

COPING WITH DROUGHT AMONG PASTORAL AND AGRO-PASTORAL COMMUNITIES IN EASTERN ETHIOPIA

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Key words: coping strategies, diversification, drought, migration,
Livestock raiding

ABSTRACT

This paper examines coping strategies of pastoral and agro-pastoral communities in six districts of Eastern Ethiopia. Data collected from a random sample of 360 households were used in the study. The results of the study indicate that the study area has been stricken by recurrent droughts since the early 1980s and that drought has increasingly devastating effects on the lives of pastoral and agro-pastoral communities. In response to the degrading production environment, the pastoral and agro-pastoral communities become more provident and employ a variety of techniques to cushion themselves against contingencies. Moreover, the results of the study show that most of the coping strategies are aimed at counteracting the detrimental effects of droughts after their occurrence rather than identifying the root causes of droughts. Finally, we suggest the need for political actors to move from crisis management through emergency intervention to improving the capability to cope in changing environmental conditions.

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I. Introduction

Food insecurity is an enormous challenge to Ethiopia. A brief historical survey reveals that over the last three decades Ethiopian agriculture has been unable to produce sufficient quantities of food to feed the country's rapidly growing population (Belay, 2004). As a result, the country is increasingly dependent on commercial food imports and food aids. Food insecurity, which has been a structural problem to sedentary farmers in the highlands of Ethiopia, has now become an important problem to the pastoral and agro-pastoral communities who inhabit the lowland areas and depend on livestock rearing for their livelihood.

Pastoral and agro-pastoral communities in Ethiopia constitute 10 to 12 % of the total population (Ahmed et al. 2002). In Ethiopia, pastoralism is widely practised in the Somali and Afar Regional States, and to a lesser extent in other regions of the country. Altogether, they occupy 61 percent of the country's land mass and keep over eleven million heads of animals (World Bank, 2003). Larger proportion of the people living in the lowland areas of Ethiopia are pastoralists engaged in extensive livestock herding and the rest depend on cultivation of a few crops and livestock herding (agro-pastoralists) (Ahmed et al. 2002; World Bank, 2003). About 30~40 % of the country's livestock population is found in pastoral and agro-pastoral areas (Coppock, 1994). Although the climatic conditions and hardships are roughly similar to most pastoral areas, the people inhabiting these areas differ in their socio-cultural traditions, herd compositions, coping strategies and in the degree of their integration into the market economy (World Bank, 2003).

Agricultural policies of the past regimes had little or no emphasis on pastoral and agro-pastoral groups. For instance, the rapid expansion of commercial farms in the 1960s in the Awash Valley constrained the mobility on which pastoralists depended through land alienation (Gebre, 2001) and forced them to move to other areas (Stahl, 1974). Other dimension of the policy was

reflected on the sedentarisation of the Afar pastoralists. However, as the policy was mainly supply-driven and not endorsed by the very people that it envisaged to serve, it led to a total failure. The first author's personal experience in the Erer valley of Eastern Ethiopia reveals that even in the very few areas where pastoralists were settled, of their own accord, a lot of support and assistance is being channeled so much so that the sedentarisation strategy proved to be unsustainable.

Since the mid-1990s, there have been some studies aimed at understanding the pastoral and agro-pastoral communities' response to the increasingly degrading environment (see among others Fasil et al., 2001; Kamara, 2001; Little et al., 2001; McPeak and Barrett, 2001; Luseno et al., 2003). However, almost all these studies were conducted in the North-eastern and Southern parts of the country and pastoralists inhabiting the Eastern part of the country were not covered by these studies. Hence, this paper examines the drought management strategies of pastoral and agro-pastoral communities of Eastern Ethiopia. **The rest of this paper is organised in four sections. Section II focuses on a review of pastoral coping strategies. Section III presents the study area, sampling design and methods of data collection. Results of the study are discussed in section IV. Section V summarises the main findings of the study and draws appropriate conclusions.**

II. Pastoral Coping Strategies: A Review

This section explains the concepts - '*coping*' and '*adaptive*' first and, then focuses on empirical evidences of related works. The concepts can either be referred as coping or adaptive depending upon the context in which they are used. Coping denotes a situation where a household is food insecure, whereas adaptive is used when a household is food secured and tends to pursue a strategy persistently (Ahmed, *et. al.*, 2002). In fact, our view is in a rapidly changing rangeland environment, adaptation is hardly possible although it appears in various literatures. Pastoralists and agro-pastoralists seem to cope with the change to make survival

possible. Davies (2003) makes a distinction between “coping strategies” (fall-back mechanisms to deal with a short-term insufficiency of food) and “adaptive strategies” (long-term or permanent changes in the way in which households and individuals acquire sufficient food or income). In the context of this paper, the term coping strategy refers to both adaptive and coping strategies of pastoral and agro-pastoral communities in Eastern Ethiopia. According to Davies (1993), coping strategies are the bundle of poor people’s responses to declining food availability and entitlements in abnormal seasons or years. Coping mechanisms involve social, economic and institutional preparedness to cope with the social effects of climatic droughts (Rockstrom, 2003). Davies (1993) underlines that coping strategies are not cast in stone and with each cycle of drought and partial rehabilitation, the range of options will change and the rate of take-up of particular coping strategies will invariably vary. It should be noted, however, that in situations where there are communities, depending on vulnerable ecosystem with eroding resilience, the coping and adaptive strategies have a tendency to overlap. In this respect, Maxwell (1996) notes that individuals and households facing difficulties in gaining and maintaining access to sufficient food not only rely on short-term means of “coping”, but they also devise alternative means of increasing access and security of access to food in the long term.

The existing empirical literature on pastoralism shows that pastoral mode of production dynamically adjusts itself to changes in ecological and social environment that are driven by both internal and external forces (Cullis, 1992; Pamo, 1998; Kamara, 2001). The pastoral society’s own social and livelihood systems play an important part in making pastoralism a viable way of life. However, in recent years, the pastoral production system in the Horn of Africa is in a critical situation and unable to support the basic needs of people whose very survival is strongly linked to the performance of this system (Ahmed et al. 2002). In this respect, numerous authors reported that pastoralists in this sub-region have long suffered from natural calamities and manmade

disasters including drought, political isolation, conflict as a result of competition for natural resources and falling levels of per capita income (Sandford and Yohannes 2000; Little et al. 2001; Ahmed et al. 2002; Luseno et al. 2003). Moreover, compared to cultivators, post-drought recovery among pastoral households is a long and slow process because herd re-constitution after drought is a long and slow process (Ahmed et al. 2002).

In response to the arid environments they inhabit, pastoral communities have developed coping or adaptive strategies over the time. These include livestock and cereal exchanges, herd diversification, herd splitting, income generation from diverse economic activities (trading occupation, farming, wage employment etc.), and the use of resources not normally exploited such as felling trees for charcoal making (Cullis, 1992; Coppock, 1994; Pamo, 1998; Fasil et al. 2001; Little et al. 2001; McPeak and Barrett, 2001; Ahmed et al. 2002). Nevertheless, charcoal making increases vulnerability of communities to drought/famine over longer period (Davies, 1993). In addition, such as governments' pressure to convert rangelands to wildlife habitat, population growth, the growth of rural towns, increased cultivation of rangelands, and the rapid escalation of violence brought about by the proliferation of automatic weapons among the pastoral communities impede mobility as adaptive or coping mechanism (Cullis, 1992; McPeak and Barrett, 2001; Ahmed et al. 2002). We find here a combination of exogenous and endogenous factors. Restricted mobility has led to the increased concentration of herds in certain areas, resulting in localized range degradation and lower livestock productivity.

Our understanding from the existing empirical literature reveals that pastoral systems in Eastern Africa have changed substantially in the past few decades. For instance, many herders have shifted from subsistence to a market-based focus as they have been drawn further into the monetized economy (Ahmed et al. 2002; Luseno et al. 2003). Herders are selling more animals, particularly males not needed for reproduction to meet their needs for cash. Household members are consuming less milk as they

sell more or reserve it for calves, kids, and lambs in an effort to increase their herds. As herders sell more animals through the market, they exchange fewer of them through traditional clan-based redistribution arrangements. However, a study by Roth (1996) indicates that pastoralists still prefer retaining them to selling for reasons of prestige or bride wealth payments, and for insurance purposes. This leads one to believe that Ethiopian pastoralists go more for herd maximization than off-take since the arid and semi-arid environment makes stable herd growth increasingly difficult.

III. Research Methodology

1. Location and Description of the Study Area

The Somali Region, where the study was conducted, is located in the Eastern and Southeastern parts of Ethiopia being one of the nine ethnically-based regional states of the country and comprises 9 zones with 49 districts¹. It has an estimated area of about 250,000 km², which makes it the second largest regional state next to Oromiya Regional State. The region has common boundaries with the Afar Regional State and the Republic of Djibouti in the North, Kenya in the South, the Oromiya Regional State in the West, and Republic of Somalia in the East and South. The total population of the SRS in 1999 was estimated to be 3.6 million (5.84 percent of the country's population). The overwhelming majority of the population of the SRS (85 percent) is rural (MEDaC, 2000). The same source shows that the SRS has a population density of 9.6 persons per square kilometer as compared

¹ With the change in government in 1991, on the basis of ethnic, linguistic and cultural identity, the country was divided into 9 semi-autonomous regional states, one federal capital (Addis Ababa) and one special administrative division (Dire Dawa). According to the Ethiopian Federal Democratic Republic administrative hierarchy, the regional states are divided into zones, districts and *kebeles* in urban areas or peasant associations in rural areas (local administration units), in that order.

to the national population density of 49.3 persons per square kilometer. This makes mobility easier. Different ethnic groups living in the area are also included in the study. Nevertheless, this study focuses on the production system as a whole, not on ethnic basis. The region is in the low lands; consequently, the temperature is high. The rainfall varies from 4.2 mm to 346 mm (NMSA, 2004), which makes crop production potential limited. This paper is based on study conducted in Shinile Zone of the SRS.

2. Sampling Design

The study area has six administrative districts namely Afdem, Ayisha, Dembel, Erer, Mieso, and Shinile. For sampling purpose, population of each district was stratified into pastoral and agro-pastoral groups and from each group 30 households were randomly selected. This resulted in a total sample size of 360 households. Given the importance of pastoralism and agro-pastoralism in the study area, these two production systems are the focus of this study. Thus, these two production systems were considered for sampling and data analysis. In stratifying households in such a way, we assumed that each category is homogeneous with respect to production systems although there might be differences in terms of other factors. We argue that information for pastoral and agro-pastoral policy development can be generated and comparison of communities on the way they cope in different situation is easy in taking production systems as sampling stratum.

3. Method of Data Collection

Field research was conducted from January to February 2001. A structured questionnaire, with both open-ended and pre-coded types of questions, was used for the field interviews. Only household heads were interviewed. It was not possible to interview all the household members for the fact that they are frequently on the move. The questionnaire was pre-tested by administering it to selected respondents. On the basis of the results obtained from the pretest, necessary modifications were

made on the questionnaire. In addition to the questionnaire survey, discussions were made with development workers and representatives of non-governmental organizations. Moreover, focus group interviews were held with community leaders and purposely selected key informants. These informal techniques helped to acquire useful and detailed information, which would have been difficult to collect through the questionnaire survey.

IV. Results and Discussion

The pastoralists and agro-pastoralists in Shinile zone consider drought as a permanent problem that they have to live with and have adopted different coping strategies. It is important to note that the capacity of a household to cope with drought may vary depending on the original situation of the household (whether the household is chronic or transitorily food insecure), degree and origin of crisis, and the structural conditions of the economy (such as availability of credit, off-farm employment possibilities, kind of production involved). This **section** examines the situation of the sample households before and after the 1999/2000 drought and looks into the coping strategies adopted by households in response to the degrading production environment. The first part deals with situation analysis and the second focuses on coping strategies commonly employed by the pastoral and agro-pastoral communities in the study area.

1. Situation Analysis

Livestock constitute a major economic factor in the pastoral and agro-pastoral communities of Shinile zone. More precisely, in the study area, livestock are a depository for savings, a reserve for contingencies, a self-reproducing asset, a source of subsistence and current income, and a source of energy for farm. Livestock play also a central role in determining the wealth and social status of pastoralists and agro-pastoralists. In addition to all these, livestock support intensification on the farm (through the cycling of nutrients through crop residues and manure).

However, the recurring drought affected livestock holdings per household. The average livestock holding of the pastoral households was 85 TLU and 21 TLU before and after the 1999/2000 drought, respectively². The respective figures for the agro-pastoral households were 74 TLU and 27 TLU. This means in normal years, the pastoral households rear various livestock species more, relatively large in number, than the agro-pastoralists. The importance of livestock for subsistence, as a source of cash and as a store of wealth, is contingent upon the number and types of animals owned and the availability of feed and water, and the owners' management skills. Comparing both production systems, agro-pastoralists keep large proportion of grazers compared to pastoralists, whereas pastoralists keep more browsers than grazers. This proves the environmental condition provides different options for varied production systems. However, the key informants put this as not being a fixed production strategy as local practices and preferences largely rely on environmental conditions. We generally observed a structurally-induced and supply-induced scarcity of grazing resources between and within ethnic groups respectively. This is following the arguments of Homer-Dixon (1994) who made a profound contribution to the concept linking conflict on common-pool resource use and scarcity of environmental resources. Supply-induced scarcity is caused when the available resource is declining in quantity due to shortage of rainfall and structurally-induced scarcity exists when movement of groups is limited due to insecurity. We have observed both situations in our study since different clans hold different property rights to specific resource –primary and secondary access rights–whereby secondary access rights are usually conditional. Supply-induced scarcity is more common in agro-pastoral areas than in pastoral areas because the former group moves less frequently than the latter.

In addition, this study points to the fact that there is a

² One Tropical Livestock Unit (TLU) is equal to 250 Kg. The TLU values for different species of animals is: 1 for camel; 0.7 for cattle; 0.8 for horse/mule; 0.5 for donkey; 0.1 for goat/sheep (ILCA, 1992).

difference between pastoralists and agro-pastoralists in terms of utilizing resources. While resources such as grazing land are considered **as** common-property resources among **the** pastoralists, they are not exclusively communal among the agro-pastoralists. The agro-pastoralists possess individual plots of land over which they have exclusive use rights. Unlike the pastoralists, the agro-pastoralists draw a distinction between communal land and private land, which they fence and protect from outsiders' encroachment. This indicates the presence of some norms of practice (or informal rules) to enable different groups to cope with.

In utilizing natural resources in such a way in both systems, livestock hold multiple functions constituting economic, social, and cultural values. These functions reflect the mechanisms through which households cope in different circumstances to attain food security at least in the short run. In both production systems, the principal motive for keeping cattle and camels is for milk production. Milk is a regular part of the meals. During dry season and under drought conditions, camels are the main sources of milk because milk from cattle and goats is relatively scarce. Goat milk is highly appreciated by livestock owners and it is mainly fed to children and is also considered to have a medicinal value. Meat production is the other important reason for keeping the livestock. Both pastoral and agro-pastoral households slaughter cattle and camel on special occasions like when community leaders and elders in the society die. Camel meat is highly appreciated by pastoralists because of its taste and presumed medicinal value. Culturally, camel meat appears to have more traditional and religious importance among the Shinile pastoralists. It is consumed during religious and cultural ceremonies. Sheep and goats are slaughtered during religious holidays as ceremonial sacrifices and when close family members residing in distant places pay a visit to the family.

In both systems of production, cattle are used as a source of draught power for land preparation. In both pastoral and agro-pastoral systems, small ruminants (sheep and goats) are important cash sources. Small ruminants can be easily liquidated

to meet immediate cash requirements. Camels and donkeys are used to move the household and its goods and chattels when changing camps in the pastoral system and as pack animals in the agro-pastoral system. Almost all of the respondents in both systems underlined the importance of camels for cross-border trade and medium distance transport. Donkeys are used for short to medium distance travel and to fetch water from rivers and wells to the village inhabitants especially for elders and children.

The above table indicates that the sample respondents kept less number of livestock at the time of the survey as compared to the preceding year. The loss in the number of animals was relatively more important to the pastoralists than the agro-pastoralists. More precisely, the pastoralists lost 82.4%, 78.1% and 58.8% of their cattle, camel and small ruminants, respectively. The respective percentages for the agro-pastoralists were 65.9%, 64.8% and 56.7%. On the whole, the reduction in livestock ownership might be attributed to bad weather conditions in 1999/2000, which caused crop failure, shortage of feed and scarcity of water.

TABLE 1. Average holdings of each species before and after the 1999/2000 drought (in TLU)

Situations	Pastoralists			Agro-pastoralists		
	Cattle (n=184)	Camels (n=185)	Small ruminants (n=203)	Cattle (n=72)	Camels (n=49)	Small ruminants (n=56)
Number before drought	39	23	21.9	47	23.45	16.6
Died in village	17	11	7.08	11	8.79	6.01
Died during migration	10	4	4.02	8.89	5.02	2.24
Died during return	4	3	1.75	1.65	1.3	1.17
Number after return	7	3	9.03	11.5	1.3	7.1

The major causes of death of livestock during the 1999/2000 drought are shortage of water, feed, animal diseases, predators and livestock feeding on toxic plants due to feed shortage, which they do not usually take. Moreover, the effect of drought on pastoral livelihood is aggravated due to low level of its integration with the country's economy. One indicator of this is that pastoralists have little market outlet to sell their animals or are forced to sell them at lower prices. The prices for livestock fall dramatically in periods of drought since nobody wants to buy weak and drought-stricken animals. At times of severe drought there are no possibilities to salvage the meat, skin and hides of animals. The strict control of informal cross-border trade due to its illegal nature and weak condition of pastoral livestock during drought compared to livestock kept by farmers hindered the de-stocking and restocking practices as coping since distress-safe forces push them to receive lower prices.

1.1. Constraints to Animal Production

There are several constraints with which pastoral and agro-pastoral households have to cope with. We focus on the main **ones** here. They include diseases, water scarcity, shortage of feed and range degradation. Not all the households, because of their own peculiar characteristics and geographical locations that cause huge variability in exposure to such production risks, equally value all of these constraints. Our focus here is on the way individual households judge different constraints in different environmental condition, particularly rainfall. The assumption is coping strategies of each group or household is determined based on their assessment of constraints. However, our approach is limited in terms of examining constraints a little further. From Table 2 we can learn that although range degradation is a cumulative process induced effect in the rangeland environment, water and feed scarcity are drought sensitive constraints. Others like diseases and predators that cause huge livestock losses, if precautions are not **taken**, are not drought-induced constraints.

TABLE 2. Major Constraints to Livestock Production in Normal and Drought Years as Perceived by the Respondents*

Constraints	Percentage of respondents who reported the problem			
	Pastoralists		Agro-pastoralists	
	Normal year	Drought year	Normal year	Drought year
Water scarcity	73.6	94.6	63.9	84.7
Livestock diseases	90.5	92.9	88.9	90.3
Range degradation	77.0	90.2	69.4	81.9
Feed shortage	76.7	94.3	73.6	91.7
Lack of market outlet	73.0	76.4	66.7	77.8
Predators	86.5	86.1	86.1	88.9
Labor shortage	38.2	36.5	31.9	43.1

* Percentages do not add up to 100 because of multiple responses

Pneumonia, Black leg, Anthrax, Foot and Mouth Disease, Botulism, Parasitic gastro-enteritis, liver disease, Trypanosomiasis and Camel pox are important livestock diseases mentioned in order of importance. Inadequacy and in most cases unavailability of veterinary services are the major factors favoring further expansion of diseases. Our survey shows that 94 % of the pastoralists and 96 % of the agro-pastoralists did not receive regular animal health services from the Ministry of Agriculture.

2. Coping Strategies

Until now, drought-induced effects on marginal rangeland users are explained based on a one-time survey. Although drought is a recurring phenomenon, we considered a recent drought event since respondents recall well the effects of the most recent disaster. The focus group interviews and key informant surveys revealed that the most important coping strategies used by the pastoral and agro-pastoral communities when faced with drought include: mobility; raiding (taking away aggressively) of animals; and species diversification. Others coping strategies include involvement in petty trade; charcoal selling; eating wild fruits and leaves of trees

and herbs; mortgaging and sales of assets; distress migration; borrowing food or money to buy food; clan interdependence (members of the same clan share food among themselves). Furthermore, entrusting some of their livestock to relatives who reside in non-drought prone areas; looking for paid employment from sedentary farming households; and reliance on remittance are other forms of coping strategies. Details about a few of these strategies are discussed below.

2.1. Movement of Animals and People

The availability of feed and water determines the livestock population. High livestock population leads to reduction in feed supply, resulting in livestock mortality. With such situation and recurrent droughts, pastoral livelihood is increasingly becoming vulnerable to impoverishment and famine. In the six districts covered by this study, both pastoral and agro-pastoral communities have consistently been challenged by rapid decline of pasture and water availability. The Shinile pastoralists and agro-pastoralists move their animals seasonally in search of better sources of feed and water. This system of seasonal movement allows the herd owners to utilize the available resources in a rotational manner and enables the vegetation on grazing lands to regenerate. Moreover, the seasonal migration reduces the concentration of livestock on a fixed pastureland for a longer period and thereby averts the risk of overgrazing. In both production systems, the head of the household makes the decision where and when to migrate. In wet season animals were trekked over short distance (to the near by areas) whereas in the long dry months when drought is widespread over a large area, local movements are not dependable. Consequently, herd owners would be forced to take their animals farther. This was often reported to have led to conflict with other communities.

For instance, pastoralists and agro-pastoralists in Mieso district migrate to the western Hararghe Highlands (Eastern Ethiopia), whereas those in *Dembel and Afdem* districts migrate to the Afar National Regional State to the extent they find fresh

pasture in the rangelands. These routes of migration were safe and easy to the pastoral communities in the earlier period. However, at present these routes are no more accessible without conflict and/or prior negotiation with leaders of other communities or clans. That means there is a tendency to introduce sharing of territories in which one community (clan group) demands the permission of the other to graze its livestock in limited areas. Moreover, the migration routes are continually changing depending on the availability of pasture and security conditions.

Since the early 1990s, the question of property rights has appeared. More specifically, the question of “who can graze where and under what conditions?” has become an immediate concern to pastoralists and agro-pastoralists. Scarcity of resources (pasture, water and natural vegetation) resulting from population explosion and weather variability are creating difficulty towards sustainable use of the natural resources. Nevertheless, pastoralists in the study area consider failure of rains as the cause for scarcity of resources than herders’ unwise utilization of the available resources such as charcoal making, which reduces the feed resource base for browsers. One interesting outcome of this study is that scarcity of resources has led to competition among herd owners for the same resources and has become a barrier to free mobility of pastoralists and agro-pastoralists. Despite these, mobility contributed positively to the development of an equilibrium system in which herders’ appropriation of a specific patchy during grazing is compensated by the regeneration of the rangelands. At present, pastureland ecology in the study area is nearly in a non-resilient phase due to limited mobility.

2.2. Seasonal Grazing Patterns

Recurring drought and conflict are pronounced by resource shrinkage and degradation and restricted mobility. Given this situation, one of the strategies used by pastoralists and agro-pastoralists to secure their livelihoods and maintain livestock productivity is changing grazing places from feed scarce areas to relatively feed sufficient areas. This practice is different from the

seasonal migration of people and animals in that it is undertaken within the vicinity of the settlement areas.³ A few (15%) of the interviewees did not change their grazing places at all. Nearly half (45%) changed their grazing places only during the dry season, whereas the remaining changed their grazing places during both dry and wet seasons.

In the past, livestock were watered in the dry season from wells owned by a group of pastoral communities. Nowadays, individual households are constructing their own Birkeds (i.e. water collected in wet season for dry season use) as watering points. Therefore, the areas that could be grazed in the dry season were confined by the need for livestock to return to these watering points at periodic intervals. As a result, dry season grazing areas were under the risk of overgrazing. In order to mitigate the problem of overgrazing, pastoralists began moving far from their settlement sites, to locations as far as 60 km away from their settlements. Dry season grazing areas were determined by factors such as conditions of rainfall in the previous season, availability of fodder and incidence of animal parasites. Nevertheless, whenever the amount of rainfall in the previous season was not sufficient, animals could graze close to the dry season wells with careful follow up by women and children. The process of grazing animals in distant locations during the dry season is highly associated with greater transaction costs in terms of time, energy and disease prevalence. Although feed availability is relatively good in the wet season, they graze their animals far away from their settlement site in order to conserve feed resources in their vicinity and avoid damage to crops they grow.

³ There is a difference between seasonal grazing patterns and mobility/migration as used in this paper. Mobility/Migration is referring to distant travel with the herd to have access to pasture on others' territory whereas seasonal grazing patterns or scheduled grazing patterns imply a planned shift from one specific area to another, within a limited boundary, mainly to allow regeneration of pasture. It also means a cyclical movement in grazing practices. Therefore, the latter is more secured in terms of safety of movement than the former.

Others' findings in different administrative zones of the region support our observation (Sugule and Walker, 1998). Seasonal grazing pattern has changed with the increase in water points, particularly the increase in "*birkeds*" since the 1970s. More concentration of *birkeds* due to dry season water scarcity leads to less space left for grazing in different seasons. Grazing patterns among Somali pastoralists have also been affected by the increase in number of settlements (domestic settlers and returnees from refugee in Somalia), the increase in area of land under cultivation and the spread of grazing enclosures. Owing to this, Babiker (2002) argues against herder/farmer dichotomy or a shift from pastoralism to farming being controversial since pastoralists intend to diversify other than moving from one form of production to the other. Hence, it is difficult to arrive at generalization on how pastoralists cope in a changing environment. Diverse experiences prevail. Shinille Zone has not been an exception to this condition. In any way, the practice of seasonal grazing, which provides pasture the chance to regenerate is considered environmentally friendly. This practice is, however, on the verge of disappearance principally as the result of rapid socio-economic changes in the pastoral areas. The seasonal grazing patterns are also challenged by the misleading policy of the SRS. Partly in response to the recurrent droughts in the SRS, the Regional Government plans to settle (sedentarize) pastoralists. However, the Regional Government's policy on settlement of pastoralists is expected to result in the disruption of the seasonal grazing patterns. More precisely, the policy could be counterproductive for two reasons. On **the** one hand, settlements affect grazing land availability since pastoralists in the settlements will be forced to graze their livestock permanently around settlement areas without traveling farther. On the other hand, the demand of settlers for firewood and permanent house construction may add pressure to the environment surrounding the settlers.

The national policy direction stands against the concepts of the new rangeland ecology (Behnke, et al. 1993) where the disequilibrium nature of rangeland ecology makes seasonal mobility

necessary to take advantage of opportunistic grazing in a variable resource conditions. This widely recognized view is in consistent with the seasonal grazing patterns pastoral and agro-pastoral households are practicing in our study area. This implies the need to develop effective formal institutions and encourage traditional norms that permit extensive movements to enable households to reduce risk. The sequential risk reducing effect of policies and institutions can be in place if local government advocates seasonal grazing patterns. Our findings also inform that prevention of inter-clan disputes and improving the marketing environment are some of the areas where intervention is required to support coping. Clear policies and political will determine the chance to attain this goal. Hence, we believe that coping with drought demands adequate policy instruments in addition to what the public can do.

2.3. Herd Diversification

Under conditions of environmental variability, an opportunistic stocking strategy requires, in addition to herd mobility, species diversification (cattle, goat, sheep, and camel) and emphasis on incentives on primary productivity. The type and quantity of feed resources available determine species diversification plan of the households. A household's motivations for primary productivity, such as potential of herd to produce immediate products that household members demand (such as milk) and the restocking capability (ability to reproduce in a short interval) are important elements in both production systems. Therefore, during mobility pastoralists make deliberate decisions in terms of giving feeding priority to female animals to secure the immediate milk demand than males. This generalization holds true only for nomadic pastoralists. Moreover, when pastoralism takes the form of transhumance that a group migrates seasonally, cows remain to serve women and children at home still with feeding priority and adult male herders move with the remaining herd.

The results of this study show that the sample respondents adopted a strategy of herd diversification (Table 3). The proportion

of households with at least two livestock species was 96% and 97% of the sample households in the pastoral and agro-pastoral groups, respectively. Herders usually keep such a diversified livestock species in order to secure their livelihood. This strategy of rearing different species of animals has ecological and economic advantages. Different species (grazers and browsers) can utilize different ecological niches of a given grazing area much more efficiently than a single species. Moreover, herd owners with different types of livestock are less vulnerable to calamities and disasters than that of those with only one species. For instance, an outbreak of certain diseases in a particular area has less chance of infesting all the species at the same time.

TABLE 3. Livestock Species Diversification by Sample Households

Number of species*	Percentage of households	
	Pastoralists	Agro-pastoralists
One	4	3
Two	21	17
Three	75	80

* Only camel, cattle, shoats (goats and/or sheep) are considered

2.4. Livestock Raiding

Livestock raiding has long been one of the strategies used by livestock owners to rebuild their herds after the occurrence of drought. Key informants indicate that it has a long history. It is common to most pastoral areas of Eastern Africa (among Somali of Ethiopia, Turkana and Massai of Kenya). In some literature, it appears as “politics of the gun” to express the extent of violence (Hendrickson, *et. al.*, 1996). We have also understood that livestock raiding is a practice used mostly at the time of environmental stress or when there is a need to rebuild the livestock resource lost due to drought. In certain cases it is considered as a cultural practice to demonstrate group strength.

Livestock raiding takes two forms: *internal and predatory*

types (Hendrickson, *et. al.*, 1996). We relied on ethnicity and kinship relations for such classification. In the internal type members of a given clan or ethnic group take away animals of their clan or group members whereas in the predatory type animals are violently looted from members of other clans or ethnic groups. Whereas the predatory type of raiding leads to undesirable consequences including armed conflict, instability and finally irreversible social tragedy. From the focus group interview with the clan leaders it became quite clear that the predatory type of raiding is common between sedentary neighbors and pastoralists whereas the internal raiding type is typical within the same ethnic groups of different clans. It is common among those pastoralists that are armed and cannot be disarmed due to limited capacity of the government. Such a practice is popular among pastoral groups of *Isaa clan of the Somalis*, and agro-pastoral *Oromo* ethnic groups and *Isaa* and *Afar* pastoralists.

Although internal type of raiding seems to contribute to ‘system stability’ and serve to redistribute resources within the clan members, it has been a source of conflict and animosity among different clans of the same ethnic group. Since recently there has been raid related conflict between *Hawya* and *Isaa* clans of the Somali and among different clans of the Afar (Kassa, 2002). The internal type used to be considered as a ‘peaceful’ coping strategy because it involves transfer of wealth from one member of the clan to the other. What makes it peaceful is the raided group will have a chance to reciprocate it when it is convenient and need arises. Moreover, traditional institutions mediate the small-scale disputes between and among groups. Hence, it does not lead to warfare and insecurity. The challenge in the assessment of raids as a coping strategy and a means to reduce vulnerability is the reluctance of different groups to inform outsiders how they are engaged and what they gain from such a practice. As a result, our explanation is confined to giving reasons instead of supporting with figures. Experiences of key informants show larger number of animals raided in predatory than in internal or “redistributive” raids, which implies the former type has a potential to lead to

poverty and destitution of the less powerful groups.

Reference must be made to the underling environmental, political and socio-economic determinants of pastoral relations in harsh environments in order to understand why livestock raiding remains to be such an important feature of social organization and external relations today. Socio-economic factors play an important role in explaining the incidence and intensity of raiding. Many aspects of pastoralists' culture display a military philosophy, which blends with religious, political and economic matters. Elders believe that livestock raids seem to be one of the few ways for a young man to acquire prestige and gain economic independence from his family. In the same vein, Bourdieu (1979) points out that in systems where economic capital is permanently at risk, accumulating social and symbolic capital is probably the most enduring and reliable form of accumulation, as it can be transformed into economic assets at any stage. Kassa (2002) also identified a similar practice in his study on Afar pastoralists of northeastern Ethiopia.

V. Conclusions

This paper examined the challenges facing the pastoral and agro-pastoral communities in Eastern Ethiopia and identified the coping strategies adopted by these communities in periods of drought. It is believed that this study, although limited both in its coverage and scope, provides information to all concerned in the development of pastoral areas so that they could make well-informed decisions.

The results of this study reveal that recurrent droughts are permanent problems that pastoral and agro-pastoral communities of Eastern Ethiopia have to live with. Moreover, the findings of this study made it clear that common pool rangeland resources in Eastern Ethiopia have become inadequate to support the livelihoods of marginal pastoral and agro-pastoral groups. The overall effect of the degrading production environment in the pastoral areas of Eastern Ethiopia has been gradual deterioration of health conditions

and productivity of livestock (reduction in milk and meat quality and quantity associated with poor feeding and emergence of diseases). These problems are exacerbated by the breakdown of seasonal grazing patterns, scarcity of water, reduction in pasture availability and conflict over resource use. **Another interesting outcome of this study is the fact that there is a difference between pastoralists and agro-pastoralists in terms of utilizing resources. While resources such as grazing land are considered as common-property resources among the pastoralists, they are not exclusively communal among the agro-pastoralists. More precisely, the agro-pastoralists draw a distinction between communal land and private land, which they fence and protect from outsiders' encroachment.**

The different coping strategies employed by the pastoral and agro-pastoral communities of Eastern Ethiopia are more of short-term responses and are largely aimed at redressing short-term acute needs. Thus, they should not be considered as stand-alone efforts in foreseeing and mitigating acute emergencies. Moreover, some of the coping strategies such as livestock raiding and trespassing into the territories of other clans or ethnic groups contribute to fomenting social tensions among pastoral communities and creating a sense of insecurity. Likewise, some of the income generating activities such as selling fire wood and charcoal would increase vulnerability of communities to drought over longer period.

The problem of food insecurity in the pastoral areas of Ethiopia is at a critical stage and the pastoral and the agro-pastoralist communities are faced with a choice: they can either continue with the old practice of periodic mobility with increasingly hostile treatment by the neighboring communities; or they can seek a wide ranging dialogue with all the neighboring communities to strike a deal that encourages equitable and sustainable utilization of grazing land and water resources. The results of this study point to the fact that it is imperative that emphasis is placed on adaptive strategies so as to lessen the magnitude and recurrence of future emergencies. Among the most

important policy measures which need to be taken in this direction are: developing infrastructure; setting up an efficient livestock marketing **system**; giving greater attention to social inequities, conflict management, and resource use; and providing support for sustainable management of the natural resource base of the study areas. These measures should take in to account the socio-economic, agro-climatic, institutional and cultural environments of the target population. **Moreover, as interventions by outsiders which don't involve the target population are doomed to failure, it is important that the pastoral and the agro-pastoral communities be actively involved in planning and implementing development projects in their areas. The present efforts made by the Regional Government to settle pastoralists should be revisited and be based on a well-conceived plan and with the participation and full consent of the pastoralists themselves.**

Acknowledgements

The authors are grateful to the officials of the Hararghe Catholic Secretariat (Ethiopia) for their permission to use the data from the Socio-economic survey of the Shinile Zone. The authors would also like to express their heart-felt thanks to the German Academic Exchange Program (DAAD) for financing the first author's stay in Germany while writing this paper.

REFERENCES

- Ahmed, A.G.M., A. Azeze, M. Babiker and D. Tsegaye. 2002. *Post-Drought Recovery Strategies among the Pastoral Households in the Horn of Africa: A Review*. Development Research Report Series no. 3. OSSREA (Organization for Social Science Research in Eastern and Southern Africa): Addis Ababa.
- Babiker, M. 2002. "Resource Alienation, Militarization and Development: Case Studies from East African Dry Lands." proceedings of the Regional Workshops on East African Dry Lands. OSSREA: Addis Ababa.

- Behnke, R., I. Scoones and C. Kerven. 1993. *Range Ecology at Disequilibrium: Models of Natural Variability and Pastoral Adaptation in African Savannah*. Overseas Development Institute: London.
- Belay K. 2004. "Management of Droughts and Famines in Ethiopia." *Journal of Social Development in Africa* 19(1). (Forthcoming).
- Belay, K. and T. Getahun. 2002. "Production and Utilization of Camel Milk in Eastern Ethiopia: The Case of Jijiga and Shinile Zones (A Survey)." *Folia Veterinaria* 46(2): 75-82.
- Block, S. and P. Webb. 2001. "The Dynamics of Livelihood Diversification in Post-famine Ethiopia." *Food Policy* 26(4): 333-50.
- Bourdieu, P. 1979. *Designing of Theory and Praxis from Ethnological Foundations of Kabylischen Society* Frankfurt: Suhrkamp.
- Broad, K. and S. Agrawal. 2000. "The Ethiopian Food Crisis: Uses and Limits of Climate Forecasts." *Science* 289: 1693-1694.
- CSA (Central Statistical Authority). 1999a. *The 1994 Population and Housing Census of Ethiopia: Results at Country Level*. vol. II. Analytical Report. Addis Ababa, Ethiopia.
- _____. 1999b. *The 1994 Population and Housing Census of Ethiopia: Results for Somali Region*. vol. II. Analytical Report. Addis Ababa, Ethiopia.
- Coppock, D.L. 1994. *The Borana Plateau of Southern Ethiopia: Synthesis of Pastoral Research, Development and Change, 1980-91*. International Livestock Center for Africa: Addis Ababa.
- Cullis, A. 1992. "Taking the Bull by the Horns: NGOs and Pastoralists in Coalition." in 'Pastoral Development Network Paper 33d. pp. 1-8. Overseas Development Institute: London, England.
- Davies, S. 1993. "Are Coping Strategies a Cop Out?" *IDS Bulletin* 24(4): 60-72.
- Fasil, K., T. Diress and G. Synnevag. 2001. "Traditional Coping Strategies of the Afar and Borana Pastoralists in Response to Drought." Drylands Co-ordination Group Report No. 17. Noragric, Norway.
- Gebre, A. 2001. *Pastoralism under Pressure: Land Alienation and Pastoral Transformations among the Karrayu of Eastern Ethiopia, 1941 to Present*. Shaker Publishing.
- Hendrickson, D., R. Mearns and J. Armon. 1996. "Livestock Raiding among the Pastoral Turkana of Kenya: Redistribution, Predation,

- and the Links to Famine.” *IDS Bulletin* 27(3).
- Homer-Dixon, T.F. 1994. “Environmental Scarcity and Violent Conflict: Evidence from Cases.” *International security* 19(1): 5-40.
- ILCA (International Livestock Center for Africa). 1992. *Livestock Production System*. ILCA: Addis Ababa.
- Kamara, A.B. 2001. “Property Rights, Risk and Livestock Development in Southern Ethiopia.” *Socioeconomic Studies on Rural Development* 123.
- Kassa, Getachew. 2002. “Resource Conflicts among the Afar of North-East Ethiopia.” proceedings of the Regional Workshops on East African Dry Lands. pp. 145-167. OSSREA: Addis Ababa.
- Little, P.D., K. Smith, B.A. Cellarius, D.L. Coppock and C. Barrett. 2001. “Avoiding Disaster: Diversification and Risk Management among East African Herders.” *Development and Change* 32(3): 401-433.
- Luseno, W.K., J.G. McPeak, C.B. Barrett, P.D. Little and G. Gebru. 2003. “Assessing the Value of Climate Forecast Information for Pastoralists: Evidence from Southern Ethiopia and Northern Kenya.” *World Development* 31(9): 1477-1494.
- Maxwell, S. 1996. “Measuring Food Insecurity: The Frequency and Severity of Coping Strategies.” *Food Policy* 21(3): 291-303.
- Maxwell, S. and T.R. Frankenberger. 1992. *Household Food Security: Concepts, Indicators, Measurements*. A Technical Review. UNICEF and IFAD: New York and Rome.
- McPeak, J.G. and C.B. Barrett. 2001. “Differential Risk Exposure and Stochastic Poverty Traps among East African Pastoralists.” *American Journal of Agricultural Economics* 83(3): 674-679.
- MEDaC (Ministry of Economic Development and Cooperation). 2000. *The Ethiopian Population Profile: 1999*. Addis Ababa, Ethiopia.
- Moris, J.R. 1998. *Under Three Flags: The Policy Environments for Pastoralism in Ethiopia and Kenya*. SR/GL-CRSP Pastoral Risk Management Project Technical Report No. 04/99. Utah State University: Logan.
- NMSA (National Meteorology Services Agency). 2004. *Climate of Ethiopia Series* 1(1). Addis Ababa.
- Pamo, E.T. 1998. “Herders and Wild-game Behavior as a Strategy against Desertification in Northern Cameroon.” *Journal of Arid Environments* 39(2): 179-190.
- Parliament of Ethiopia. (n.d.). The Federal Democratic Republic of

- Ethiopia Basic Information: The State of Somalia, www.ethiopar.net/English/basinfo/infosoml.htm (Accessed on November 17, 2003).
- Roe, E., L. Huntsinger and K. Labnow. 1998. "High Reliability Pastoralism." *Journal of Arid Environments* 39(1): 39-55.
- Rockstrom, J. 2003. "Resilience Building and Water Demand Management for Drought Mitigation." *Physics and Chemistry of the Earth* 28(20-27): 869-877.
- Roth, E. 1996. "Traditional Pastoral Strategies in a Modern World: An Example from Northern Kenya." *Human Organization* 55(2): 219-224.
- Sandford, S., and H. Yohannes. 2000. *Emergency response interventions in pastoral areas of Ethiopia*. Report of the Pastoral Appraisal Team. DFID: London.
- Stahl, M. 1974. *Ethiopia: Political Contradictions in Agricultural Development*. no. 67. Publication of the Political Science Association. Uppsala.
- Sugule, J. and R. Walker. 1998. "Changing Pastoralism in the Ethiopian Somali Regional State." South East Rangelands Project. Survey Report. UNDP-EUE: Addis Ababa.
- World Bank. 2003. "Ethiopia: Pastoral Community Development Project." (Project Information Document www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2002/04/12/000094946_02041104202174/Rendered/PDF/multipage.pdf (Accessed on November 10, 2003).