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PASTORAL DEVELOPMENT STRATEGIES
IN THE SAHEL AND EAST AFRICA:
CAN THE MISTAKES BE CORRECTED?

by

Ahmed Musa Haji Ahmed

A report submitted in partial fulfillment
of the requirements for the degree

of

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in

Range Management
Plan B

Approved:

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CHAPTER I

INTRODUCTION

There is much controversy on the definition given to those people who raise livestock on the natural vegetation. Differences in the degree of their dependence on livestock and livestock products for food, as well as differences in the patterns of their movements, create the controversy. "Pure-pastoralists", "nomadic pastoralists", "semi-pastoralists", "semi-nomadic", "transhumant", and "semi-sedentary" are but some of the many terms used in the literature to describe them (see, for example, Johnson, 1969; Jacobs, 1965; McGee, 1986; Horowitz, 1981). To avoid much of the confusion created by the use of these terms, we use the definition of pastoralists as "...people who derive most of their income or sustenance from keeping domestic livestock in conditions where most of the feed that their livestock eat is natural forage rather than cultivated fodders and pastures", and who "...devote the bulk of their own, and their families', working time and energy to looking after their livestock rather than to other economic activities" (Sandford, 1983:1). Pastoralists occupy most of the arid and semi-arid regions of Africa as the ecological conditions of these areas are mostly unfavorable for cultivation (McGee, 1986).

The pastoral zone in Africa covers a geographical area that extends from the Sahara Desert to the southern parts of the

continent, and from Somalia to Senegal. African pastoralists differ in their cultures, social organizations, migration patterns and types of animals raised among other characteristics. Despite these differences, Goldschmidt (1981) attributed the following general characteristics to most pastoral tribes in the continent:

- They keep cattle, goats, sheep and camels in various proportions.
- Most pastoralists do not use horses (or other transport) to herd their animals, but rather do it on foot.
- They keep their animals primarily for milk and meat.
- They graze their livestock in an ecologically unprofitable area for cultivation, so that pastoralism is probably the most economic way of using the land.
- Spatial and temporal variability of low rainfall forces or necessitates that the pastoralists move their livestock from place to place in search of pasturage and water.
- Grazing land is a common property, as are natural water points. However, water wells belong to the people who dig them. Individuals or groups of people can own wells.

Goldschmidt (1981) cites that about one-half of African land area is devoted to livestock and that 15% of the population depend either completely or partially on them. The Food and Agriculture Organization annual report (1982 FAO Production Yearbook) estimates the African livestock population as follows: cattle, 173,387,000; sheep, 186,167,000; goats, 152,178,000; and camels, 12,563,000. In tropical Africa about 70% of the ruminants live in the Sahel and

eastern Africa, 15% in non-Sahelian western Africa, and the remaining 15% in central and southern Africa (Pratt, 1984). Such large populations of livestock in Africa equate to a high livestock-head per capita ratio for the continent. Simpson and McDowell (1986) estimated the following average number of livestock per person ratio in Africa, Europe and USA respectively for early 1980: cattle, 0.34, 0.27, 0.49; sheep, 0.37, 0.36, 0.05; and goats, 0.31, 0.03, and 0.01.

In Africa, south of the Sahara, livestock contributes about 20 to 40% to the total income of the region (Thomas, 1985) and until 1980 almost 100% of the meat and livestock supplies in Africa were from the pastoral sector (Hubel, 1986). Yet, pastoral livestock production in Africa is constrained by many factors. Rainfall fluctuation, which is more than 50% in sub-Saharan Africa, and seasonal shortages of water (Simpson and McDowell, 1986), as well as seasonal variations of forage resources in terms of their availability and nutritive values greatly limit livestock production (Hubel, 1986). Droughts and famines claim the lives of thousands of animals. For example, the Sahelian drought of 1968-1974 destroyed 3.5 million head of livestock (Franke and Chasin, 1980). Disease and parasites take their toll of animals as adequate clinics and diagnostic facilities are mostly unavailable and vaccination services are not very effective (Schillhorn van Veen, 1984). Limited or lack of modern facilities and technologies and adequate marketing systems and infrastructure also limit livestock production in the pastoral societies of Africa.

To improve the range/livestock sector in Africa, national governments and international donors have been involved in recent years in many projects and programs dealing with pastoral herders. For example in 1985 there were 11 livestock projects in Africa supported by the United States Agency for International Development (USAID) with an estimated life of project (LOP) cost of US \$87 million (Abel, 1985). From 1967 to 1980 the World Bank was also supporting 34 livestock-only projects in Africa with a proposed bank contribution of US \$295 million for a total cost of US \$570 million (Sandford, 1980). Table 1 shows the proposed total cost of 31 of these projects in 22 countries.

Disease control, water development, introduction of range management techniques, out-right sedenterization, establishment of ranches and associations and development of marketing systems were but some of the efforts carried out to develop the pastoral societies. But these interventions proved to be less than successful (Goldschmidt, 1981; Dwyer, 1985; Abel, 1985). Instead, some were detrimental to the natural and social environments (Baker, 1975).

Most of the mistakes inherent in the pastoral development efforts were and still are related to their revolutionary, rather than evolutionary, nature. In short periods of time, authorities try to drastically change the pastoral system of life rather than to incorporate into it. Policies towards pastoralists were at times even hostile (Franke and Chasin, 1980; Lewis, 1975). Since pastoralists are generally peripheral to the decision-making and the policy formulating system, they do not have much to do with the

Table 1. Total cost of 31 livestock-only projects in East and West Africa (US \$ millions).

Fiscal Year	Project	Total Project Cost
1972	Botswana: Livestock Development	5.4
1978	Botswana: 2nd Livestock Development	13.4
1980	Cameroon II: Livestock Development	39.9
1979	Central African Rep: Livestock Dev. II	13.0
1972	Chad: Livestock Development	3.4
1978	Chad: 2nd Livestock Development	16.1
1974	Congo: 2nd Livestock	8.8
1972	Ethiopia: Addis Ababa Dairy Dev.	6.5
1975	Ethiopia: Rangelands Dev.	42.9
1973	Ethiopia: 2nd Livestock Dev.	6.4
1974	Ghana: Livestock	4.5
1969	Kenya: Livestock Development I	11.4
1974	Kenya: Livestock Development II	59.7
1969	Madagascar: Beef Cattle Development	4.2
1975	Madagascar: Village Livestock & Rural Dev.	12.8
1975	Mali: Livestock Project	17.3
1972	Mauritania: Livestock Development	6.0
1979	Niger: Livestock Project	15.0
1975	Nigeria: Livestock Development	42.0
1974	Rwanda: Agricultural Development	4.3
1976	Senegal: Eastern Livestock Dev.	13.0
1974	Somalia: Trans-Juba Livestock	11.5
1979	Somalia: Central Rangeland Dev.	46.3
1978	Sudan: Livestock Marketing	51.3
1969	Tanzania: Beef Ranching Development	2.0
1973	Tanzania: 2nd Livestock Development	24.7
1975	Tanzania: Dairy Development	15.3
1969	Uganda: Beef Ranching Development	5.1
1973	Zaire: Livestock Development	15.0
1977	Zaire: Ituri Livestock Dev.	16.1
1979	Zambia: Livestock Development	5.8
TOTAL		531.3

Source: Sandford, 1980.

planning and implementation of the projects dealing with them. The result is development interventions (components of the development strategies) directly confronting the pastoral strategies for survivability: sedenterization vs. mobility, land privatization vs. communal ownership of land; social competition vs. social collaboration, cash economy vs. subsistence economy, and adventurism vs. risk aversion.

Rural societies change, but they do so gradually. They accept what is beneficial for them, but only when they test it with caution. They cooperate with whom they trust.

The scope of this paper is to review the literature on the pastoral societies in eastern Africa and the Sahel. It explores their strategies for survival and their adaptations to the environment. Then the paper reviews some development strategy activities used to "develop" or change the pastoral societies and the mistakes related to carrying out such activities. Finally, possible correction for the mistakes are mentioned. The Sahel and eastern Africa regions are chosen because the agricultural sector of most of these countries depends on the pastoral production as cultivation is less pronounced in the harsh climate of these regions (Konczacki, 1978). This is manifested by the large percentage (more than 60%) of African ruminants living in these regions. Furthermore, both regions have experienced severe droughts during the past two decades that greatly affected the pastoral societies in these regions and attracted international attention.

Physical Environment of The Sahel

The term "Sahel" is an Arabic word which means shore. The ecological zone of Sahel in West Africa got its name from the Arab traders who used to cross the Sahara Desert which resembles in its appearance and vast emptiness a limitless ocean. They called the zone adjacent to the Sahara the shore of the desert (Franke and Chasin, 1980). The Sahel extends through several west African countries including Senegal, Mauritania, Mali, Burkina Faso, Niger, Chad, Gambia, and some parts of Nigeria and Cameroon.

Climate. The Sahel is located between latitudes 13°N and 17°N with average annual rainfall of 600 mm and 100 mm respectively (Appendix Figure 1). The Sahel has transitional zones with the Sahara Desert in the North and with the more humid zone in the south (subdesert Sahel, and the Sahelo-Sudanese border, respectively). The typical Sahel lies between 200 mm and 400 mm isohyets. Most rain falls in July and August, while the rest of the year is mostly dry (de Ridder et al., 1982). Rainfall varies both in space and time, and comes in torrential form (Franke and Chasin, 1980). Temperatures are generally high throughout the year but it is hotter in the north than in the south as can be seen in Table 2.

Vegetation. The Sahel is marked by abundant annual herbs that are mainly grasses, widely spaced perennial grasses and woody acacia trees adapted to the dry climate (de Ridder et al., 1982). The short grasses that cover the spaces between the acacia trees consist of hydromorphic and psammophilic species that respond differently to the moisture regimes (Franke and Chasin, 1980). The hydromorphic grasses

Table 2. Average temperature (C°) for some Sahelo-Sudanese regions.

	North 17°N *P = 200 mm	Middle 15°N P = 450 mm	South 13°N P = 700 mm
Annual average	29.0	28.0	27.5
April-October average	31.5	30.0	29.0
August average	31.0	27.0	26.0
November-March average	24.0	25.0	26.0

Note *P is precipitation
Taken from de Ridder et al. 1982

respond quickly to the rainfall growing rapidly to withstand heavy grazing during their early stage of life. Psammophilic grasses grow in the sandy areas and are not very sensitive to seasonal rainfall variability because moisture is generally available from the sandy soils for a longer period of time (Franke and Chasin, 1980).

Except for the Central Delta with deep layers of clay loam covered by sandy loam, most Sahalian soils are classified as poor detritic complexes with laterite (hardpan) or sandy complexes (de Ridder et al., 1982).

Physical Environment of East Africa

Climate. East Africa, according to this paper, refers to Kenya, Tanzania, Uganda, and Somalia. The geographical location of these countries lies roughly between latitudes 12°S and 12°N. The coastal line of the region extends along the Red Sea and the Indian Ocean (Appendix Figure 2). Near the equator it is expected that the rainfall regimes follow the movement of the low Intertropical Convergence Zone (ITCZ) which is the low pressure zone where air masses from the south and north converge giving rise to rain. This zone follows the movement of the sun between the tropics with a lag of about one month and enables a rough approximation of the rainfall season (Griffiths, 1972). Although two wet seasons are expected in the zones near the equator, in Kenya, Tanzania and Uganda, this general pattern of rainfall is modified by topography and large lakes so that multiple rainfall regions exist (Pratt and Gwynne, 1977). Year-long rainfall, single season rainfall and double season rainfall regimes all exist in East Africa. Appendix Figure 3 shows the

rainfall regions of Kenya, Uganda and Tanzania, and the length of their different wet and dry seasons.

In Somalia there are two wet seasons and two dry seasons. The major wet season (gu) begins in April and ends in June, while a lesser rainy autumn season (deyr) extends from September to November. The two dry seasons are the summer (xagaa) season which begins in July and continues till early September, and winter (jiilall) dry season from December to March (Swift, 1977).

The mean annual rainfall of Kenya, Uganda and Tanzania varies from more than 1500 mm in the west and north of Lake Victoria, north of Lake Nyasa, and on the high mountains to less than 300 mm in the lower elevation-areas of northern Kenya (Appendix Figure 4). In Somalia, the annual rainfall varies from a minimum of 600 mm in the south to less than 100 mm in the northern coastal plains (Appendix Figure 5). Generally the dry (less than 650 mm) zones of East Africa, with mean temperatures of 20°-30°C are predominant pastoral zones of the region (Pratt and Gwynne, 1977). According to these authors considerable rainfall fluctuations and high evaporation characterize this low rainfall zone.

Vegetation. The vegetaion of East Africa varies according to the climate and landform variations from dense forests to sparse semi-desert vegetation. The vegetation of most pastoral areas with less than 600 mm of rainfall is thornbush of Acacia and Commiphora species. Commiphora spp. are mainly found on the red basement soils, and include Boscia spp. and Boswellia spp., while Acacia species predomiate the deep alluvial soils. Acacia tortilis, A. albida, A.

edbaica, A. mellifera and A. nilotica are found in the region. Main grasses and dwarf shrubs include Chrysopogon spp., Cenchrus, Cynadon and Sporabolus spp., Indigofera spp. and Aristida spp. (Pratt and Gwynne, 1977). According to these authors less than 250 mm of mean annual rainfall can hardly support perennial grasses as well as large woody species, therefore, annual grasses and dwarf shrubs are the predominate species.

CHAPTER II

ANALYSIS OF THE PROBLEMS

The African pastoralists have lived and survived in their environment through the centuries. Experience has taught them ways to make the best possible use of the existing resource base, as well as ways to reduce or evade possible and imminent risks associated with low and fluctuating precipitation, diseases and social factors like wars and hostilities. Therefore, they have developed strategies that characterize their economy, cultural values and social relations. Nonetheless, most development activities are based on assumption about pastoral problems and needs. Such assumptions may be erroneous, or at least, misleading.

Strange (1980) mentions several traditional attitudes and practices which are considered to be irrational and destructive. Such attitudes and practices include:

- much emphasis on animal products for food where cereals could be used;
- not selling animals for cash at appropriate and advantageous times;
- primary emphasis on maximizing the numbers of stock rather than on quality and saleability;
- the desire for large numbers of livestock to meet social requirements, like marriage dowries;

- using livestock as currency where money could be used; and
- inappropriate land use where everybody maximizes his/her use of the communal grazing land while nobody takes responsibility for its abuse.

Khogali (1981) considers mobility of pastoralists a primitive way of life which destructs the environment, wastes labor and constrains development. Khogali also considers that the different livestock species kept by pastoralists eat different plant species and destroy the environment more than a single species would do.

These allegations may not be appropriate. They are the basis for disagreements between pastoralists and developers. That pastoralists do what they need to do for their survival may not be given due consideration. The following discussion tries to elaborate why pastoralists behave as they do, because understanding their way of life is the basis for identifying the mistakes made in development programs.

Dietary Habits

Strange (1980) states that pastoralists primarily depend on milk for food and that such dependence is a major cause for pastoralists' accumulation of livestock which may cause overgrazing. Because milk-yield of their animals is very low and it must also be used to raise calves, many livestock are required to satisfy the family needs. But if we want to know the magnitude of overgrazing that a family can cause we have to know how many livestock a family needs to live primarily from milk. Existing data seem inconsistent and sometimes misleading (Khazanov, 1980).

Dahl and Hjort (1976) calculated that a family consisting of a father aged 30, a 25-year old pregnant wife, a boy of 18, a girl of 15 and two children of 3 and 8 can satisfy their daily need of 318 g of protein and 13,800 Kcal of energy by consuming 16.6 kg of milk. Using a good season average of 1.5 kg of daily milk production of the African Zebu for human consumption, they calculated that such a family would need a herd size of 73 animals with 15 % of the total herd lactating at any given time. In the dry season when both the number of lactating animals and milk-yield decline the size of the required herd to provide the necessary milk should change. According to their calculations Dahl and Hjort (1976) state that when the dry season is at its peak 4% of the herd would be lactating and milk-yield per cow would be 0.7 kg per day for human consumption. So at such a time, according to them, the family would need 593 animals! The same authors, therefore, conclude that "...it is virtually impossible to subsist solely on fresh milk in places where there are large seasonal variations" in forage and rainfall, and that a typical pastoral family cannot have the labor force needed to manage such a herd even if it happens to accumulate such a herd (Dahl and Hjort, 1976).

Shapiro (1979), using figures for Fulani cattle milk production, calculated the herd size that would provide the aforementioned family of six with its daily requirement of 16.6 kg of milk and found out that herd sizes of 124 and 188 animals would be needed in the wet and dry seasons respectively (based on herd structures attributed to the herders). Shapiro concludes that such large herd sizes are not

common among the Fulani families and such data do not support the evidence. Therefore, although milk is a primary food for pastoralists, the above observations show that most of them do not have the required herds for living solely from milk, and that the grazing pressure that animals of a typical family could exert on the range is less than would be projected.

Another explanation has been given to the pastoral accumulation of livestock for subsistence purposes. Konczacki (1978) states that during dry seasons, because of lack of forage, milk becomes scarce, so meat is substituted for decreased milk production and more animals are killed for consumption. Furthermore, animal mortalities from starvation increase. Therefore, for security and drought survivability purposes pastoralists tend to maximize the number of their animals in the good seasons because the larger the number of animals, the higher the probability that enough animals will survive droughts and hardships for subsistence and recovery (Konczacki, 1978). According to Konczacki, pastoralists rely mainly on milk and its derivatives during the good seasons while more meat is consumed in the dry seasons. This shows how the pastoralists rationalize the use of their two predominant animal products at the most appropriate times and the complementarity of milk and meat. Schneider (1981), who studied the East African pastoralists, also says that pastoralists depend to a varying degree on cereals and grains for food as their herds cannot provide them with enough meat and milk for sustenance.

It is argued that pastoralists uneconomically use protein by relying mainly on milk and meat for food (Strange, 1980). Strange says that while small amounts of protein are needed for body building, the required energy for the human body could be satisfied by cheap cereals rather than meat and milk. Strange (1980) suggest a shift of diet to more cereals through cultivation or sales of animals. But at the same time he mentions that there are ecological dangers related with the cultivation of the marginal lands where pastoralists live, and that local prices for meat-marketing and grain purchases are unfavorable for pastoralists.

Compared to cereals, milk and meat are almost always at hand for pastoralists and they are easy to transport compared to cereals. There are also food preferences. For example, Somali pastoralists consider meat and milk superior to cereals. But the main issue is to what extent do pastoralists depend on animal products for food? Generally there is "...the assumption that most, if not all, members of the [pastoral] society subsist mainly off the milk, meat, and blood of their livestock, and that agricultural or other foods, whether grown by themselves or by neighbors, play little part in the total pastoral economy. The extent to which such societies actually subsist off their livestock products is seldom explained in detail; indeed, it is generally asserted rather than illustrated" (Jacobs, 1965:150).

Livestock and People

Livestock play an important role in the pastoral social system. They are used as a means for tightening social relations by being

redistributed among society members through marriage obligations, gifts, loans and as food by sharing milk and meat. These animal and animal-product transactions provide for more equitable distribution of wealth among the society members and serve as a strategy to disperse risk and maximize welfare in an unpredictably hazardous environment. Swift (1977) cites a situation where a Somali family who lost all its animals was provided with camels, sheep and goats (including lactating camels and goats) by kinsmen to recover from loss of animals. Among the Somali pastoralists it is considered an obligation of the society (whose relationship is primarily based on kinship through patrilineal linkages) to count on each other. Although animals are individually owned, all members of a clan feel much responsibility in collectively watering and caring for the clan livestock especially during the dry season.

Another way of helping less fortunate kin is to hire him for herding animals and pay him in animals so that he can rebuild his herd and become economically independent in the future (Swift, 1977). Animals for salary is also reported among the Borana and Rendille (Dahl, 1979).

Among the Somali pastoralists marriage involves transactions of wealth between the husband and wife lineages. "It is ...the exchange of wealth usually in livestock and largely in camels, which establishes the affinal link (and in the next generation the matrilateral bond) between their lineages. Any gift from the affines is called dibaad and any gift to the them is called yarad" (Lewis, 1961:139-40).

Although the transaction of livestock through marriage serves as a distribution of wealth between the two groups and helps a poorer one to get some animals from a wealthier one, it also works as a means of tightening relations between the groups especially when they are genealogically distant clans.

Also a father gives some of his livestock to a newly married son in order to help him have an economic base. When a boy is born, it is a common tradition among the Somali pastoralists that a young female camel is given to him (xuddun-xid) and all its progeny becomes his personal property. This helps the young boy to have a sense of responsibility for the whole family herd, and prepares him to be economically stable in the future.

In the Somali tradition, meat and milk are shared during religious and other traditional festivals and ceremonies. Many animals including camels, cattle, sheep and goats are slaughtered, and large quantities of milk are consumed by many people. Such gatherings create closeness among the people as they meet and eat together. Also, social problems are discussed and many important issues are raised during such meetings.

Among the Borana of Kenya, Dahl (1979) states that cattle are distributed among members of a pastoral group through bride wealth, stock friendship and through gifts. According to Dahl (1979), stock friendship is a system of borrowing and lending certain animals and any of their future offspring. Such a gift of cattle is a way of putting the recipient in debt so that the giver could get back animals of a similar value when need be. The unpredictable harsh

environment, labor constraints and lack of alternative ways of investment (better than livestock), limit individual accumulation of wealth for private use (Dahl, 1979). According to this author, a wealthy herd-owner may not have a better standard of living than other members of the pastoral society. Therefore, reciprocity and sharing are dictated by the environmental setting, and such a society, in order to respond accordingly to the environmental constraints has to co-operate and share resources for the betterment of both the wealthy herd-owner and the less fortunate (poor in terms of livestock ownership).

Among the Turu in East Africa, transaction of animals take place through uriha relationships and marriages (Schneider, 1981). Uriha is a way of loaning animals to another person for reasons such as access to his skills in livestock management, his support and alliance (Schneider, 1981). Also:

There are no households without cattle even though many Turu own no animals of their own. Through uriha, even the destitute Turu who has no legal right to any animals can obtain milk ...and over time acquire such rights and begin the process of building a herd (Schneider, 1981:216).

Among the Fulani, Shapiro (1979) cites livestock transactions and distribution through bride wealth, inheritance, gifts and loans to create solidarity and cooperation among the group members for the general welfare and survivability.

Livestock also have financial importance which is expressed in the following characteristics (Shapiro, 1979):

- easily convertible to cash;
- serve as a medium of exchange for other goods;

- provide multiple options for decreasing risk;
- easily portable from one place to another; and
- have moderate rates of return.

In most pastoral societies of Africa livestock serve both as wealth and sources of income, which is different from what they do for a western rancher as they are just a source for generating income through which wealth may be attained (Doran et al., 1979).

The importance that livestock have in the pastoral societies is very much expressed in the cultural values attached to them. Among the Somali pastoralists the word caydh, which means poor, is synonymous with lack of livestock, while having many livestock is a sign of wealth. Even payments for injuries, deaths, bride wealth and other liabilities or purposes are valued in terms of livestock (camels).

Among the Fulani pastoralists it is also noted that wealth is measured in cows (Horowitz, 1972). Schneider (1981) reports the same for Turu pastoralists with such a phenomenon being generally common among the African pastoralists. So livestock are analogous to money. Schneider (1981) cites that, among other characteristics, money is a "good that acts as a medium of exchange, store of value and unit of account ...by means of which comparisons of value and calculations are made" (Schneider, 1981:213). Livestock do have all the three characteristics in the traditional pastoral societies. They may also provide a hedge against risk and as inflation. Holding livestock that retain their real value may be preferred to holding currency which is more subject to reduction in value due to inflation. The

question is why is it so? The answer is because livestock serve both for consumption and production of their kind, as well as for the acquisition of other items through sales or exchanges. Furthermore there are no other goods better than animals for investment in pastoral areas. Dahl and Hjort (1976) mention that the number of female cattle could double in 5-6 years. Haaland and Keddeman (1984) calculated that in Somalia incomes of livestock herders were about three times as high as that of farmers, and that even for the farmers who had some livestock, their incomes from animals were more than those from cultivated crops.

Some authors mention that pastoralists accumulate livestock for prestige and power and that they respond to higher livestock prices with less rather than more animals sales (Doran et al., 1979). This notion may explain the subsistence strategy of the pastoralists. We have mentioned earlier that most pastoral societies group themselves through kinship relationships; that ecological and labor constraints limit an individual's capacity to raise unlimited number of animals; that groups thrive by mutual cooperation, rather than by power and subordination; and that through livestock dispersal, risk is minimized. Even a previously wealthy man could become dependent on those to whom he gave animals. This suggests that pastoral society subsists on its total livestock in spite of individual ownerships. It also suggests that monopoly of wealth does not exist. Furthermore, it has been documented that major decisions in pastoral societies are reached through group consensus rather than through any individual's power and direction (Lewis, 1961; 1975).

Furthermore, the fact that pastoralists sell the minimum number of livestock consistent with their immediate need for cash is an explanation for their subsistence production system. This is in contrast to profit accumulation which in the real sense increases the power of the profitors (employer) relative to the employee creating a real master-servant relationship (Ingold, 1980). Studies in Ngisonyoka Turkana showed that livestock herd sizes were not in excess of the subsistence need, and that pastoral livestock production did not seem to cause any range degradation (Coughenour et al., 1985).

Herd Diversification

In arid and semi-arid regions of tropical Africa, including the Sahel and pastoral zones of East Africa, fluctuations in resources availability due to brief periods of unpredictable rainfall and long dry periods result in short periods of forage production (Coppock et al., 1986). To utilize most of the available forage resources and water, mobility and diversification of livestock species are crucial elements in the pastoral strategy for survival. Camels, cattle, goats and sheep are raised but the herd composition varies among different communities and localities. Pastoralists in more mesic areas like the Maasai and Wodabe Fulani have cattle as their large stock while the Tuareg in the drier areas of the Sahel have camels. Ngisonyoko Turkana and Somalis have both camels and cattle, but their relative importance varies from drier to wetter areas respectively (Lewis, 1961; Konczacki, 1978; Coppock et al., 1986).

Different livestock species utilize different ecological niches and topographies, thus multi-species groups are better in utilizing varied resources than only one species (Oba and Lusigi, 1987). Camels are predominately browsers, cattle are grazers, while goats and sheep are mixed feeders (Coppock et al., 1986). The composition of livestock diets consisting of herbaceous vegetation, dwarf shrubs, and other browse species including seeds and seedpods was calculated for all seasons in Ngisonyoka Turkana. Findings by livestock species for these three forage categories respectively were: (a) cattle (96%, 4%, 0%); (b) sheep (67%, 28%, 5%); (c) camels (5%, 72%, 23%); and (d) goats (36%, 27%, 37%) (Coppock et al., 1986).

This shows that different livestock species complement each other in the utilization of the available resources and enable pastoralists to extract energy from most plant species through meat and milk (Coppock et al., 1986).

Apart from utilizing different plant species, mixed herds have other advantages. Different livestock species have different water requirements. Cattle need to be watered once every two days so they always have to be near a watering point and their grazing distance is short. Goats and sheep need to be watered at least once every week, and can go longer distances from water to graze than cattle can. Camels in the dry seasons can go 60-80 km away from a watering point and can remain without water for up to two weeks (Oba and Lusigi, 1987).

Differences in livestock lactating periods also give greater security to the herders. Cattle have a lactating period of about 7-

8 months; camels, an average maximum of 18 months; and goats, because of their short gestation period, give milk before both camels and cattle do at the beginning of a rainy season (Dahl and Hjort, 1976). Furthermore, according to the authors, goats, being browsers like camels, can give milk in the dry season after cows are dry.

Diversification of livestock species also has the benefit of minimizing disease risks since livestock species differ in susceptibility to different diseases (Ingold, 1980). Large stock are less susceptible to drought and diseases than small stock, but the latter have higher reproduction rates than the first and serve for quick recovery from droughts. They also satisfy the day-to-day needs for meat and cash (Dahl and Hjort, 1976; Wienpahl, 1985).

Mobility

Mobility is a crucial pastoral strategy for survival in the arid and semi-arid environments marked by seasonality and spatial and temporal distribution of rainfall and pasturage. Frequency of movements, distances travelled and shapes of routes taken vary according to the climatic conditions, topography, species and combinations of livestock, location of water points and type of vegetation (Johnson, 1969). Mobility enables pastoralists to utilize a wide range of vegetation resources. As previously mentioned, sporadic, short rains after relatively long dry periods result in short-lived eruptions of forage production (Coppock et al., 1985). Pastoralists have to utilize such forage when it is green and nutritious whenever and wherever possible. Due to the seasonal variations in rainfall, pastoralists undertake annual movements

consistent with wet and dry seasons. During wet seasons they take their livestock away from permanent water points to fresh vegetation in places where dry-season grazing is limited by lack of permanent water.

The Ngisonyokaa Turkana follow a pattern of seasonal movements consistent with the nutritional needs of different livestock species at different production stages (Dyson-Hudson and McCabe, 1983). According to these authors, Ngisonyoka Turkana do not have regular migration routes, nor do they have any permanent place to return to. At the onset of the dry season, cattle are the first to be taken away from the major wet-season camp to places with good, abundant forage. Non-lactating sheep and goats are moved second. And finally camels are taken away as the dry season progresses (Dyson-Hudson and McCabe, 1983). These authors mention that cattle are taken to highlands, goat and sheep to plains and hills, while camels, which are not good at steep and rough places, remain on the plains.

The pastoral seasonal movement in the Sahel follows a more or less regular north-south route. During the rainy season the Pastoral Fulani move their cattle to the drier areas in the north, where they exploit the nutritious annual grasses and escape the tse-tse fly in the south. At the onset of the dry season as the annual grasses dry-up and water ponds evaporate, they return to the wetter climate in the south (Stenning, 1957). As camel herders in the north move further towards the edge of the Sahara in the wet season, the cattle from the south occupy the zones where camels left, therefore, camel

dry-season grazing area and cattle wet-season grazing land overlap (Oba and Lusigi, 1987).

The Pastoral Fulani annual movements are called "transhumance" as the family has, more or less, a permanent camp where livestock and herders regularly return to. Breman et al. (1978) who studied the migratory movement of some Fulani cattle herders in Nigeria, stated that milk cows that stayed in the village and did not follow the migratory movement had worse body conditions than those cattle that were exposed to the wider vegetation range during the movements.

The Somali pastoralists, who mainly herd camels, goats and sheep in the northern parts of the country, divide the family into two herding units, namely a camel herding unit and sheep-and-goat herding unit (Lewis, 1961). During the wet season the two herding units stay together as forage and water are abundant, but during the dry seasons, camel boys take camels away from permanent water points to where feed is relatively abundant and return back to wells after long intervals. On the other hand, sheep and goats are kept relatively close to the water points. Lewis (1975) cites that Borana divide their herding units in the dry season into sheep and goats, dry camels, lactating camels, dry cows and lactating cows, and that their grazing distances from permanent water depends on their watering frequency.

Pastoral mobility also provides for conserving pasturage near the permanent water points for use in the dry season, while lush forage away from permanent water points is exploited in the wet season. This is a management system commonly practiced by the

pastoralists. Those who violate it are rebuked by the Maasai (Lewis, 1975) and punished by the Borana (Dahl, 1979).

Pastoral movement also provides for optimum collaboration between herders and cultivators. In the wet season, Fulani herders take their animals away from crop fields to minimize trespassing and damage to the crops, while in the dry season animals make use of crop residues while they drop their dung on the fields and increase soil fertility (Shapiro, 1979).

Escape from diseases, insects, raids and hostilities and participation in social gatherings also cause pastoral movements. During long droughts the normal orbit of movement is very much changed and wider areas than normal are exploited. Large areas of common land therefore, can provide the flexibility and mobility needed for pastoralists to survive with herds and flocks in the low productive arid and semi-arid lands.

It has been mentioned that during the 1973 drought, the Borana pastoralists from Marsabit in Kenya who moved to Ethiopia did not lose all their animals. They could recover from drought losses while those who remained behind lost their livestock and some of them ended up in rehabilitation schemes (Oba, 1985).

Horowitz (1977:30) commenting on the importance of mobility for pastoral survivability states:

Mobility and the concomitant communal access to pasture are the most significant adaptive strategies evolved by arid and semi-arid zone pastoralists because of the enormous and non-predictable variation in quantity and distribution of rainfall, which results in tremendous variation in the availability of graze. Yet the fundamental development posture of many planning and donor agencies attacks this

strategy by restricting or attempting to restrict animals to a specifically demarcated piece of land.

CHAPTER III

DEVELOPMENT STRATEGIES

Colonial Period

In the previous sections we have elaborated to a certain extent how pastoralists in the arid and semi-arid regions developed strategies to cope with, and survive in their environment. Those strategies included diversification and maximization of livestock (to a limited possible level), mobility, dispersion of livestock, co-operation and sharing. All these strategies of pastoralists served the major cause of the people--survivability rather than profitability, subsistence rather than commercialization, and risk aversion rather than adventurism in the world of competitive markets. This is mainly because they have to wrestle with an unpredictable, harsh environment where their livelihood is in constant danger. They have tried to solve their problems their way for a long time without much external influence.

With the advent of colonial rule in Africa, a formal administration that governed large areas and many people of different occupations came into play. Pastoral mobility and their ability to evade authorities made them different from, and more difficult to administer and control than the sedentary cultivators. Furthermore, their production system seemed primitive and backward to colonial administrators. Development strategies started by the colonial power

and later continued by post-colonial governments were often detrimental to the pastoral societies. Baker (1975) mentioned the case of Karamoja where demarcation of boundaries, restriction of pastoral movements, imposition of taxes and compulsory labor triggered a chain-reaction of events that resulted in hostilities and range degradation. Not only were Karamojong people deprived of their dry-season grazing area, but their whole production system was put in jeopardy (Baker, 1975).

The Maasai pastoralists did not have much better luck than the Karamojong. Their best grazing land was taken over by European settlers and other neighboring farmers, their movements were restricted, and their traditional ways of purchasing animals for the improvement of their stock were hampered (Jacobs, 1975).

In West Africa pastoralists fared badly too. The French disrupted the Tuareg traditional caravan trade across the Sahara, major pastoral grazing lands were turned to cultivation of cash crops, and pastoralists' animals were confiscated in many instances. In addition, heavy taxes were imposed on them, their mobility was restricted and their social system was disturbed (Franke and Chasin, 1980). All these activities contributed to increased grazing pressure on a smaller marginal land area and caused soil degradation (Franke and Chasin, 1980).

As grazing land was either lost to cultivation or deteriorated under heavy grazing pressure, new wells were dug in large numbers to open new areas for grazing. Also, veterinary service was increased (Franke and Chasin, 1980). Both of these activities were carried out

without any management plans and they exacerbated range problems (Ibid). In short, the colonial powers were mainly concerned with their interests and did not give much consideration to the welfare of pastoralists.

Independence

When the Africans gained their independence, those who came into power were mainly people trained by the European authorities for office and administrative jobs. They did not have much to do with the pastoral people. Only in Mauritania (Horowitz, 1977) and Somalia were the political rulers from the pastoral people.

But even in Somalia, the small group of elite who took over the power base and the urban people who gained access to the new administration through education considered pastoralists (reer baadiye) which means backward people. The new national governments pursued policies inherited from the colonial rulers while the nomadic pastoralists remained in their more peripheral spheres.

In the Sahel, production of peanuts and cultivation continued at the expense of the rangelands (Franke and Chasin, 1980). In East Africa privatization of Maasailand for ranching and the withdrawal of large areas for wildlife deprived the Maasai pastoralists in Kenya of much of their grazing land (Galaty, 1980). In Ngorongoro Conservation Area in Tanzania, authorities blamed Maasai pastoralists for environmental degradation, while research carried out in that area showed that while neither the range nor the wildlife suffered from bad pastoral management, the pastoralists suffered very much from tough rules that favored the preservation of the area (Homewood

et al., 1987). So, in the eyes of the authorities, welfare of the pastoralists was secondary to the conservation of the area for other purposes. Therefore the proposition goes that "...development is a process at the aggregate, national level, that whatever may be defined by national leaders as the public benefit overrides sectional or sectoral interests" (Aronson, 1981:43). But as there are conflicting sectoral interests between the pastoral sector and the urban/administrative one, power serves the latter group of policy makers.

As Government officials and donor agency specialists define development from their own point of view, some of their development goals related to the livestock sector include the following (Simpson, 1984):

- Increase livestock and livestock product exports, or reduce imports of livestock products in order to improve the balance of trade.
- Integrate the planning of the livestock sector with that of other sectors of the economy to achieve overall improved and sustained economic development.
- Sell retail meat at cheaper prices to facilitate increased consumption.
- Improve societal per capita income, including per capita income of the livestock producers.
- Improve health and sanitation in production and marketing.
- Improve political stability.

- Increase the overall production while reducing the cost of meat.

To achieve such goals government efforts towards pastoral development include alteration of the environment, improvement of livestock, change in pastoral behavior and provision of economic services (Goldschmidt, 1981). These efforts are components of an overall development strategy of the government and "...the strategy for achieving national resources development is nearly always the project. The project is the embodiment of the overall policy for the penetration of the state into its internationally sanctioned domain" (Aronson, 1981:44).

Because the Sahelian and East Africa countries are less developed, they lack the necessary investment capital and technology to carry out pastoral development projects and seek international aid. International aid for such purposes comes through aid projects. The nature of aid projects for development purposes is discussed in detail by Honadle and Klauss (1979) but it mainly includes economic and technical assistance.

In the context of economic and technical assistance, induced innovation is the hallmark of a development activity. It involves economical, social, technical and cultural change. Change in this context implies one from a less desirable to a more desirable state in a relatively short period of time. Mostly the developers consider themselves knowledgeable of what the desirable fate is for the people and they rely much on technology that has been proven successful in a completely different biological, political and social setting. In

the following sections we will discuss some of the effects of the induced innovations as elements of the strategies for pastoral development. All different elements or components of pastoral development strategies are interwoven. For example, water development may lead to land privatization, or land privatization may lead to social structure disruption. Also, a strategy may have many components or it may have a single one.

Water Development

In the semi-arid and arid regions of the Sahel and East Africa, because of the scanty and erratic rainfall, water availability is a constraint to livestock production. In the traditional system pastoralists relied on ponds, natural reservoirs and shallow wells that they dug. The movement of the herds followed the pattern of seasonal rains, whereby during the wet season livestock were taken away from wells and surrounding pastures to areas where utilization of pasture was difficult in the dry season. Different pastoral groups owned their wells, and therefore had a right to utilize the pasturage of the nearby area. Traditional chiefs and leaders could regulate the use of wells and pastures whenever necessary (Swift, 1977; Dahl, 1979; Ware, 1977). It is also noteworthy that traditional wells could not facilitate a large number of livestock at any one point of time. Concentration of animals on a well was restricted by the capacity of water production and the labor needed. In some societies wells were used to enforce local rules as those who did not abide by the local rules were sanctioned from using them (Dahl, 1979).

The introduction of new water points by government agencies and projects changed that system. No one could deny the use of the new high capacity government wells to others, and many different people could come from different places for water.

Water development was intended to increase the distribution of livestock over a wide area of range. In some cases wells were established as compensation for grazing land taken away from pastoralists (Homewood et al., 1987). New water points opened areas that were not used previously, that were used by certain species of animals only or areas that were used only in certain seasons of the year. Hence, without any adequate management, water development increased grazing pressure on the land, invited different species of livestock and changed length of grazing period and season of use (Sandford, 1983). In Karamoja dry-season grazing land was overgrazed drastically due to new water points (Baker, 1975). In the Sahel, Franke and Chasin (1980) cited that between 1949 and 1954 FERDES (Fonds d'Equipement Rural et de Developement Economique et Social) dug about 600 wells in Niger, Burkina Faso, Mali, and Mauritania; and that 50 wells were dug in the Ferlo Desert of Senegal between 1950-55. Franke and Chasin (1980) also cited that an additional 500 wells were dug in the Sahel during the same period by another organization, the Travaux d'Hydraulique Paturage, and that a few years later 170 more wells were dug in northeastern Nigeria. It has been noted later that some of the wells in Niger attracted about four times as many animals for which they had been designed (Franke and Chasin, 1980).

Between 1957 and 1968 about 1000 waterpoints were established in Sudan (Sandford, 1983).

Much of the ecological degradation in the Sahel has been attributed to increased water development without any other suitable management interventions to limit the increased grazing pressure (Ware, 1977; Franke and Chasin, 1980). In the central region of Somalia the most degraded ranges are near permanent deep wells. The villages of Bargaan and Nooleeye in Galgaduud region of Somalia are almost engulfed by sand dunes that have already destroyed large areas of good range. Such problems originated from boreholes.

It is not only overgrazing that causes range and soil deterioration around water points, but there are also other factors. Permanent water points attract people who establish business like teashops near the wells. Some of them start fencing large areas for shifting cultivation, as they did in the central regions of Somalia, and cause much damage to the soil and natural vegetation. They clear big patches of land for cultivation and continually cut down trees for fencing. Cultivators might finally take over the area from pastoralists if they are more powerful politically and economically (Sandford, 1983).

Since most of the modern wells and boreholes are equipped with diesel pumps, they can break down at a time when demand for water is very high, or they can lack fuel for days when people and livestock are thirsty in a dry season (Sandford, 1983). Reliability of the modern wells and boreholes can therefore, cause more problems for people than do traditional wells.

Many pastoralists have already felt the problems of government wells in their areas. In the central region of Somalia, a local chief strongly objected to the establishment of a borehole in his area on the grounds that the proposed well would attract many people from elsewhere and the range would be devastated since no one would be able to control the use of the government well. Elsewhere in the Sahel similar attitudes towards government wells have been reported:

Wodaabe herders in the region of Bermou, north of Dakoro, Niger, oppose any government well-construction program. They prefer to pay for shallow wells to which they will have exclusive access, as was traditionally the case, for they know public wells attract people from far away, from groups with whom they have not established agreements on range use, with a consequent overloading of the pasture and upsetting of the grass-water balance (Horowitz, 1981:78).

Improvement of the Management

It has been argued that the pastoral behavior of mobility and grazing of the common land are detrimental to the range, and that people who own their animals individually do not manage well the common grazing land. This notion is discussed in Hardin's "Tragedy of the Commons" (1977a, in Sandford, 1983).

Grazing reserves, herder associations and ranching are new techniques introduced into the pastoral societies in Africa to better control grazing, promote sedenterization, and to build new economic and organizational institutions (Oxby, 1982; Lawry et al., 1984; Awogbade, 1983). Here we briefly discuss some of them.

Grazing Reserves and Herder Associations. Attempts have been made in some parts of Africa to create grazing reserves for pastoral societies. Management practices like rotational grazing systems

(especially rest-rotation and deferred-rotation systems) were introduced. Although rotation of pastures is known by pastoralists and they practice it through their seasonal movements, their perception of it is different from that of the scientific community (Sandford, 1983). Where the intention of the scientists is to improve composition, vigor and productivity of the vegetation by using such a rotation, pastoralists emphasize its effect on the livestock rather than on vegetation (Sandford, 1983). Where rainfall is irregular and sporadic pastoralists try to utilize immediately the fresh new growth when and where it rains if there are no overriding constraints on that (like diseases, biting flies or other social obligations). This practice is conceptually similar to the seasonal suitability grazing system proposed by Valentine (1967) for arid and semi-arid rangelands of the southwestern United States. However, there may be contrasting objectives between the herders and scientists in terms of perception of the problem. But it is the latter who mostly formulate and try to implement plans through pastoral development programs.

In the Ruma-Kukar-Jangarai Reserve in Nigeria, a rotational grazing system was introduced (Awogbade, 1983). A Grazing Committee from the local herders was appointed to take part in the managerial activities by serving as mediator between the government and the people, regulating herds and livestock movements and by maintaining law and order. However the people (including some committee members) did not agree with the program and the plan was finally shelved.

Difficulties arose from trying to restrict access to the pastures when it was the best time to use it for the herders (Awogbade, 1983).

In Somalia the Central Rangelands Development Project (CRDP) funded by USAID, the World Bank and others, has also introduced grazing reserves in two districts. Rest-rotation grazing systems were recommended for these reserves. Although the project is still going on, its first few years saw difficulties in the implementation of the rest-rotation systems, because it became difficult to guard an unfenced area from people and livestock. Secondly, if it rained on the rested area while the rest of the range was dry, there was no way the herders would refrain from moving herds to the fresh grass. Furthermore, there were no clear benefits from such abstinence because, without controlling the stocking rate, resting some part of the range for about a year (as planned for these reserves) increased pressure on the open part of the range. So, the overall result could be waste of good forage, general deterioration of the range and loss of weight in livestock.

The CRDP has tried to promote herder participation in the management and implementation of the project activities in the two districts by establishing Range and Livestock Associations (RLAs). For such associations, each consisting of the users of a traditional grazing area (degaan), a committee of 7-11 members was supposed to be elected by the herders. So far, four associations have been established and officially recognized in the two districts of Ceel Dheer and Hobyo. Apart from being mediators between the project officials and the herders, the committee members of each degaan are

supposed to carry out the management plan proposed for their range--the rest-rotation scheme. They have also to provide guards and supervise the overall activities. However, their activities are hampered by the problems already mentioned. Furthermore, most of the decisions are made by the district and higher level officials.

Another experience with herder associations can be drawn from Niger. Between 1979 and 1983 a pilot project, Niger Range and Livestock Project (NRP) which was funded by the Government of Niger and USAID was carried out in central Niger. The project established during its life 10 herder associations that were provided with credit loans to carry out many activities according to the priorities set by the herders (Swift and Maliki, 1984). According to the authors most of the loans were used for providing poor people with livestock, growing-out herds, buying cereals for bad times so that people would not sell their animals at low prices in the dry seasons or for other uses. As the NRP Project was to pave the way for a broader project, the Niger Integrated Livestock Project (NILP), the sustainability of such association activities could be tested through NILP which started in 1983.

The NILP was planned to organize 110 Herder Associations of 18,000 herders in the five years of its planned life. But the USAID (1985) Mid-term Evaluation reported that at about half-way through the project life no more new Herder Associations were formed, and the viability of those associations organized by the previous NRP project was at stake. This was because during the drought of 1984-1985 the project was not quick with its emergency action. As a result people

responded to the drought by selling or slaughtering their weak animals and moving away with the rest of their herds in search of forage. A government plan to sedentarize destitute pastoralists around water sites for agricultural purposes also hampered the project activities for a while. According to the Evaluation Report, herders lost confidence in the project as it was no better than other sources of help during the drought. Furthermore, veterinary posts, dispensaries and other services promised by the project were either installed outside the project zone or were not installed at all. So, people became confused with project intentions.

As a result of their findings, the evaluation team suggested that project responsibilities towards herder associations be transferred from the project to local government agencies. The team also suggested that direct credit operations of the project be suspended indicating that the drought tested the viability of the project plans.

Ranches. Ranching was introduced in Africa by the European settlers but has been continued by the African governments. Privatization of land through the development of ranching was considered a profitable, ecologically sound enterprise (Benke, 1984). When land was privatized, it was expected that stocking rates would be adjusted to the carrying capacity and surplus stock would be sold - a process that would help to improve the national economy. This would represent a shift to commercialization of the livestock industry. But this shift based on experience from the western

ranches rather than the local economic, technical, political and social setting lacked the necessary components for success.

As Moris (1981) points out, American ranching and range management systems, from which most of the ideas and technology are imported, are capital-intensive enterprises that have:

- support mechanisms, transportation and slaughtering facilities to cope with the difficult situations in a short period of time;
- a policy towards production of beef that emphasizes weight-gain and physical quality without giving much consideration to other animals products;
- a technology that gives correct information about weather conditions, soil and vegetation trends, the number of animals and their composition and structure; and
- strong legal measures that protect the producer from trespass and other outside violations.

"In the African contexts where USAID and UNDP intended to transfer range management technology, the attempts fail to meet these conditions at almost every point" (Moris, 1981:102).

From its beginning ranching has been detrimental to the traditional livestock production in Africa. The following discussion highlights the above notion.

The Ankole Ranching Scheme was started by USAID and the government of Uganda. Through such a scheme, common livestock herders lost their grazing land to a few powerful people who obtained private ownership of large tracts of rangeland (Benke, 1984).

In Botswana under the Tribal Grazing Land Policy, a commercially oriented ranching scheme resulted in a few wealthy, politically strong figures getting rights for exclusive use of large tracts of the grazing land without doing any development on them (Benke, 1984). According to Benke, these wealthy people simply wanted to exclude the traditional herders.

In Niger similar examples can be drawn. In Ekrafane, for example, one of several ranches funded by Fonds d'Aide et de Cooperation in the 1960s disrupted the traditional herding movements and grazing pattern by closing off 110,000 ha. from traditional pastoralists (Franke and Chasin, 1980). The development of such ranches did not give consideration to the local livestock production system. This was so because the authorities wanted to revolutionize the traditional system.

The early post-independence policy of Kenya put so much emphasis on private ranching that tracts of Maasailand fell under the ownership of a few wealthy entrepreneurs from the Maasai and other people (Oxby, 1982; Galaty, 1980). A sense of insecurity was felt by the average Maasai herder as he saw his pastureland steadily shrinking, and it was that feeling which made the Maasai people accept the formation of group ranches to protect their land (Galaty, 1980). But the government policy behind the group ranch formation "...was to control the movement and numbers of livestock in arid and semi-arid areas, which are now called rangelands; this in turn would control overgrazing" and increase meat production by destocking surplus livestock (Olang, 1982). Although legal ownership rights

over their land has been given to the Maasai pastoralists, the overall objectives of the government and the donor agencies (The World Bank has funded the group ranches) do not seem to be achievable because pastoralists still practice nomadic movement across ranches (Oxby, 1982). Destocking to the proposed level is unacceptable by the people as it is contrary to their well-being and security. Also household decision-making regarding day-to-day activities does not seem to have been delegated to the committee members and government authorities (Oxby, 1982).

The demarcation and adjudication of land for different Maasai groups also disrupted the mutual coexistence and land use of the Maasai people. On several occasions bloody clashes took place between the different groups on land issues (Galaty, 1980).

In Tanzania the Maasai Range Management and Livestock Improvement Project was carried out by the Tanzanian government with the funding of USAID from 1970-1980 (Moris, 1981). The first thing done was to divide an area of about 25,000 square miles among Ranching Associations (RAs) whose members received the Right of Occupation on their units (Raikes, 1981). Although herder committees were established so each association could participate in the management and funds were provided for many services, the project objectives of increasing off-take of livestock, restricting movements in the pastures, improving of the range condition and improving marketing were not realized as they did not match the local situations (Moris, 1981). Also:

The incomplete nature of "improved" livestock production systems became apparent in the worst years, when

stockowners did generally try to rely on the commercial economy as we had been urging ...Spatial variations in rainfall became very patchy in dry years, vindicating the demarcation of RAs into very large units but also destroying any planned rotation of grazing at the local level. Our suggested grazing blocks did not provide for the concentration of all of an RA's herds on the one small area that received some rain in that season. When ...owners judged their herds would be unlikely to survive the season and they came forward with large numbers for sale the commercial system failed ...[and] ...those who took our advice were not necessarily better off for having done so. (Moris, 1981:110).

The above statement by one of the expatriate staff in the project is self-explanatory. There is no need to comment on it.

Stratification

Another cash-oriented livestock production technique recommended for the Sahelian pastoralists is the stratification process mentioned by Shapiro (1979). In this process the Sahelian region is divided into three zones whereby the drier pastoral northern zone is proposed as a breeding zone. Here male calves would be raised up to the age of two. Then the animals would be taken to the intermediate, wetter "growing out" zone. This is in the farming area in the south where they can feed on farm residues from age two to six years. Finally the mature animals would be moved near to consuming centers for fattening and marketing.

The viability of this process whereby pastoralists will sell animals to farmers who would "grow-out" the animals and then sell them to others who would fatten them and market them does not seem to be promising and sustainable depending on the interests of herders and farmers as well as on support systems and prices.

Productivity and Commercialization

Pastoral development policy and its concomitant strategies concentrate on increasing livestock productivity. The productivity which is emphasized here is beef and meat production where off-take of high quality livestock from the pastoral societies is encouraged. But what is the productivity of pastoral livestock? Traditional herds produce meat for the household, milk, manure, draft power, for cultivation in some places as well as livestock for sale. So, measurements comparing commercial productivities based on beef production to pastoral production are biased because only one product of pastoral animals (meat) is used in the comparison (Benke, 1985). When comparisons are based on the other parameters, the beef producing enterprise is not better than the pastoral system (Benke, 1985). N. de Ridder and Wagenaar (1984) compared traditional livestock productivity to that of ranching systems in eastern Botswana. Using conversion co-efficients to calculate liveweight equivalents of draft power and milk off-take for human consumption, they concluded that "traditional systems in eastern Botswana can be considered 95% more productive in terms of liveweight production equivalents than ranching systems on a per hectare basis" (de Ridder and Wagenaar, 1984:6).

Table 3 shows that pastoral livestock production in Mali expressed in kilograms of protein is almost equal to that of other zones with similar rainfall in the U.S.A. and Australia. Instead of using fossil fuel for transportation and other management activities,

Table 3. Production of protein in extensive system of grazing.

Region	Rainfall mm/yr	Livestock species	Animal Protein		Ratio of fossil fuel* to labor mJ/man/hr
			kg/ha/yr	kg/man/yr	
USA					
Utah	< 200	lambs	0.3	0.9	105
New Mexico	200-500	diverse	0.5	1.4	142
Texas	500-900	cattle	4.5	4.3	172
Australia					
Pastoral zone	200-500	sheep	0.4	1.9	628
Wheat/sheep zone	500-1000	sheep	5.5	1.0	218
Mali					
Transhumence	300-Delta	cattle	3.2	.07	0
Sahel	< 300	diverse	0.4	.01	0
Savanna	300-800	diverse	0.3-0.6	0.01-0.04	0

Source: F. Penning de Vries and M. Djiteye (1982), cited in Stryker 1984.

*mJ = megajoules

the Malian pastoralist uses labor and skills for his management (Stryker, 1984).

Stressing beef production without giving much consideration to the other useful livestock products can be misleading. Fertilizers and tractors would be needed to substitute for manure and animal traction if the animals are diverted from these activities. Traditional peasants who use their animals or those of neighboring pastoralists would suffer from the changes as would national economy.

Furthermore, if a small holder tries to specialize in meat production he has to sacrifice milk and the other products to gain profit from selling his animals. His cost-benefit analysis depends on the prices and marketing system. Prices fluctuate and terms of trade do not seem to favor him in Africa (Benke, 1985). If prices are good at one time they may be drastically bad at other times and the income the herder receives from selling his animals may not be enough for buying other food items in lieu of the meat and milk production of the sold animals. Also, he may not be able to rebuild his herd following hard times.

The Somali pastoralists were commercially active for centuries. They exchanged products like myrrh, gum arabic, ivory, ostrich feathers, hides and skins and, to a lesser degree, live animals for agricultural products, clothes and other items (Swift, 1979). When oil was discovered in Arabia in the 1940's and 1950's, a large demand for meat was created. This demand triggered a shift in production in Somalia towards commercialization of live animals. The share of live-animal export in the total national export by value rose from

27% in 1950 to 58% in 1973 (Swift, 1977). According to Swift the government response to the increased production was to provide veterinary service and water points only, so despite the increased export there was no overall development of the livestock sector. The livestock trade process in Somalia is in the hands of urban livestock dealers who have good contacts with Arab merchants and the government officials of Somalia. Such dealers with Letters of Credit from the Somali Government control the livestock market for their benefit. Aronson (1980) cites that the local producer and the local intermediary (between producers and big dealers) together receive about 40% of the animal price to the Saudi Arabian butcher. Although the Somali Government tried to directly intervene in the marketing of livestock by establishing the Livestock Development Agency to improve marketing facilities, such an agency could not survive for long as it did not prove to be better than the private dealers. Livestock marketing activities carried out by private dealers with the consent of the Somali Government, therefore, do not favor the producers. This is because dealers mostly get livestock from the producers on loans at relatively cheap prices. When they sell the animals to the Arab merchants, the dealers use the money to import consumable goods. It is mostly after they have sold these goods and profited several times that they pay the producers (Aronson, 1980). How commercialization of live animals weakened the cooperation of the pastoral society in Somalia has been discussed by Swift (1977).

In Karamoja, Uganda, the government carried out steps to increase trade of animals through compulsory culling and by trying to

buy livestock for a meat processing plant. Such a program did not work due to low government prices compared to local market prices and disagreements between the producers and the government on the kind of animals to cull (Baker, 1975).

In Tanzania, the government carried out steps to control prices of cattle and retail marketing of beef, mainly to supply cheap meat to the urban population (Sullivan, 1984). According to this author, the government established its institutions to take over such activities from private traders but, because of undervaluation of the domestic production and its uncompetitive prices (government retail price of beef was 65% of the market price), strong black markets were created, shortages of meat took place and producers exported their livestock to neighboring countries for higher prices.

Difficulties related to transportation and lack of adequate nearby marketing infrastructure also pose problems to the pastoralists' contact with markets (Homewood et al., 1987). Other problems related to the provision of other services to the pastoralists such as breeding, transportation, bank credit and veterinary services have been summarized by Goldschmidt (1981).

CHAPTER IV

CONCLUSION

Throughout this paper, I have attempted to illuminate some of the mistakes related to the development of the pastoral societies. I have tried to elaborate if the mistakes were those of the pastoralists due to their behavior, or whether the mistakes were those of the policy-makers and experts. I think that the problems are related to the way the developers manage things. Top-down management mostly disregards the needs of the pastoralists and complicates communication and cooperation between the officials and the herders. A participatory, or bottom-up approach of management of pastoral development schemes can build confidence in the pastoralists and lead to fruitful results.

Participation of pastoralists in the management and decision-making process does not simply mean the establishment of committees for herder-associations and group ranchers which begins with projects and mostly ends with them. Such participation is based on proposing plans to the herder-committees and expecting their approval by persuasion and promises. The pastoralists do not necessarily play major roles in the formulation of the policy and the setting of plans at levels higher than field operations. Even the field operations cannot be devoid of the instructions and supervision of technicians

and government officials who mainly rely on their education rather than on pastoral opinion.

A long-term pastoral development policy should not be circumscribed by short-term projects that are delimited, apart from other factors, by a time-frame which can be useful only if all participants understand each other and cooperate effectively. Such cooperation can be achieved by removing the communication gap which is inherent in the educational differences between the traditional herders and the policy-makers.

Lack of education makes the traditional herders incapable of fully participating in the administrative system. It makes them look like primitive and backward people, whereas the educated elites maintain their privileged status and enjoy their educational advantage over the less educated herders.

Incorporation of pastoralists into the economic, social and political setting is almost impossible without educating them, and there is no development without education. Education is change in knowledge, attitudes, skills, values and lifestyles. It also helps in the differentiation of labor. In the traditional pastoral societies it is mainly age and sex that, to a certain extent, determine the labor roles. Therefore there are no work opportunities that the pastoralists can seek if they go to the villages and cities other than low-status physical work which most of them may not appreciate.

Formal education, non-formal adult education and extension service information are necessary elements that must have a top

priority in the pastoral development strategies. Extension service and diffusion of technology in Africa are constrained by many problems. Some of the problems include lack of adequate research centers, inadequate communication between the research centers and the extension staff, and lack of adequate support systems. Also national governments do not give much consideration to their extension organizations. Considering these problems and others, the reforms suggested by Moris (1983) in African extension service seem promising. In most lesser developed countries the formal primary education for the rural people does not go along with the needs of the society because of the following reasons (Todaro, 1981):

- Primary schools have their curricula based on preparing students for secondary schools only, as much emphasis is put on literacy, foreign languages, and numerical drills. Students are trained to recite and repeat things rather than to think and solve problems.
- Little time is spent in the primary schools in teaching students what has immediate application in the rural societies.
- The problem of preparing students for higher education only (from primary to secondary to college and university), makes students unable to participate in local production systems. They only look for higher education opportunities, which is in most cases impossible for all students.

Therefore, in the pastoral context, much care should be taken to set the educational curricula according to the needs of the pastoralists. But education should not deprive those desiring the opportunity to receive the academic training necessary for professional careers. From the primary school the curricula should include the important subjects related to range management, animal veterinary and husbandry, and soil conservation. These subjects must have an important role even in higher levels of education.

Although mobility can be considered a constraint to education, I think it is not a major constraint. Pastoralists have constant contacts with villages and markets. They also have some places where they occasionally gather (mostly near wells). Primary schools can be built in such places where pupils are taught. Traditional schools already exist at such places in Somalia where Koran (the Holy Book of Islam) is taught to youngsters. Families can leave their children with friends and relatives and pay for their expenses. It is a matter of trade-offs. Pastoralists need the labor of their children, but if they feel that what the children are learning can be incorporated into their economy and political power, they accept it.

Non-formal education can be carried out by mobile units that are dedicated to live with the pastoralists. The mobile units do not necessarily need vehicles and modern transportation systems that are both expensive and complicated. They can use donkeys, horses and camels for transportation. Living with pastoralists creates an air of friendship, confidence and cooperation between the herders and the staff members. The two parties can learn from each other and

appreciate one another. Such an operation requires that permanent administrative service centers be established in an area central to the regular seasonal movements of pastoralists so that they can be within relatively easy reach for both the staff members and the pastoralists. The administrative service centers can facilitate communication between pastoralists and higher authorities, markets and other sectors of the whole society. Education has to prepare pastoralists to take over most of the positions in the local administrative and service centers and beyond.

Any development project requires careful planning.

"Planning is both an end and a means to achieving the goals and purpose of a given project. It is an end in that it reflects a conscious and methodical process of decision making. Because planning is a dialectic process which not only identifies expected results, but provides regular feedback and allows for adjustments to unforeseen circumstances, it serves as a means to achieve desired outcomes" (Gay and Bartel, 1986:23).

Therefore, it is necessary that much consideration be given to the formulation of suitable plans for pastoral development projects. Gay and Bartel (1986) give a good model for plan development.

Pastoral participation in the management and implementation of the development programs requires that their traditional systems, cultures and values be appreciated. Such attitude towards pastoralists draws experience from their management systems rather than revolutionizing them. In Burkina Faso traditionally the local chiefs could regulate grazing by excluding animals from degraded areas around wells until the area was regenerated (Ware, 1977). In Somalia, Swift (1977) cites that chiefs and sultans could create pasture reserves, regulate the use of wells, and could check cutting

of trees for fuel and other purposes. In Mali the dina system was used by the natives to control and regulate grazing, farming and even fishing in the annually flooded delta of the Niger River (Horowitz, 1981). Incorporating modern management systems into the traditional systems may have good results as it may call for better pastoral participation in the management.

According to my experience in the Central Rangelands Development Project of Somalia, pastoralists consider water points established by the government to be beyond their influence of control. They do not expect to maintain them or regulate their use. They feel a difference between the wells they dig and those dug by the government and projects. If water points established by projects and government agencies were put under the jurisdiction of the local people, the sense of pastoral responsibility towards their management would not be lost while the government could still have its system of collecting revenues from the wells.

Pastoral development efforts put much emphasis on beef and meat production. Measures related to productivity need much caution as they seem to be biased and do not give a good picture of the overall productivity of the pastoral herds (Benke, 1985). Meat, milk, manure, transportation, draft and other livestock out-puts comprise the productivity of pastoral herds. So a loss of one of these products may have negative effects. For example, if the 500,000 power oxen in the Sahel (Shapiro, 1979) were sent to the slaughter houses for their beef, what would be substituted for them?

The importance of browse in pastoral production is undeniable, but emphasis is not put on its research and management. Browse management should be given a major role in the pastoral range management (Moris, 1987). There are many important browse shrubs and trees that provide feed for livestock as well as food for people. Research should explore more about such species.

Remoteness of the pastoral societies from urban centers is complicated by lack of roads for easy communication. Building roads is expensive, but increased trade, provision of services to pastoralists and modernization and change in attitudes can be achieved by constructing roads that link urban centers to pastoral villages and their main gathering centers.

In conclusion, development is the improvement of the human potential and capacity to solve their problems. Therefore, such improvement has to be consistent with the economic, social and political setting of the society. Honadle (1982) mentions seven elements which successful capacity-building programs have. These elements include:

- collaboration between the "providers" and receivers of technical assistance;
- emphasis on learning how to solve problems and making it work rather than depending on predetermined solutions and programs;
- sharing the risk of innovation failure between the client and service provider;

- involvement of different levels of actors (high officials, low level staff, pastoralists and peasants) in the capacity-building;
- demonstration of the effectiveness and superiority of the new technology and behavior to the old ones;
- consideration of local resource base; and incentives.

Real rather than assumed needs of the society should be considered. The society knows its needs so its full participation at every level of decision-making is required.

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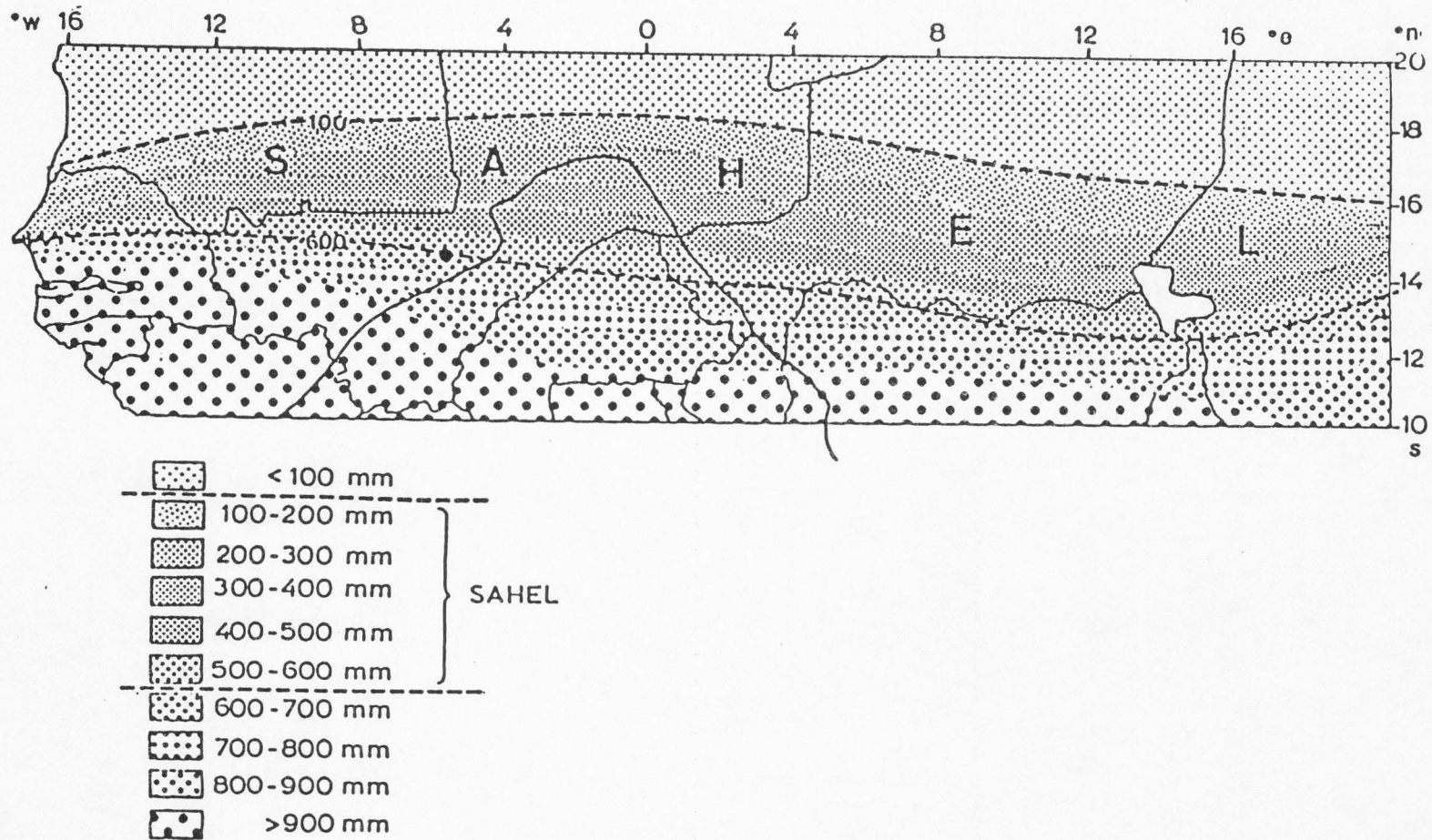
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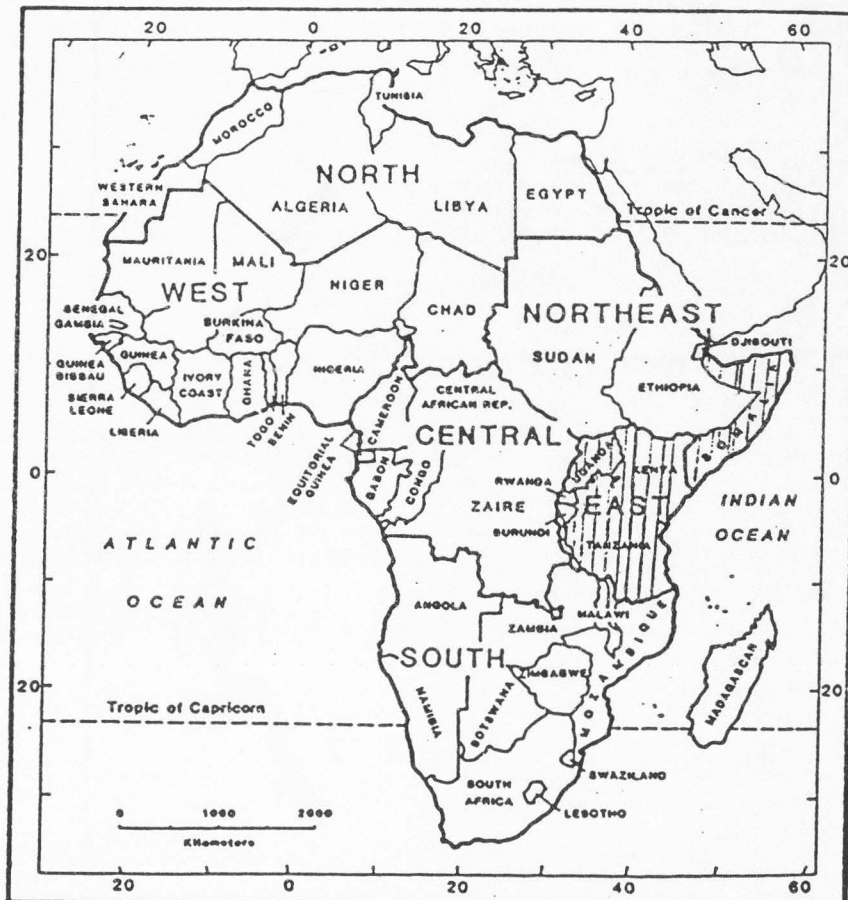
APPENDIX

Appendix Figure 1. Annual rainfall of the West African Sahel.



Taken from de Ridder et al., 1982

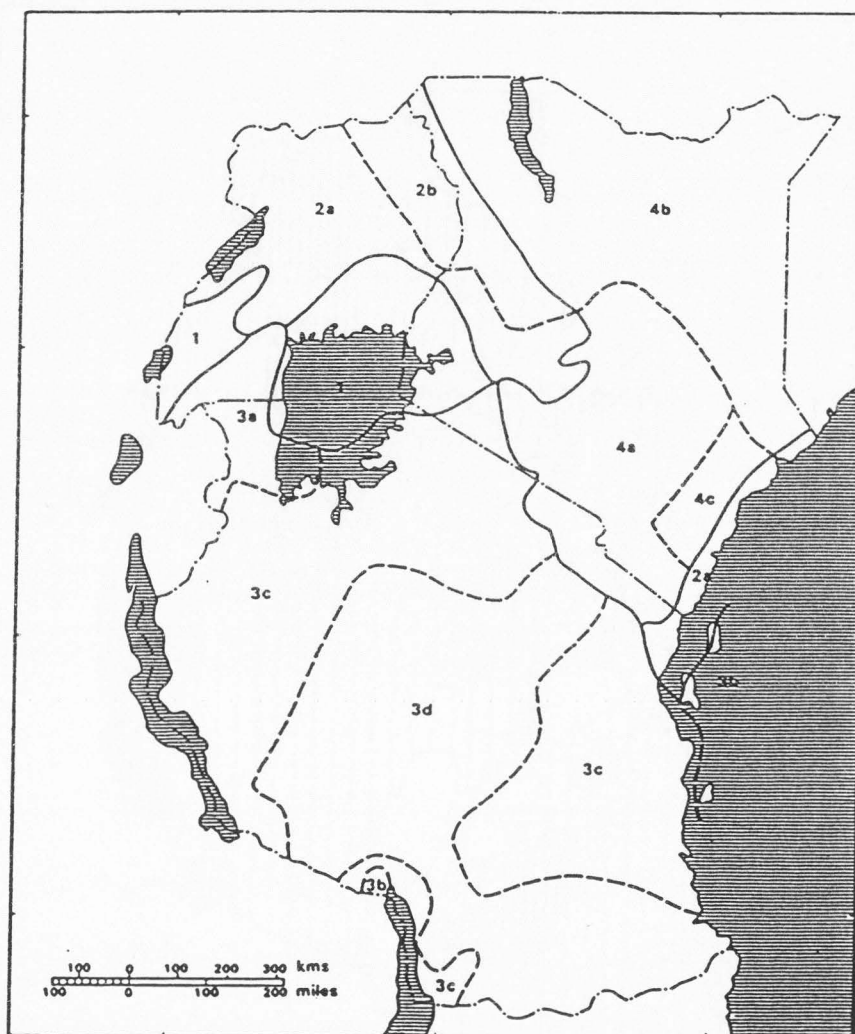
Appendix Figure 2. Countries of Africa and Political Regions.



East Africa Region
(Somalia, Kenya, Uganda and Tanzania).

Adapted from Guthrie, 1986.

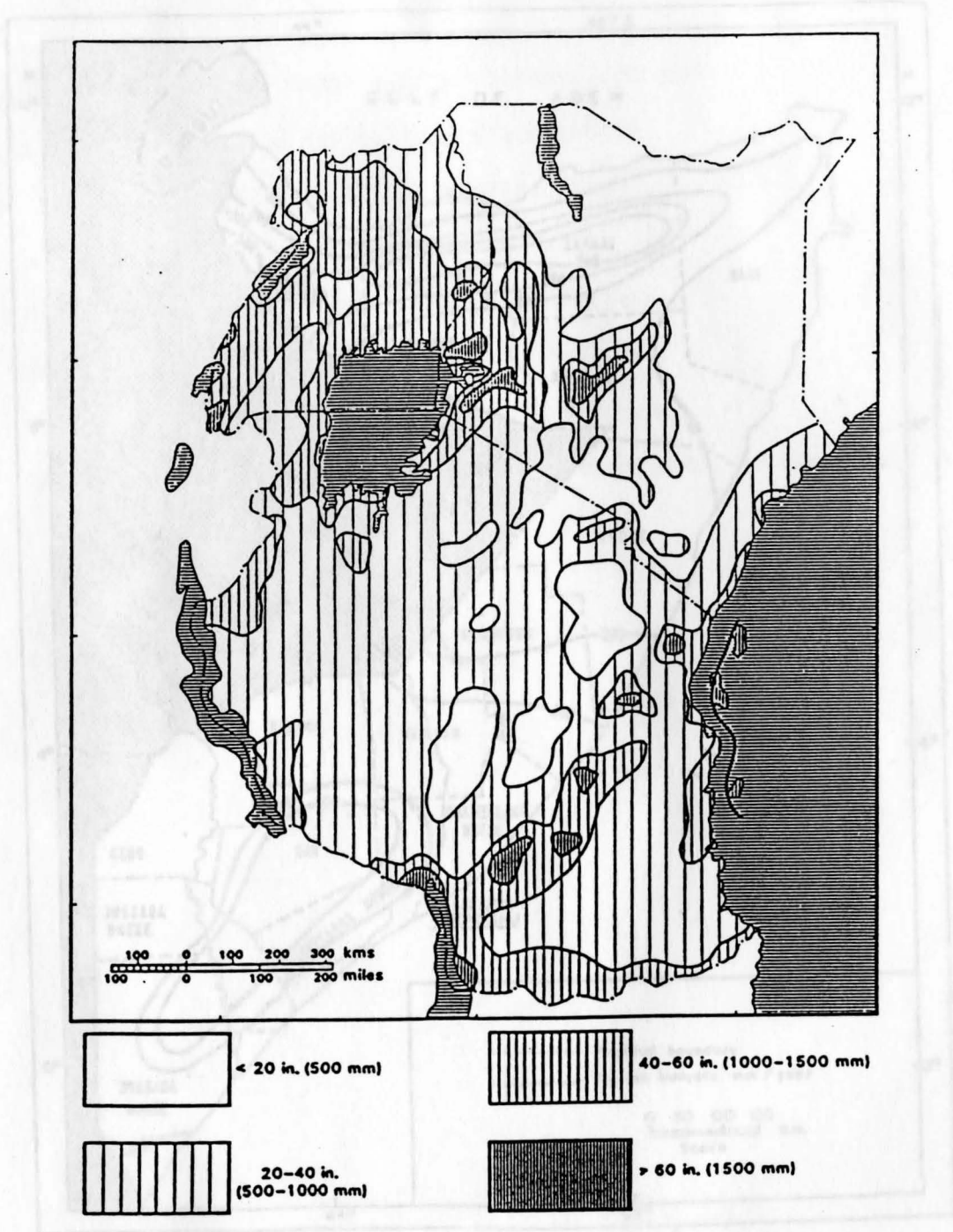
Appendix Figure 3. Rainfall regions of Kenya, Uganda, and Tanzania.



- | | | | |
|---|---|--|--|
| 1 | Year-long rainfall (or dry during January only) | | |
| 2 | Single season rainfall (starting March) | | |
| | (a) with short dry season during Dec-Feb (2-4 mths) | (c) with standard rains (Nov-May) and long dry season June-Oct (5 mths) | |
| | (b) with long dry season during Sep-Mar (5-7 mths) | (d) with shortened rains, Dec-Apr, and very long dry season May-Nov (7 mths) | |
| 3 | Single season rainfall (starting about November) | 4 | Double season rainfall (peaks about April and Nov) |
| | (a) with extended rains, starting Sep-Oct, and short dry season June-Aug | (a) | with good to moderate rainfall Nov-Dec and Apr-May |
| | (b) with extended rains, continuing to July, and short dry season Aug-Oct | (b) | with very low rainfall and short seasons, sometimes mainly April |
| | | (c) | with low rainfall, mostly Nov-Dec |

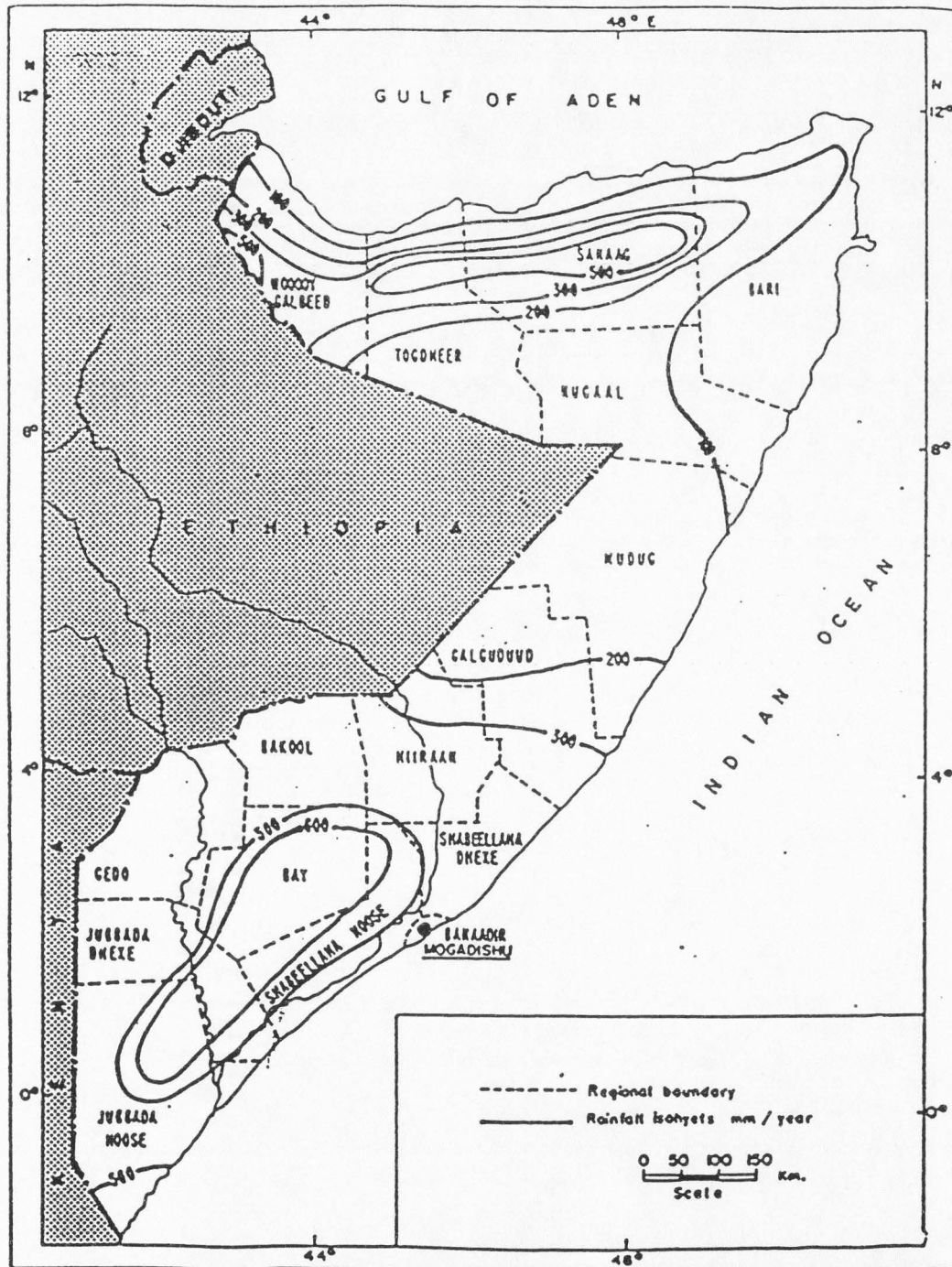
Taken from Pratt and Gwynne, 1977.

Appendix Figure 4. Mean annual rainfall in Kenya, Uganda and Tanzania.



Taken from Pratt and Gwynne, 1977.

Appendix Figure 5. Somalia: Regions and rainfall.



Taken from Iannelli, 1984.

ABBREVIATIONS

- CRDP - Central Rangelands Development Project
- FAO - Food and Agriculture Organization
- ITCZ - Inter-Tropical Convergence Zone
- LOP - Life of Project
- NILP - Niger Integrated Livestock Project
- NRA - Niger Range and Livestock Project
- UNDP - United Nations Development Program
- USAID - United States Agency for International Development