to the explanations provided by key informants, if two people quarrel over ownership of a well, and no clear evidence is found by the clan leaders, the issue is referred to the *Abba Gada*. If the *Abba Gada* can not settle

the dispute, he sends the claimants to the well for a ritual. These two people will add tobacco into the water saying: "you well destroy me if I am trying to claim you falsely." The judgement is expected from the well. Traditional belief is that misfortune will befall to the family or the man who wants to claim the well on false grounds. The key informants assert that experience had shown that false claims to a well perpetually result in crises in the claimant's family. Usually, the false claim leads to mishaps such as frequent death or physical disability of family members, unexpected impoverishment or unusual loss of property.

If two people quarrel over the watering order of wells and blood is shed, it is mandatory to slaughter an animal at the well before the next day's watering starts. The animal should come from the herds of the guilty person. If the next day's watering starts without performing the purification ceremony, the fear is that the well may be destroyed or the water will dry up. This argument is supported by a case that occurred two years ago. According to key informants at Didahara, there was a dispute between the father of the watering order and the father of the well of *Digalu* clan, one of the 17 clans of Borana. The father of the watering order was proved guilty and asked to slaughter an animal for the purification ceremony, but refused to do so. When people on the next day started watering their herds without performing the purification ceremony, the well was destroyed on the spot and five people were wounded. According to the key informants the quarrel on wells with the father of watering order and the owner of the well is considered seriously. However, dispute with the owner of the well is considered more seriously than with the father of the watering order.

There are legal sanctions to be applied on well abusers. They either pay heads of cattle or they are excluded from use. The recently introduced form of sanction is payment in cash. Borana equate the well with their wives. This is to emphasize how important it is for their survival and how strong the sanctions could be. However, the deterrence effect of economic sanctions is minimal as compared to the social sanction. In comparing the administrative system of Borana with the bureaucratic governments, Bassi (1996) has stated the following.

> Whereas kingdoms and more generally states may impose law and political decisions by the use of ,or potential use of an organized force whose control is delegated to certain social entities, the Borana maintain their internal order and peaceful resource use by consensus and persuasion, which in turn, are obtained by diffused and intense participation in the process of decision-making within the assemblies.

According to key informants, when there is drought or acute shortage of water, territorial based committee at *madda* level will be established and sit under a shade tree waiting for cases to be dealt with and solved. This committee is called *jarsa madda* and is selected from each *reera* that make up the *madda.* However, the Borana elders say that the enforcing power of the local institutions in resource management is becoming weaker and weaker.

5.3.3 Correlation

To know the relationships between indigenous institutions and conflict resolution, correlation analysis was done. Accordingly, there is a significant ($r=0.202$, $p<.05$) relationship between conflict resolution and indigenous institutions. This shows that the stronger the indigenous institutions are, the more the resource use conflicts are resolved peacefully. This in turn has a positive impact on the way resources are utilized peacefully

and hence risk management. The relationship between risk management and conflict resolution is also positive (r=0.205, p<. 05) and statistically significant. The more the conflicts are resolved and the pastoralists share the resources peacefully, the better they manage the risk because they utilize the available resources without problem. The results are given in Table 11 presented elsewhere. However, the results are different across the sites. The positive impact of conflict resolution is more pronounced at Gayo, which is considered institutionally more intact than Didahara. The results for the correlation analyses are given in Table 9 (for Didahara) and Table 10 (for Gayo). This is the implication of the importance of indigenous institutions in peaceful resource sharing and hence risks management.

5.3.4 Summary

In summary, the following were the findings: (1) the relationship between conflict resolution and indigenous institutions is positive and statistically significant (r=0.202, p<. 05), (2) the relationship between conflict resolution and risk management is positive and statistically significant (r=0.205, p<. 05). These answer to the second research question, in that, indigenous institutions are important for peaceful co-existence and resource sharing and hence risk management.

5.4 Influence of Local Indigenous Institutions on Herd Building after Crash as Means of Risk Management

This section presents the traditional restocking mechanisms used by the Borana pastoralists as the means of risk management and their current trend. The reasons that have contributed

to the decline of the systems are also presented, and so are the results for the chi-square and correlation analyses.

5.4.1 Herd Rebuilding as a Social Security Mechanism and Risk Management among the Borana

There are different mechanisms of helping the poor members of the community among the Borana Oromo. These range from the provision of milk and other foods to sustain the poor families to the contribution of heads of cattle to restock them. The first kind of assistant starts at the village level. This includes contribution of food such as milk to feed the poor. The poor can go for herding for the well to do family and get basic needs. At the same time, he can be given a head of cattle to reestablish his herd. There are three forms of wealth redistribution known among the Borana pastoralists. These are *dabare, busa gonofa* and *irba.*

Dabare is the temporary transfer of milking cows, goats or camels. The arrangement can be made between friends or relatives. The right of the recipient is to utilize the milk while giving the proper care for the animals and the offspring. He has no right to sell or change the temporarily loaned animal before the giver agrees. There is a newly introduced form of temporary loan with the introduction and intensification of cultivation. This is the distribution of oxen that are "beyond" the need of wealthy household to the needy. This takes place among friends and relatives. The recipient uses the oxen in plowing for an unspecified period of time.

The second form of mutual assistance is called *busa gonofa,* which is a gift to the recipient. This is a clan obligation to restock clan members who have lost their animals in the natural

disasters such as drought. Each of the 17 clans of Borana has its own annual meeting. During this meeting, individuals who have become destitute appeal to the meeting for help. The meeting investigates how the animals were lost, so as to determine whether they were misused or lost through mismanagement. If they were lost through conditions beyond owners' control, then the applicants are eligible for the assistance. After the eligibility is known, the next step is to identify the close relatives who can contribute and ask them to give to the needy. If they refuse to contribute they are forced to give double of what they were asked. The number of animals an individual gets depends on many things such as wealth of the clan, number of applicants and family size of the applicant. However, the clan has lost its power to force people to contribute. As a result the poor members of the society have started involving in different income generating activities that the Borana culture does not support. This includes charcoal preparation and sale, sale of firewood, and other manual works. The biggest threat to mutual assistance also comes from poverty.

As Borana elders say before thirty years someone who owns less than twenty milking cows could get clan assistance. Currently, owners of twenty milking cows can be forced to assist others. Now the applicants should own less than three cows or none to qualify for the clan assistance. Because of the declining number of cattle holding per household and inability of clan leaders to force their members, the mutual assistance is becoming almost non-existent.

The third form of assistance is called *irba*. This is also a clan obligation to restock clan members who have lost their herd in raiding. Unlike *busa gonofa* this contribution is

discussed and decided immediately after the raiding. According to Borana oral history, the applicant is entitled to get at least half of his herds lost in raiding. Because of poverty and the declining power of the indigenous institution to enforce the rule, this practice is declining dramatically.

Figure 4 shows the mean number of different species either given or taken in the three drought periods that have affected the Borana pastoralists since 1991. In all cases the role of cattle is prominent. There is a declining trend of the mutual assistant from 1991 to 1999/00. In 1999/00 the temporary loan is greater than the obligatory clan contribution. This might be because of the inability of the system to force its members. In the temporary loan the ownership remains that of the giver. It also depends on the mutual agreement and consent of the two parties. As a result, friends and relatives might contribute to help each other temporarily. In the clan obligation, the ownership is transferred to the recipient and this might deter people from contributing.

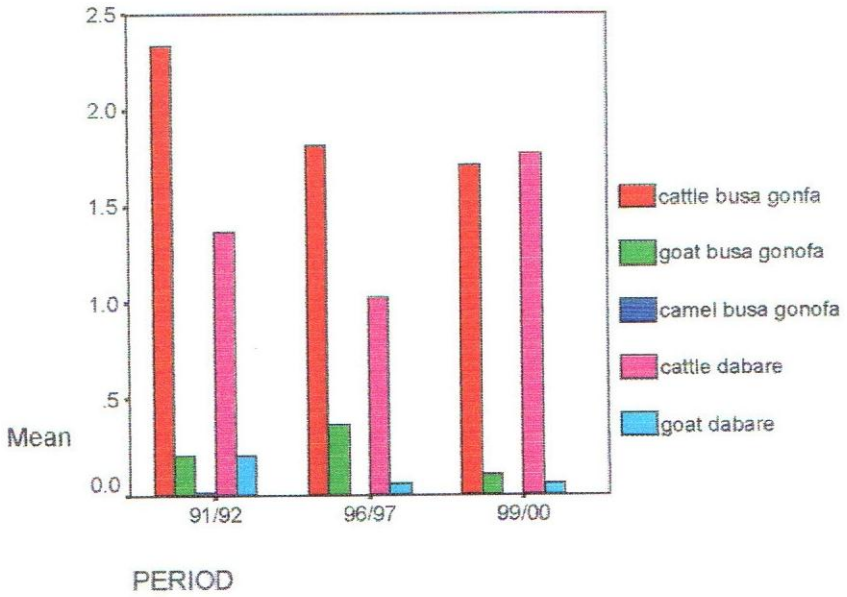


Figure 4. Mean number of animals either given out or taken: both sites combined

Source: This study, 2002

Figure 5 shows the mean number of animals either taken or given out by the respondents of Didahara in the three drought periods that hit Borana pastoralists in the past twelve years. The declining trend of the animals' circulation across the period is similar to the results for the combination of the two sites. The temporary loan is highest in the last drought period. The transfer of camels and goats is very much less than the transfer of cattle. This confirms that cattle are more important in Borana culture than any other livestock.

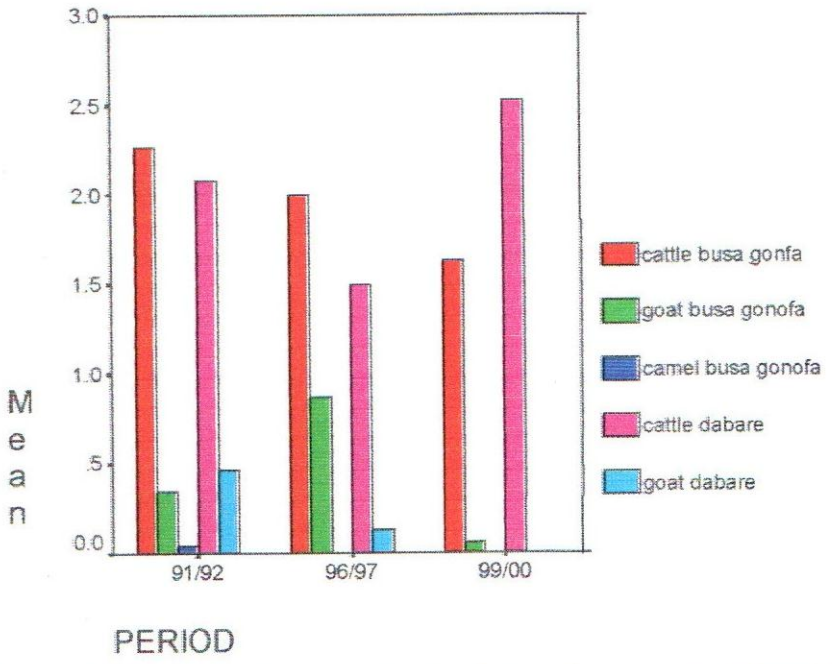


Figure 5. Mean number of animals either given out or taken: Didahara site

Source: This study, 2002

Figure 6 shows the mean number of three animal species used for the mutual assistance in the three drought periods at Gayo research site. According to this result, there is not much difference between 1996/7 and 99/00 in mean number of cattle distributed at clan level. However, the temporary loan has increased in the last drought period. Surprisingly, the mean number of goats and camel is almost nil for this site. This might be partly because of the high cultural value of cattle in gifts and exchanges and less exposure of culture to external influence compared to Didahara. The increase in the mean number of animals transferred on temporary basis in the 99/00 drought period may indicate that the relation ship between two parties based on mutual understanding is becoming more important than the obligatory clan contribution. It may also be because of the declining power of clan leaders to enforce the customary law.

The decline of the power of the clan leaders also influences the way access to resources is defined. This has negative implication on the efficient utilization of pasture and water resources since the government structures at the local level are not in a position to take full responsibility. They are more devoted to security issues and collection of taxes.

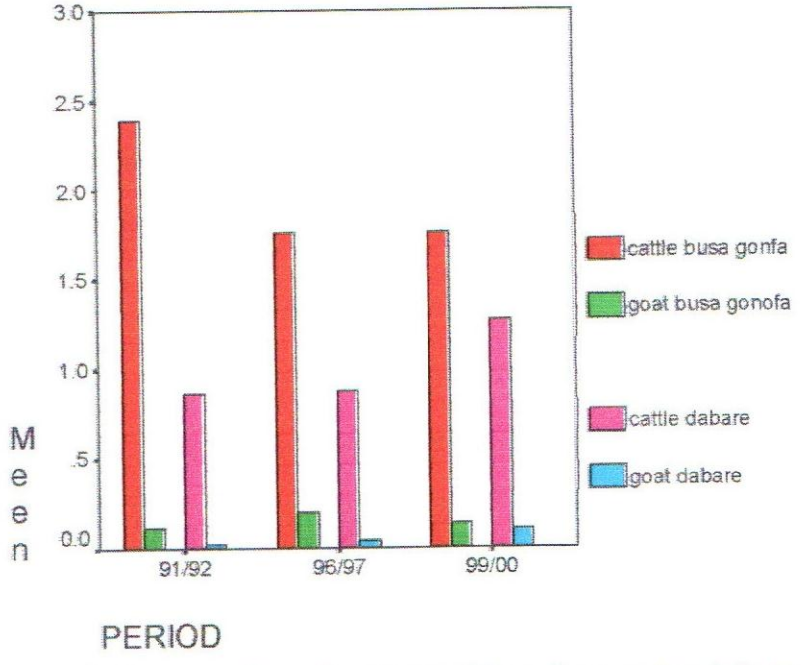


Figure 6. Mean number of animals either given out or taken: Gayo site

Source: This study, 2002

As shown in Table 13, only 20 people (37.7%) of the poor respondents could get cattle from the obligatory clan assistance in the three drought periods that hit Borana. The mean number of cattle received is 1.45 with standard deviation of 0.76. Fifteen (28%) of the poor people could get cattle from the temporary loan in the three drought periods. According to Borana customary rules of resource sharing, every Borana is entitled to get the minimum subsistence for himself and his family. Even if the animals are lost through

sales that are not traditionally unacceptable or through mismanagement, the individual can get the clan assistance for the sake of the family. However, this kind of person has no right on the animals received through this mechanism. The right is that of other family members, but he can subsist on them as any member of the family. The animals are kept under the constant supervision of clan leaders. Under this provision, the clan can force him to move and settle among the clan members or take the entire family members leaving him behind. This is when the clan mutual assistance is fully operational and can provide all the basic needs. From observation and results shown in Table 13, the clan seems to have neither the resources nor the powers to do as it used to do.

Table 13. The Mean Number of Animals Received in Three Drought Periods

Animal	Type of gift	Number	Minimum	Maximum	Mean	Std.
Cattle	Busa gonofa	20	1	3	1.45	.76
Cattle	Dabare	15	1	4	1.87	.92
Goat	Busa gonofa	6	1	3	1.75	.75
Goat	Dabare	5	1	3	1.60	.89
Camel	Dabare	1	1	1	1.00	-

Source: This study, 2002

5.4.2 Trend of the Social Security System among Borana

The respondents were asked to report the trend of the social security system among the Borana. They were asked to agree or disagree about the change (in terms of whether there has been a decline or not) of the social security system. The frequency distribution is given in Table 14. As the result indicates 72% of the respondents agree that the helping mechanisms have declined. Only 28% of the informants disagree to the decline of the

helping mechanism. Different reasons that have contributed to the decline are given in the Table 15.

Table 14. Perception of the Trend of the Borana Traditional Social Security System

Trend	Frequency	%
Declined	72	72
Not declined	28	28
Total	100	100

Source: This study, 2002

According to the results given in Table 15, different reasons have caused the social security system to decline. Poverty is considered as a sole cause of the decline by 33.33% of the respondents who believe that the social security system is declining while 27.78% of the respondents believe that the cause is the decline of the social bonds among the Borana. The majority (37.5) of them gave a combination of reasons that have contributed to the decline of the social security system. These combinations include the decline of the power of the clan leaders to enforce the traditional rules, poverty, and individualistic living condition that is becoming part of the system, and others.

Table 15. Reasons for the Decline of Traditional Social Security System

Reasons	Frequency	%
Poverty	24	33.33
Decline of the social bonds among Borana	20	27.78
Combination of reasons	27	37.50
Influence of market economy	1	1.39
Total	72	100.00

Source: This study, 2002

5.4.3 Relationships between Risk Management and Number of Livestock received

5.4.3.1 Cross-Tabulation for Risk Management and Tropical Livestock Unit (TLU) Received in Three Drought Periods

From Table 16, 78% of Didahara respondents who either managed the risk moderately or well are those who did not receive any clan assistance. In the same manner 72% of the Gayo respondents who have managed risk well did not receive any clan assistance. Even though the chi-square values are relatively large, the p-values could not enable us to conclude cozily that there is a significant relationship between the two variables. The chi-square value and p- value for Didahara are 7.1 and 0.13 respectively. For Gayo chi-square value is 4.7 and p-value is 0.319

Table 16. Cross-Tabulation for Risk Management and TLU Received in Three Drought Periods (1991/2, 1996/7 And 1999/00)

Site	Risk management	TLU received in three drought periods			Total
		0	1	2	
Didahara	Poorly managed	8	2	4	14
	Moderately managed	11	3	1	15
	Well managed	18		3	21
	Total	37	5	8	50
Gayo	Poorly managed	10	4	2	16
	Moderately managed	15	2	3	20
	Well managed	11		3	14
	Total	36	6	8	50

Didahara site, $\chi 2=7.1$ and p-value=0.13, Gayo site, $\chi 2=4.7$ and p-value=.319

Source: This Study, 2002

Cross-Tabulation for TLU received and risk management: two sites combined

From Table 17, the highest percentages of the three categories of risk management are in the category of those who did not get any clan assistance. The majority (83%) of the respondents who have managed risk well did not get any assistance. The higher proportion (74%) of the respondents who moderately managed risk had received no help. However, chi-square value=8.35 and (p=0.079) are evident that there is a relationship between assistance received from clan and risk management.

Table 17. Crosstabulation for Risk Management and TLU Received : Two Sites Combined

Risk management	TLU received			Total
	0	1	2	
Poorly managed	18	6	6	30
Moderately managed	26	5	4	35
Managed well	29		6	35
Total	73	11	16	100

Source: This study, 2002

5.4.3.2 Correlation

The relationship between indigenous institutions and herd rebuilding (social security mechanism) is positive but weak. The weakness is attributed to the declining power of clan leaders to enforce the customary rules of resource sharing and the poverty that hit the majority. Risk management ability and total tropical livestock unit (TLU) received in the three drought periods in Borana (91/2, 96/7 and 99/00) are negatively related even though not significant. The negative relation might be because of the fact that people who could use all the possible means and be able to save at least some of the herds that can support the

family will not be eligible for clan help. Clan assistance is given to people who have lost their animals in the natural disasters such as drought and raiding to enable them feed their families. The results are given in Table 11.

5.4.4 Summary

The traditional restocking mechanism is found to be weak among the Borana pastoralists. The relationship between the indigenous institutions and herd building after crash is weak. The influence of herd building (traditional wealth redistribution) on risk management is also weak. This is because of the fact that the indigenous institutions are so weakened and could not perform their daily functions as before. They lack enforcing power. Poverty is another major contributing factor to the decline of the herd building after crash as a means of risk management.

5. 5 Influence of the Local Indigenous Institutions on the Availability of Labor for Herd Management as a Means of Risk Management

In this section, the roles the indigenous institutions play in providing labor for herding and the relationships between family size, indigenous institutions, and risk management is presented. The relationship of family size and species diversification and their implication on risk management are also discussed. Regression analysis is also done and discussed.

5.5.1 Influence through Marriage and Rites of Passages

Borana division into Sabbo and Gonna moieties sounds as if they are not related. The main purpose of the division is to maintain proper intermarriage. Nobody is allowed to marry from his own moiety. There were rules that govern the age of marriage and the age to start

raising children for a male. This is to allow every member of the society to play roles expected of him at different age categories and *gada* grades. The roles include herding that starts at about 8 years old. Between the age of 24-32 the Borana males are junior warriors in addition to herding cattle at distant satellite camps. From the age of 32-40 years, males are senior warriors (Legesse, 1973). Even though marriage was allowed after the age of 32 raising of children starts after 40. There was also restrictions on sex of the child to be raised. Between the age of 40-48, they are allowed to procreate but only sons. They are allowed to raise daughters after the age of 48. This is after their class (Gada grade) handed over the power. The following table shows the changes that have occurred to the rules.

Table 18. Age of Respondent at First Marriage and when the First Child was Born

	N	Minimum	Maximum	Mean	Std
Age at first marriage	86	17	42	27.63	5.84
Age of respondent when the 1st child was born	79	18	46	31.73	6.82

Source: this study, 2002

According to Table 18, the mean age at first marriage and age when the first child was born are 27.63 and 31.73 respectively. The majority (87%) of the respondents were married before the minimum required age and 88.2% of them got their first born child before the minimum requirement. The changes have occurred because the *Gada* rules are not as effective as they were. Some of the *Gada* chronologies that start at birth and end at death are no more in place. Most of the young boys who would have gone to distant places for herding marry earlier than they should. There is no warrior age category to defend the

people and the resources from competitors. This might be one of the causes of the shrinkage of Borana land being encroached by competitors.

To see the difference across the sites, the mean ages for both variables was calculated. But there was no significant difference between the means for the two sites. However, more variation can be observed for the Didahara site. This shows that the changes to the Borana indigenous institution are not site specific. The detail is given in Table 19.

Table 19. The Mean Ages by Sites

Sites		Number	Minimum	Maximum	Mean	Std. Deviation
Didahara	Age at first marriage	40	17	42	27.50	6.14
	Age when the first child was born	40	18	46	31.85	7.70
Gayo	Age at first marriage	46	20	40	27.74	5.63
	Age when the first child was born	39	21	44	31.62	5.88

Source: this study, 2002

One of the mechanisms of having labor for herding is marrying many wives and getting many children especially sons. The sons are partly born being part of the system and partly made part of the system by being given some cattle as their own herd. The father starts giving (nucleus herd) *handhura* to the newly born baby boy on birth.

Two or three years after the birth of the baby boy, the name giving ceremony will take place. The ceremony for the eldest son is different from others and it is called *gubbisa.* It is a big ceremony that requires participation of clan members socially and economically. If

the individual is unable to prepare the feast, he has the right to ask for clan assistance. On the name giving ceremony the hairs of the boy are shaved. They are mixed with water and the cord that has been kept since his birth. Then the mixture is sprinkled on the back of animals to be given as *handhura* to the boy. *Handhura* means umbilical cord. It is also considered as the nucleus. This forms the nucleus herd for the boy. In addition to the father's gift, the wealthy people in the clan can give *handhura* to the boy. Those other members of the clan can contribute whatever they could. According to Borana culture it is cattle that is given as *handhura.*

Girls and other younger boys have *moggasa* ceremony for name giving. It is not a big ceremony. However, the name and *handhura* will be given for boys. The gift will make the boys feel part of the system and accept the hardship of herding as normal. The sprinkling of the water mixed with a piece of cord makes the boy to love cattle more than anything else and encourages him for herding.

5.5.2 Relationships between Family Size and Risk Management

5.5.2.1 Cross-Tabulation and chi-square for family size and risk management by sites

From Table 20, it is evident that the higher proportion (71%) of the Didahara respondents who have managed risk well are those who have a large family size (six and above). For Gayo 57% 0f the respondents who have managed risk well have family sizes of six or more. The chi-square value (12.12) and (p=0.016) for Didahara and chi-square value (8.68) and (p=0.07) for Gayo also show that there is a relationship between risk management and family size.

able 20. Crosstabulation for Risk Management and Family Size of the Respondents

Site	Risk management	Number of family members			Total
		2 to 5	6 to 9	10 and above	
Didahara	Poorly managed	4	9	1	14
	Moderately managed	3	7	5	15
	Well managed	6	3	12	21
	Total	13	19	18	50
Gayo	Poorly managed	9	7	0	16
	Moderately managed	8	4	8	20
	Well managed	6	5	3	14
	Total	23	16	1	50

Source: This study, 2002

Cross-Tabulation and chi-square test for the association of family size and risk management: two sites combined

The majorities (65.7%) of the respondents that have managed risk well have family sizes of six and above. From the chi-square value 15.1 and (p=0.005) we can conclude that there is a significant relationship between family size and risk management. It is evident that households with large family sizes could manage risk better than households with small family sizes. This emphasizes the importance of extensive labor for herding and other activities. The result is given in Table 21.

Table 21. Crosstabs for Risk Management and Family Size: Whole Survey

Risk management	Number of family size			Total
	2 to 5	6 to 9	10 and above	
Poorly managed	13	16	1	30
Moderately managed	11	11	13	35
Well managed	12	8	15	35
Total	36	35	29	100

Source: This study, 2002

5.5.2.2 Correlation

Correlation: Didahara Site

As different literatures indicate the importance of high labor for pastoral production, the statistical analysis from this survey shows a strong positive relationship ($r=0.536$, $p<0.005$) between risk management and family size of the respondents. The results are shown in Table 9. The larger family size can make labor allocation to different activities and herding of different species at different ecological niches and save the herds from being lost. Different species require different labor allocation. For example, browsers are interested in bushes and grazers in grasses. The watering frequencies for different species are also different and require manpower accordingly. It is the older member of the respondents who have larger family size. These people can allocate the excess labor to different non-pastoral activities and generate income that postpones selling of livestock. As Didahara is close to town and has its market place, family members can involve in petty trades, like charcoal preparation and sales. It is also possible that the family members beyond the labor requirement of the household could migrate to the town and send remittance to the family. The second most important variable that has a strong positive relationship ($r=0.552$, $p<0.005$) with risk management is species diversification. Species diversification is keeping different species (in Borana case cattle, sheep, goats and camels being dominant) to use different range resources according to the body requirement of the animals. The animals also have different abilities to resist drought, water shortage and diseases. This minimizes the chance of losing what they have in a single disaster. As indicated above labor is very important to diversify the species of animals as risk management. The relationship between family size and species diversification is evident of this. The relationship is significant ($p<$.

01). The indigenous institution is negatively related with family size. The possible reason for this is the fact that people who marry early will have a large family size and may not abide by the decision of indigenous institutions but become capable of managing risk by the labor force they got. The other reason is that in the Borana system, there is a traditional birth control mechanism that forces woman to abstain from sex when breastfeeding a child. As the indigenous institutions weaken, fear of social stigma will wear out and people start procreating, as they desire. This in turn has effect on population size and increases pressure on the scarce resources but positively contribute to the individual household to manage risk better.

Correlation: Gayo Site

Family size of the respondents has a positive relationship with risk management but is not significant. Since Gayo is far from town and the chances of involving in different income generating activities are less; the family size might not affect the capacity of the household to manage risk very much. Family size and species diversification is positively related but not significant. Gayo is relatively more cohesive than Didahara and cooperative work can solve labor shortage in herding. Once the maximum limit of the labor requirement is achieved, additional manpower may not increase output of the pastoral production. The results are given in Table 10.

5.5.2.3 Regression

Regression: Didahara Site

In the regression analysis, stepwise procedure was used. The advantage of this procedure is that it enters variables into analysis based on their contribution to R Square and level of significance (Bryman and Cramer, 1997). Variables that have greater contribution to R square and significant at ($p<.05$) are included in the analysis. Two variables that fulfilled these criteria of inclusion have been entered for this site. These are species diversification and family size of the respondent. These two variables explained 41.8% of the dependent variable risk management. Households with a large family size have enough labour to herd different species at different places and can fulfill their watering requirements that requires high labour to draw the water from deep wells.

Helland (1998) argues that the number of animals, which could be watered, is limited by the manpower available. The labor availability also can facilitate or constrain proper management of herds according to age, sex and species. The diversification of species helps herders to utilize range resources efficiently. Different species have different ability to resist drought, diseases and other ecological constraints. As a result, a likelihood of losing the herds will be minimized by species diversification. Borana pastoralists are known for their cattle. However, they have introduced other species such as camels to their herd. Camel is becoming the most important part of Borana herd. It is used to transport crops from distant markets and to transport water for calves, sick and weak animals and human consumption. In the process, those animals that would have died on the way to water points will be saved. At the same time, camels give milk for family consumption. Small stocks

will provide meat, milk and are also quick sources of cash for the immediate use of the household. See Table 22.

Table 22.Regression: Didahara Site

Predictors	Beta	Significance	Tolerance
Species diversification	.398	.002	.827
Family size	.371	.004	.830

Dependent variable: risk management, R square = .418
Source: This study, 2002

Regression: Gayo Site

Table 23 shows that species diversification is the only variable that was entered into the analysis. It explained about 39.4% of the risk management in the area. This shows that diversification has contributed a lot to the ability of the pastoralists at Gayo to manage risk properly. Because of its distance from towns and absence of other alternatives, the people in the area might have depended on diversification of species. As far as the maximum labor requirement for herding is achieved, introduction of additional manpower may not increase pastoral production. There are not many alternatives in the area for the excess labor to involve in and generate income. This might be the difference between Didahara and Gayo for the family size's contribution to risk management.

Table 23. Regression: Gayo Site

Predictors	Beta	Significance	Tolerance
Species diversification	.470	.000	.999

Dependent variable: risk management and R square = .394
Source: This Study, 2002

Regression: Combined sample

Species diversification, family size and total TLU received in the last three drought periods have explained 45.8% of risk management for the total survey. The interrelationships between the variables play roles in risk management. The role played by species diversification and its relation with family size is explained above. There are other variables, which have a contribution to risk management. Education is one of these contributing factors. Family members who are educated can send remittance to the family. It also plays roles in devising strategies of coping with risk such as selling animals and deposit in the bank. The larger family can allocate some of its manpower to other income generating activities such as selling firewood, charcoal preparation and sale, involving in the labor work like gold mining in the case of Borana. As can be seen from the site-specific analysis, family size is more helpful to Didahara than Gayo. Age is the most important factor that has positive and significant relationship with family size. As the pastoralists get older and older, the likelihood of getting married to many wives and producing many children is high. The labor provided by the children is helpful in risk management as indicated earlier. The results are given in Table 24 below.

Table 24. Regression for the Two Sites Combined

Predictors	Beta	Significance	Tolerance
Species diversification	.471	.000	.882
Family size	.314	.000	.882
Total TLU received	-.152	.046	.996

Dependent variable: risk management and R square =. 458
Source: This study, 2002

5.5.3 Summary

The roles indigenous institutions play in availing labor for herding is discussed as it delays marriage and later allowing marriage to many wives. The system also embraces young boys into the system by gifts of animals and rites of passages that every male members of Borana must go through. However, delay in marriage of male and restrictions on age of child raising might have negative impacts on the future labor that the boy might require. This might be the reason why the correlation coefficient between indigenous institutions and family size shows a negative relationship. This result disproves the positive relationship between indigenous institutions and labor availability suggested in the conceptual model in Figure 3. On the other hand, labor is found to be the most important part of risk management. Labor availability also affect species diversification positively. This will improve risk management capacity of the household. This shows the importance of the relationship between labor availability and species diversification and their combined effect on risk management.

5.6 Changes that have Occurred to Indigenous Institutions and their Implications

The Borana have been occupying the central parts of their present day territory for at least four centuries. For a substantial part of this period, they controlled much larger territory to the south and southeast of their present location (Helland, 1998). Helland attributes the history of their success to the Borana indigenous institutions and how these have governed Borana relations with their neighbours, as well as how social institutions have ordered internal relations in Borana. There is no doubt that the Borana have had social institutions

capable of handling issues of great complexity (Helland 2001). The success of Borana pastoralism has depended on institutional capabilities to mobilize and coordinate labor and resources across individual management units. According to Bassi (1996), the two most important Borana institutions are *qallu*[9] and *gada*. As indicated by Helland (1998), *gada* subsumes all other institutions in an integrated Borana worldview and infuses these more pragmatic institutions with, the authority and legitimacy, that they require to be effective.

According to Bassi (1996) *gada* rituals and political integration play roles in discouraging physical clashes and foster peaceful resource sharing in strenuous competition for scarce water resources. To know the changes that have happened to the institutions, the current status of these institutions and prospects in the Borana pastoral system, three methods were used to collect information. These are household survey, group discussion and key informants interview. Individual respondents were asked to rate the strength of the Borana indigenous institutions in resources and risk management. The results are given in Table 25. According to these results, 57% of the respondents rated the institutions either as weak or very weak while 43% of the respondents rated either as effective or very effective.

[9] Religious institution of Borana that performs many rituals for peace, rain, fertility of cattle and women and the general wellbeing of the society.

Borana pastoralists have high value for their indigenous institutions. However, this could not save the institutions from total decline in their daily operation. Some of the pastoralists might not be aware of the slow processes of changes taking place to the institutions. Respondents have given a number of reasons as the causes of the decline of the institutions.

Table 25. Score of the Status of Indigenous Institutions

Score	Frequency	%
Very weak	28	28
Weak	29	29
Effective	20	20
Very effective	23	23

Source: This study, 2002

Table 26 shows the reasons that contributed to the decline of the institutions. The Borana indigenous institutions have been weakened because of: the state intervention in Borana affairs (50.88%), internal change (22.81%), religion (21%), and formal education (15.79%). These reasons are discussed below in detail in combination with the group discussions and key informants' interview.

Table 26. Factors that Contributed to the Weakening of Borana Indigenous Institutions

Factors	Frequencies	%
State influence	29	50.88
Relief and development organizations	7	12.28
Religious organizations	12	21.00
Market economy	4	7.00
Education	9	15.79
Internal change	13	22.81
Others	7	12.28
Total	57	142.08

Source: This study, 2002

Discussions

Religion

Everything among the Borana is defined according to their customary laws called *aadaa seera Borana.* This includes politics, religion, economy, resource management and social relations that complement each other. People who join other religions have to abandon all these. Besides these, the introductions of the new religions (Islam and Christianity) have affected the bonds among the Borana and the value they have for their institutions (group discussion, Didahara, key informants). This is more so for the younger generations that are either converted at the few hostels in pastoral areas constructed by missionaries or at schools. These people do not abide by the traditional rules and regulations. The converts also object to the performance of many rituals that are part and parcel of Borana life.

Poverty

The findings of the focus group discussions showed that poverty is a very important contributing factor to the decline of indigenous institutions. Most Borana ceremonies are very demanding in terms of economy, time and energy. They require mobility of people to the ritual places, some of which are very far from most of the Borana areas. These people require food and other basic needs while they are there. They also require many cattle for the rituals. Mostly, the people used to move with their cattle and consume milk. Nowadays the number of cattle and milk production has dramatically declined. As a result, people are unable to go to the ritual places. The arguments of the people who participated in group discussions confirm that poverty has weakened Borana indigenous institutions. Poverty also weakened the mutual assistance or the social security system among the Borana. People

who could not get clan assistance start to involve themselves in income-generating activities that might contradict with the Borana ways of life. People, who are supposed to travel with father of *gada* (*abba gada)* and religious leaders (*qallu)* for different purposes of the community, prefer to cultivate, engage in trade or other activities. To force these people to move with the local officials, the clan should stock or restock them and make them self-sufficient. However, the poverty levels of majority of the clan members do not allow this. Therefore, poverty is changing pastoral production system to one not compatible with Borana ways of life that involve a number of rituals and frequent mobility.

Resource Use Conflict

Another factor that emerged from the group discussions was resource use conflict. The Borana people attach much importance to places such as Gayo in Dire district and Goro in Liban. Most of the cultural and ritual places have been abandoned in the last three decades because of conflict and insecurity. Goro used to be the most frequented cultural and ritual place that every father of *gada* (*abba gada)* during his term in office would travel to and perform many rituals for fertility, prosperity and wellbeing of the general public. Participants of both group discussions agreed that this place has been abandoned. The consequences, according to them are drought, famine, bush encroachment and decline in cattle holding and milk production and so on. At the same time, social bonds and solidarity among the people have declined. This increased competition rather than cooperation. Baxter (2001) argues that conflicts in pastoral areas were revolutionized by the introduction of automatic weapons. This has the effect of changing the unused rangelands into unusable bush land and increases grazing pressure.

Internal change

There are two most important issues that participants in the two group discussions agreed upon. The first is related to the decline of the bonds among the Borana. People do not consider problems of others as before. The principle of being Borana and getting access to resources including cattle has declined. The rich are not much concerned about the poor. Sometimes, they use their wealth status to influence decisions and rules of resource use. The second factor is the introduction and expansion of locally fermented and distilled drinks into all Borana settlements. Borana was not known for local as well as commercial drinks. Local drinks called *araqe*[10], *Farso*[11] and *dadhi*[12] and even commercial beer are available in most of the Borana encampments (*Ollas*) including the most sacred cultural place Gayo. The effects of the drinks on Borana life are multifaceted as the elders indicate. Economically it forces people to consume more than they could earn on a daily basis and affect the family. People go drinking rather than herding or watering animals. The frequencies of their participation in cooperative work such as well excavation and maintenance are reduced. Borana decisions take place through assembly. The time and frequency of participation in the assembly is affected because of the introduction of alcohol. The leaders who are authorized to call the assembly may be influenced by the drink and ignore the problem of the poor. Socially, drink aggravates disagreements between the drunkard and family members and even among the community. People who drink fight for no reason. There is no respect for elders and local leaders.

[10] Prepared by the process of distillation fermenting crop products such as maize and sorghum. It is the strongest local drink in terms of alcoholic content.
[11] Prepared by fermentation from similar crops as araqe but not distilled .

These local drinks are obtained from Arsi Negele to Borana. Arsi Negele is 225km from Addis Ababa on the high way to Moyale. Moyale is 770km from Addis Ababa. Sometimes these local drinks have to be transported for about 545km before their final destination. The study areas, Didahara and Gayo are 600 and 720km away respectively from Addis Ababa. In this case the drinks are transported for about 400km or more. As some of the dealers indicate the local drinks have to pass in the hands of many dealers leading to dilution. The most diluted drinks reach pastoral area, which is the final destination. This forces people to drink a lot to get the required alcohol level and therefore paying more.

State influence

Boranaland was conquered by Minelik II of the then Abssyinia in 1897(Kassa, 2002). According to Borbor Bule (key informant), two of Minelik generals led the conquest of Borana from two directions. The force that was led by Habte Giorgis came from Hagere Mariam (northwest) and the other force led by Asfaw Darge from Negele (east). On their arrival, these brutal forces imposed new rules and regulations on Borana. At the time of incorporation, pastoral lands were granted as fiefs to the feudal retainers of Minelik II, in reward to their services, to ensure their loyalty and to secure them a source of income (Kassa, 2002, Helland, 2002). Accordingly, Borana became the fief of one of the Minelik generals and a system of indirect rule was established through which the appointed Borana representatives of the suzerain feudal lords were charged with the maintenance of peace as well as collection of taxes.

[12] Prepared by the process of fermentation from sugar, honey and other plants.

The appointment of feudal representatives (called *balabats)* from the lineages of the semi-sacred and ideally apolitical *qallus* also represented a clear break with the Borana traditions (Helland, 2002). Accordingly, the *qallu* of *Karayu* clan represented Sabbo and that of *Oditu* clan represented *Gona* moiety (key informants). The power of *gada* officials was undermined. The traditional rules and regulations were replaced by the Minelik rules. The Minelik army took over most of the powers of the traditional leaders and made Borana institutions secondary. According to Helland (2002), incorporation to the Ethiopian State brought tax burdens to the Borana with few, if any, benefits from the state. The major change took place with the ascendancy of the current government to power, when for once Borana found themselves out-maneuvered by their Somali competitors (Helland, 2002). With the change of government in 1991, the Borana as a group became politically suspect. According to Helland (2002), a large number of Borana civil servants were replaced with fresh recruits from various minority groups residing in Borana.

According to key informants, it was in the 1972 gumi gayo assembly that the power of g*ada* officials was reinstated, but still restricted to ceremonial and ritual functions rather than being active in every social, economic and religious life of the society. During the period 1897-1972 water and grazing lands were under the rule of the two *qallu (*religious leaders) who were appointed by the government. Borana recall this period with sorrow, even though the successors were not much better than their predecessors. This period was the beginning and the total immersion of the Borana under the rule of unsympathetic forces that regarded the Borana ways of life as backward, uncivilized and clumsy. The total disregard of the indigenous institutions was to change this "aimless" ways of life. But the

improvement they brought to Borana was imposition of taxes and other feudal obligations and resource alienation. As Helland (2002) indicates, great difficulties were also created by the appointed individuals from the *qallu* lineages, who started to use the office to gain illegitimate and undue influence over other parts of the Borana socio-political systems such as election of g*ada* officials.

After the demise of the feudal system in 1974, the military government introduced a new administrative structure and the pastoral areas were divided into a number of Pastoral Associations to implement the principle of socialism. At each Pastoral Association, government representatives have been elected and given political, economic or resource management, judicial, and executive powers. The traditional ways of conflict resolution, resource management and the accumulated knowledge of the pastoralists about the ecology and resource management were disregarded and in some cases, forceful sedentarization was attempted.

The 1975 rural land proclamation nationalized all rural lands and vested ownership rights in the state. In effect, the regulation replaced the role of the indigenous Borana leadership and their representatives by pastoral associations. The duties of the new leadership were to administer the people and their resources such as pasture and water and act as a bridge between government and the pastoralists (Kassa, 2002).

The group discussion participants agree that the military government at least realized the importance of the indigenous resource management system in mid 1980s. However, the

power to punish deviants and exclude them from resource use based on the extent of the crime committed was still not given back to the Borana.

The replacement of the military regime by the Ethiopian People Revolutionary Democratic Front/Tigrean People Liberation Front (EPRDF/TPLF) has worsened the alienation of the Borana. Much of the fallback areas are awarded to Somali regional state. Two of the nine Tula(deep well) complexes were given to the same region without the consent of the Borana. The powers of PA over the local people have become limitless.

Comparing the problem of resource scarcity with the decline of the socio-political institution, Helland (1998), stated the following: The major threat to Borana pastoral system do not necessarily stem from shrinking pastures and reduced productivity, but from the incapacitation of important Borana social institutions. The authority of *aadaa seera* Borana (Borana customary law) is eroded and pan-Borana solidarity is being eroded. He also stated that Borana have seen their sons removed from political and administrative positions in the local administration and seem to have minimal influence over the events, which shape the welfare and destiny of the Borana. The Gada system, which is also the unifying factor of the Oromo people, is a threat to the Ethiopian rulers who follow the old principle of divide and rule.

Melba (1988) indicates the incorporation of the Oromo people (including the Borana) into the Ethiopian State as the main cause of the decline of the Gada system. Generally, the intervention of the state is one of the main causes of the weakening of the Borana social, political, religious and resource management institutions.

5.7 Discrepancies Between Indigenous Resource Management and Conventional Government Sponsored Pastoral Associations

The most important resources in Borana are water and pasture. There are ways of managing these scarce resources for efficient utilization. As indicated in section 5.2.1 of this thesis, different water sources are managed differently based on degrees of dependability. Accordingly, the most permanent water source, wells, are more controlled and the management is clan based rather than administrative/political territories. In the dry season, every Borana pastoralist moves to the wells of his/her clan and uses them. Since grazing areas around the wells are also reserved for the dry season, well management indirectly determines the way grazing management should be organized (group discussion). As a result, Borana management system is more of clan based than administrative. On the contrary, the Pastoral Associations' management system is totally based on administrative division that does not have much meaning for the Borana. The enforcing mechanism for the Borana system is mostly based on consensus and social sanctions. It also involves exclusion from resource use or payments of heads of cattle. That of the formal organization is totally based on coercion and fines in monetary terms, which it lacks the resources and personnel to enforce. Water ponds constructed by development organizations and handed over to PA for management at Didahara are evident for this. Most of the ponds are not functioning because of lack of maintenance and proper care. But most of the ponds constructed and managed by the local people are functioning well because of proper care and management.

Currently, there is no clear demarcation as to the responsibility of the two systems in resource management. However, the indigenous institutions have lost the enforcing power of whatever sanctions they might want to impose on resource abusers. The local institutions may not be able to impose sanctions and fines on the resource abusers without recognition from PA. This is one of the most immediate problems expressed by Borana elders. Borana elders say that they have become ineffective because the power is with the PA. This is a dangerous point where misuse of resources might lead to externality and degradation of the lands.

5.8 Whether Pastoral Association play the Roles of Indigenous Institutions

Participants of the two group discussions were asked whether PA can play the role of the indigenous institutions. They answered in the negative with reasons hereby discussed. The most important of the reasons is that the people who make the management entity of the two systems are of different background and experience. The Borana institutions are made up of elders with accumulated knowledge of the ecology and experiences. They have structures up to grassroot levels that handle issues. Younger people who lack the knowledge and experiences on the other hand lead pastoral associations. The structure is not compatible with pastoralism, which is mobile. These people can not perform Cultural and religious ceremonies that are related to Borana life and resource management systems.

The elders also argue that pastoral associations were primarily created to enforce government rules and regulations, not for Borana people. Pastoral associations are much

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concerned with the interest of the government, and their accountability is to the government. They were created to implement the political objectives of the government and collect tax. On the contrary, indigenous institutions were created to safeguard the interest of the community and are accountable to the community, which they are part of, and necessitated, by the social, economic, ecological and political realities of the local people. The PA operates within administrative boundaries contrary to the Borana indigenous institutions that operate on clan and other social divisions hence the latter being popular and effective among the Borana people.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The most important natural resources that the Borana pastoralists depend on and use communally are water and pasture. The three different governments (Feudal government of Haile Sellasie, Socialist government of Mengistu and the current government of Meles Zenawi) have affected the management of these natural resources in the past four decades. The political instability in the country had its own effects on the ways natural resources have been managed through the indigenous institutions given the different motives of the political parties in power. Despite the fact that the Borana pastoralists have tried to resist pressures from different Ethiopian governments to takeover the resource management, the Borana indigenous institutions have undergone transformations, and the institutions have since lost their power to administer and manage the resources. The management of grazing lands is gradually shifted to Pastoral Associations (PA), as the indigenous institutions lost the judicial power to coerce members to abide by the traditional rules and regulations.

The cases of resource use conflicts are now mostly taken over by government agencies and representatives, although the Borana indigenous institutions have not totally withdrawn from resource management and resolution of conflict. The traditional wells that are the mainstay of Borana pastoralism are still managed by traditional rules. But there is no power and authority to exclude the offenders or resource abusers from resource use or to impose any fine on them. The power and authority is vested upon the PA. Change in access rights

to common property resources in form of cultivation, grazing reserve and presence of individual water tanks, tend to disadvantage and impact negatively on the weaker member of the community in particular and pastoralism in general. It blocks mobility routes, jeopardizes peaceful resource sharing, and contributes to shrinkage of grazing lands.

The risk management capacities of the indigenous institutions also seem to have been eroded. This is evident from the correlation analysis in this study that shows the weak relationship between the indigenous institution and risk management. The indigenous institutions seem to have succumbed to the combination of the existing problems and the stresses due to ecological changes, population pressure, and negative impact of development interventions. The traditional social security systems among the Borana are also weakened and can no longer sustain the poor members of the community in the pastoral production system. Mobility is curtailed by combination of factors such as population growth and settlement in remote grazing areas, division of southern rangelands based on ethnicity, the impartial impact of drought, the few social services available that attract settlement, and the declining number of cattle holding per household. The combinations of problems have immersed the Borana pastoralists in a situation where they can no longer predict their destiny.

The roles indigenous institution could play in resource and risk management are found to be ineffective. The conflict resolution mechanisms are weakened. The way common property resources have been used is changing to privatization. The clan helping

mechanism has declined dramatically. The consequences of the decline of the indigenous institutions on the life of the pastoralists are many and complex.

6.2 Recommendations

The Borana pastoralists have, from time immemorial, accumulated knowledge of their ecology and the best ways of managing the scarce resources and risks that characterize pastoral areas of East Africa in general and Borana in particular. Using the *Gada* system and other indigenous institutions, the Borana have been able to manage their resources very effectively in the past. However, the powers of the institutions to enforce customary rules and regulations are now worn out. The new institutions such as Pastoral Associations seem to have neither the resources nor the knowledge to fully replace the traditional ways of resources and risk management. If action is to be taken to rescue the Borana from immersion into total crises, every actor in the area should work towards rebuilding of the indigenous institutions especially *Gada* system, the pillar of the Borana life. The Borana indigenous institutions, knowledge and practices need to be recognized as the basis on which to develop resource management systems.

The need for mobility in the use of range resources in order to cope with the ecosystem variability should be understood by the federal and regional governments. The ethnic based regional structure that curtailed the movement of pastoralists should be reconsidered.

New institutions that can bridge the gaps between formal and indigenous institutions are required so that the two work in cooperation and address issues at the grassroot level and the interests of pastoralists. The new institutions are also expected to play the enabling roles. The indigenous institutions should be empowered to enable and rebuild the capacity of the local communities to assume greater responsibilities in the management of natural resources and provision of basic services.

The current Ethiopian constitution allows every ethnic group to govern its affairs. In the case of the Borana zone, the Oromo speaking minority groups, some of them competing with Borana majority groups for resources, dominate the zonal and district administration positions because of their political loyalty to the governing party. The regional state of Oromia should reconsider its appointment criteria and fill some posts with the Borana elites if they are to benefit from their constitutional rights. There should be strong and responsive administration that can talk for the voiceless.

Ethnic conflict is one of the most serious risks in the area. Even though conflict is common to pastoral areas because of competition for scarce resources, the current conflict between Borana and Somali clans is based on ownership claim for the grazing lands and permanent wells. The conflict also partly emanates from the way the regional governments were structured. To solve the problem, the regional states and federal government should consider and act in accordance with the historical perspectives of ownership of the disputed areas. At the same time, bringing the elders of the two communities together so that they solve the conflict peacefully based on their customary rules is important.

Constructing roads and infrastructure in the pastoral areas for easy transportation and operation can solve some of the problems of pastoral risks such as lack of market for cattle, input and output markets.

There is a need to enhance provision of education, as in the long run education will impact positively, resource and risk management. The school enrollment rate should be encouraged to increase emigiration so that population pressures on scarce resources may be eased.

Exploration should be undertaken for the proper and efficient utilization of ground water.

The traditional restocking mechanisms have been weakened for various reasons. Some of the NGOs operating in the area on restocking the pastoralists should work closely with clan leaders to identify the beneficiaries, types of animals required and the geographical areas from where to acquire the animals.

The pastoralists' strong psychological attachment to cattle that hinder sale of animals during good seasons need to be changed to avoid unnecessary lose in drought and other disasters. Awareness creation is important to encourage pastoralists to sell some of the animals and invest in non-pastoral activities or deposit the money in banks.

Land use policy that can accommodate the newly emerging interests in land use is needed.

The Oromia Regional State should take measure against the uncontrolled infiltration of the local drinks to the Borana *ollas*.

Pastoralists should be consulted and fully participated in every development activities in the area, to utilize the local knowledge and create sense of ownership of the development projects among the pastoralists.

Further, alternative livelihoods should be encouraged to run away from pastoral livelihood, and this would be associated with change to more appropriate land tenure system.

Finally, research should be conducted to find viable ways of introducing irrigated agriculture, since cultivation is becoming one of the risk mitigation options in the area.

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APPENDIX I: GLOSSARY

Aadaa seera Borana	Borana customary law
Abba ella	father of the well
Abba gada	father of era in the gada system (president)
Abba hirega	father of the watering order or supervisor of the order
Abba oba	father of the watering day
Abba olla	father of encampment
Abssyinia	former name of present day Ethiopia
Angafumma	seniority
Arada	grazing territory above olla
Busa gonofa	clan contribution to restock poor members of the clan
Dabballe	the first gada grade, in which boys are treated as girls
Dabare	temporary loan of animal
Dambala	occasional source of floodwater
Dargula	the entrance of the well
Ella	well (water point)
Facana	the hole around the well to collect water from the well into it and then poured into naniga
Forra	satellite herds(travel long distance in search of water &pasture)
Gada	indigenous Oromo economic, social and political system
Gadamojji	retirement ceremony that every gada grade passes through
Gamme	stands for 2nd and 3rd gada grades, but identified as junior and senior gamme
Gubbisa	name giving ceremony of the eldest son
Gumi-gayu	assembly of multitudes held every eight years to review the rules
Handhura	umbilical cord ,nucleus
Haro	seasonal water source (pond)
Hiriya	age set(member of age set)
Irba	replacement of something lost in accident or disaster

Jarsa gosa	clan elders
Konfi	caretaker of the well in the absence of abba ella
Kora arada	council of locality
Kora dheda	council of the 2nd highest grazing unit
Kora ella	well council
Kora madda	council of the highest grazing unit
Kussa	the fourth gada grade
Luba	generation set (Gada grades)
Meri	kind of water trough
Moggasa	name giving ceremony of younger sons and all girls. It is small feast
Nagaa Boran	peace of Boran
Naniga	canal for watering cattle, watering trough around wells
Olla	encampment, settlement or village
Qallu	the highest Borana religious leader
Raba	the fifth gada grade
Reera	area, cluster of villages
Sunsuma	indicates respectful relationship among the Borana
Waaqa	God
Warra	home based lactating and weak animals
Yuba	collective name of gada grades 7-10

APPENDIX II: HOUSEHOLD SURVEY QUESTIONNAIRE

Introduction

My name is _____. I am conducting research on Borana indigenous institutions in resource and risk management. The purpose is to identify the roles the indigenous institutions can play in resource and risk management in order to be able to make some recommendations for policy makers. Your contribution is vital for the success of this work. The responses will be kept strictly confidential. The name appears only as identification.

Name of respondent_____

Date and time of interview_____

Ollaa/madda_____

Section A: Background information

1. Age of the respondent_____
2. Sex 1 male [] 2 female [ ]
3. Marital status [1] married [2]single [3] divorced [4] widowed [5] widower
   If the respondent is married to more than one wife, specify the number of wives____
4. Formal education level of the respondent _____
5. Wealth category of the respondent: [1] wealthy [2]middle [3] poor
6. Religion affiliation [1] protestant [2] orthodox [3] catholic [4] Islam [5] waaqeffata [6]other, specify _____
7. Please list the total number of your family members (you included)_____

Section B: Information on socio-political institutions

8. Please indicate the position you occupy in the local leadership _____
9. How often do you participate in local assemblies? [ ] Very often [ ] often [ ] moderately often [ ] not often [ ] not at all
10. Please discuss the role of Borana indigenous institutions in:
    [a] Wealth redistribution_____
    _____

[b] Water and pasture management_____

_____

[c] Conflict resolution_____

[d] Risk management_____

_____

11. Please list your age at first marriage _____
12. Please list your age when you got your first child_____ and specify the sex of the first-born [1] male [2] female
13. How do you rate the effectiveness of Borana indigenous institutions in resource and risk management now days? [ ] very much effective [ ] very effective [ ] effective [ ] weak [ ] very weak [ ] very much weak
14. If it is not effective, what do you think is the source of weakness? [1] state influence [2] influence of relief and development organizations operating in the area [3] religious organizations [4.] Market economy [5] modern education [6.] Internal change [7.] other specify_____
15. Do you practice traditional religious practices? Yes__ no___
16. How do you rate the importance of Borana indigenous religious beliefs (Waqeffanna) for peace of Borana? [ ] very important [ ] important [ ] moderately important [ ] not as such important [ ] not important at all
17. Is there any calamity Borana attribute to the conversion of its members to other religious groups? Yes__ no ___
18. What is your position concerning this? True__ false__

    If true explain_____

    _____

Section C: Resource management

19. Do you have *kalo* (enclosure) for your private use? Yes__ no __
20. If yes to question number 19, when did you establish? _____
21. Do you own any water source privately? Yes__ no__

    If yes when did you establish it?_____

[b] Water and pasture management_____

_____

[c] Conflict resolution_____

[d] Risk management_____

_____

11. Please list your age at first marriage _____
12. Please list your age when you got your first child_____ and specify the sex of the first-born [1] male [2] female
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18. What is your position concerning this? True__ false__

    If true explain_____

    _____

Section C: Resource management

19. Do you have *kalo* (enclosure) for your private use? Yes__ no __
20. If yes to question number 19, when did you establish? _____
21. Do you own any water source privately? Yes__ no__

    If yes when did you establish it?_____

22. Do you charge people who want to use your privately owned resources? Yes__ no__

23. Who have the right to use it other than you? [1.] My sons and daughters [2.] In-laws [3.] *Olla* members [4] *Dheda* members [5] *madda* members [6.] My clan only [7] all Borana

24. Do you cultivate? Yes__ no___

25. If yes please indicate the number of hectares you cultivate? _____

26. When did you start cultivation?_____

27. What is the main reason forced you to cultivate? [1]. Access to extension service [2] Unavailability of pastoral production/ [3] Loss of cattle in drought [4.] Agriculture is more productive [5] Other, specify_____

28. Do you participate in: [1] wells excavation [2] Wells maintenance [3] Group watering [4] all

29. Which of the following do you think will be the most serious problem in the future? [1] Shortage of pasture [2] Water shortage [3] shrinking of pasture land [4] Decline of wealth redistribution [5] Change in access rights to common property resources [6] decline of Borana customary laws and its consequence on the Borana pastoral system

30. Have you encountered resource use conflict? Yes__ no__

31. If yes to question number 30, then with whom? _____

What were the causes? _____

32. What were the contributions of the Borana indigenous institutions in resolving the conflicts?

_____

_____

_____

33. How do you perceive the strength of Borana indigenous institutions in resource and risk management? [a] Becoming stronger [b] weakening [c] no change

Section D: Herd management

34. Please list the average distance your forra animals move from your home (in days)?

_____

35. Is the distance your herds move in search of pasture and water decreasing? Yes__ no__

36. If yes what are the reasons? _____

_____

37. Do you have enough labour to manage your herd properly? Yes__ no__

38. If no please indicate the additional manpower you need_____

39. Do you have children in towns? Yes__ no__

40. If yes please specify their number and sex_____

_____

41. Please discuss the future of mobility?_____

_____

Section E: Risk management

42. What risk mitigation mechanisms do you use? _____

43. What activities your household under takes currently? [1] Herding [2] Petty trade [3] Charcoal preparation and sale [4] Labour work [5] Selling firewood [6] cultivation [7] Honey collection 8. Other, specify_____

44. Do you think Borana grazing land is shrinking? Yes__ no__

45. If yes what do you think is/are the possible reason/s? [1] Ethnic conflict

[2] Bush encroachment [3] Regionalization [4] overgrazing

[5] Water scarcity in the remote forra area [6] population growth and settlement

[7] Other, specify_____

46. Please rate the following risks in your local area [ ] drought [ ]livestock disease [ ] problem of wildlife [ ] lack of access to grazing land [ ]ethnic conflict [ ]cattle rustling [ ]market risk

47. To cope with risk which of the options do you use? [ ]sell animals to by crops [ ]rely on aid food [ ] borrow animal [ ]look for employment [ ] prepare and sell charcoal

[ ] others, specify_____

Section F: Social networks

48. Please list the number of animals you contributed for busa gonofa[13] in the following years

	1991/2	1996/7	1999/2000
Cattle			
Goats			
Camels			

49. Please list the number of animals you contributed in dabare[14] in

	1991/2	1996/7	1999/2000
Cattle			
Goats			
Camels			

50.Please list the number of animals you received in *busa gonofa*

	1991/2	1996/7	1999/2000
Cattle			
Goats			
Camels			

[13] It is contribution by clan members to restock people who have lost their animals in natural disaster

[14] stock friend

51.Please list the number of animals you received *in dabare* in

	1991/2	1996/7	1999/2000
Cattle			
Goats			
Camels			

52. Do you agree to the statement "The helping mechanism among Borana is declining".[ ] Strongly agree [ ]agree [ ] moderately agree [ ]disagree [ ]strongly disagree

53. If you agree to the decline, what do you think are the major causes of the decline? [ ]poverty [ ] influence of market economy [ ] decline of the strong bond among the society [ ] differences in religious affiliation [ ]others, specify_____

54. Is there any institution that lends money in time of difficulty? Yes__ no ___

55. If no do you think such institution is important? Yes___no___

56. From where do you think the money can come? [ ]from community saving [ ] government [ ] NGOs [ ]other ,specify_____

57. Have you been a member of any cooperative? Yes__ no___

58. Briefly explain its importance_____

_____

_____

Section G: Herd ownership and drought

59. Please list:

[a] The total number of cattle you have_____

[b] The number of Borana cattle you have_____

[c] The number of non-Borana cattle you have_____

[d] The number of goats you have_____

[e] The number of camels you have_____

60. Please list the number of deaths occurred in the following drought years.

	1991/2	1994/5	1999/2000	
Borana				
Non-Borana				
Camels				
Goats				

61. Do you agree to the statement " Borana cattle are more productive?" [ ]strongly agree [ ]agree [ ] moderately agree [ ] undecided [ ] not agree [ ] not at all

62. How do you rate the adaptability of Borana cattle to your environment? [ ] very adaptive [ ] adaptive [ ]moderately adaptive [ ] poorly adaptive [ ]not adaptive at all

APPENDIX III: QUESTIONNAIRE FOR KEY INFORMANTS

1. Discuss the role of Borana indigenous institutions in defining access and use of water and pasture? _____

_____

_____

2. What are their roles in: [a] risk management? _____

_____

[b] In conflict resolution? _____

_____

3. In your opinion what role government can play in empowering the local institutions?_

_____

_____

4. Comment how effective resource management institutions can be built_____

_____

4. Discuss works that require cooperation and how effective they are now days?

_____

_____

5. What changes have happened to Borana indigenous institutions and access rights to common property resources since 1974? _____

_____

What are the possible causes? _____

_____

6. How do you see the attitudes of trained development workers towards indigenous institutions' capacity in resource and risk management? _____

_____

7. Have you been consulted in any of the project planning and implementation in the area? Yes__ no___
8. If yes please discuss your contribution_____

_____

_____

9. Discuss the status and prospects of *Gada* and other Borana indigenous institutions in resource and risk management_____
10. Discuss the Borana indigenous conflict resolution mechanisms and their current status_____

_____

11. How did traditional indigenous institutions work in herd building after crash as a means of risk management? _____

_____

12. What influence the indigenous institutions have on labour availability for herding?_____

_____

APPENDIX IV: GROUP DISCUSSIONS GUIDELINE

1. What are the possible changes that have occurred to the Borana indigenous institutions?

_____

_____

2. Discuss the implication of the changes on:

(a). Population size and structure_____

_____

(b). Social life of the people_____

_____

(c). Risk management capacity_____

_____

(d). Resource management capacity of the community_____

_____

3. Is there any gap between indigenous resource management systems and government sponsored institutions (PAs, coops etc.)?_____

_____

4.Are these emerging institutions that could play the role of the indigenous institutions?_____

_____

APPENDIX V: INDEX CONSTRUCTION AND MEASUREMENT OF VARIABLES

This section provides key to measurement of variables and the way indexes were constructed for some of the variables used in chi square, crosstabulation, correlation, and regression analyses.

Risk management

This variable was measured using the total tropical livestock unit (TLU) that the household could carry to the next rainy season after drought and the wealth category of the individual household. To standardize different species for comparison, each species was changed into TLU. Accordingly .1, .7 and 1 multiply small stocks, cattle and camel respectively. Individuals are also requested to categorize themselves based on wealth. Wealthy household was scored 3 and poor household was scored 1. The reliability test between wealth category and TLU owned is 0.79

In the cross tabulation and chi-square analysis, the risk management was categorized into three categories. The lowest score indicates poor management of risk and the highest score indicates good management of risk. In Borana case someone who for example could not manage the risk of drought and lost his animals will qualify for clan assistance if he has five or less milking cows. The score for risk management ranges from 1 to 40. The category is as follow.

Poorly managed risk (1-10)

Moderately managed risk (11-20)

Managed risk well (21 and above)

Correlation coefficient (r) between the two variables that make index of risk management is .650

Herd building or Wealth redistribution

Wealth redistribution or the traditional social safety net is measured by the total TLU received by the drought victims in the last three drought periods since 1990. It is either on temporary base called *dabare* or gift locally called *busa gonofa*.

Changes in access to common property resources

Changes in access to common property resources is measured by the extent of private ownership being introduced in the form of cultivation, private water point ownership and grazing enclosure locally called *Kalo*. The question was constructed for yes and no. Yes is scored 2 and no is scored 1.

The reliability test among the three variables that make index for changes in access right is 0.61.

Table 27. Correlation Among Variables that Make Index of Change in Access Rights

Variables	Own water source	Own kalo	Cultivate
Own water source	1		
Own kalo	.253*		
Cultivate	.314*	.176	1