

# **Security in African drylands**

## **Research, development and policy**

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*Cover: A Somali yaq tree. Photo by Anders Hjort of Ornas*

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## Pastoralists and agropastoralists loosing ground: A Horn of Africa perspective

*Zeremariam Fre*

### **Introduction**

Pastoralists and agropastoralists throughout Sahelian Africa have lost much of their ground. Not only are the grazing and water resources shrinking but access to available high potential areas have become a thorny issue (inter-communally) between pastoral groups, farmers and the state. In countries where there is a political/military conflict pastoralist movement is severely restricted to some areas. Consequently some traditional pastovalist groups have either completely abandoned pastoralism, have a minimal involvement in animal herding or have taken up other means of subsistence to survive.

Several examples can be cited to demonstrate the seriousness of the scramble for resources throughout the Sahel. The tension between Mauritania and Senegal, which flared up to a bloody conflict in May 1989, was primarily over grazing, agricultural and water resources of the Senegal Valley (Boubaker Ba, 1990). There are also similar conflicts over land resources between Mauritanian refugees and their Senegalese host (Boubaker Ba and Toure, 1990).

During the 1984-85 drought, Chadian pastoralists were compelled to move south to the cotton growing areas of Chad where they were in direct conflict with farmers. The pastoralists claimed land rights of the cotton growing areas, farmers resisted and the result was conflict (Hissene, 1990).

Somali pastoralist clans have serious conflicts over water and grazing resources:

Neither the pasture nor the water of the country has never been enough to the whole population (Omar, 1990).

The Government inspired resettlement of large numbers of Ethiopians from the degraded Northern Highland regions to the more fertile regions of Southern Ethiopia led to conflict. Conflict between the newcomers (farmers) and the traditional users of the land in Southern Ethiopia (pastoralists, hunter-gatherer and hoe-cultivators) is growing. Conflicts over resources between farmers and pastoralists in Western and South Western Sudan are over diminishing resources and are racially (Arab versus African) motivated (Bol Aken, 1990).

In East Africa and other parts of the Horn of Africa the story is much the same and has serious implications for social, political and environmental security (Fre, 1989; Sirad, 1990; Gemaledin, 1987; Lane, 1990 and others).

The main focus of this paper will be Eastern Sudan and Eritrea (see Map 1). The two regions generally represent a wider Sahelian scenario. Environmental degradation, famine, drought, displacement, encroachment and in the case of Eritrea, war, had a combined negative effect on pastoralism as a mode of production. They have become major constraints to pastoral production. In the case of Eastern Sudan there is very clear evidence of a policy of neglect (in terms of investment, extension, fodder improvement and risk aversion) towards pastoralists. The main development focus was on agriculture (both rain fed and irrigated schemes) at the expense of smallholders and pastoralists. This is well documented by several authors. In the case of Eritrea (Fre, 1990) the three decade long war had a negative environmental impact and has set off a major process of degradation in an already fragile ecology. Due to the conflict, free movement of people and stock have become impossible and the majority of the civilian population has been displaced internally and externally. In peace times pastoralism and agropastoralism made a significant contribution to the rural economy in Eritrea (FAO, 1958). Eritrea then exported live animals to the Gulf and Southern Europe.



I would like to confine myself to the main themes of the present workshop which are: social versus environmental security and peoples actions in the management of scarce resources. One should start by questioning the prevailing definitions and misconceptions about pastoralism as a mode of production and form of land use. Government policies and the rationale for such policies will be critically reviewed. I will then concentrate on the ongoing environmental crisis and its implications for pastoral peoples and their mode of production. Evidence will be produced that some pastoralist groups coped better than others during the 1984-85 drought. Others were unable to cope and were perennially destitute or are in search of other means of subsistence to survive. The discussion will then focus around the concept of sustainable development, environmental and social security and will propose some ways forward in terms of future research and policy. The main assumption is that as a mode of production, an economy and a form of land use, pastoralism is seen as a viable industry by its adherents who inhabit various ecosystems and face a multiplicity of problems. Pastoralism is there to stay.

### The problems of definitions

One would like to be cautious in defining pastoralism in the Horn because defining pastoralism could be subjective and ethnocentric and at times such definitions could be very misleading. The point is in rural economies where livestock are involved in the economy in one way or the other (milk, milk products, draught power, manure, transport, trade, etc.) the range of pastoral specialisations vary greatly. In the Horn of Africa pastoralism ranges from the highly specialised camel breeding in the lowlands to mixed farming or agropastoralism in plateau regions. Both systems have different grazing and management regimes. Some authors tried to define pastoralism in terms of gross revenue. For example Wilson (1986: 14-15) gives the following definitions:

- i) *Pastoral System*: Is a system in which more than 50% of gross revenue (the value of subsistence plus marketed production) or more than 20% of the household food energy is directly derived from livestock or livestock related activities.
- ii) *Agropastoral System*: If between 10 and 50% of gross revenue is derived from livestock and of the rest over 50% is derived from agriculture the system is referred to as agropastoral.

- iii) *Agricultural System*: If less than 10% of revenue was derived from livestock the system may be classified as agricultural.

If this definition is anything to go by, it means that the majority of the rural population in study areas is either pastoral or agropastoral. Other authors are much more cautious. According to Hogg (1981):

The terms "pastoralism" and "nomadism" reveal little of the complexity of any people's economic and social adaptations, indeed they direct attention away from the variety of combinations of different kinds and patterns of movement and economic activities often pursued by pastoralists ... they are usually engaged in a variety of different subsistence and exchange activities in addition to their pastoral activities. (Hogg, 1981: 11-12).

The same author draws examples from the Middle East, North Africa and East Africa which show that a universal definition of pastoralism is not possible and any occupational definition is relative. In the present context of use of words "pure" pastoralism and "agriculture" may be seen as two logical extremes (Brandström, *et al*, 1979) but in reality the two systems coexist or interdepend. The Horn of Africa is no exception.

### **Prevailing misconceptions and the real challenges**

Primitive pastoralism, which continues to be widely practiced with little departure from ancient, traditional methods, has been widely responsible for the tremendous damage to huge areas of land ... primarily due to overstocking. Both the pastoralists and their beasts have become more numerous as a result of the abolition of tribal warfare and slavery, reduction in the incidence of famines, and better control of disease. The economic benefit from this disastrous method of land use have been minimal. Quite apart from the reluctance of the people to sell their stock, the productivity of the system is extremely low. (Webster and Wilson, 1980: 336-337. Underlined by present author).

This is quoted from an influential text book on tropical agriculture and represents the orthodox and negative view of pastoralism held by several governments and agencies. Challenging these views can be an important point of departure.

Planners' perception or assumption of the given situations rather than the realities have influenced government policy towards pastoral groups. The effects of such policies have led to more marginalisation of pastoral groups, created more ecological havoc and has hindered the process of national integration. Government policies in Eastern Sudan can be cited as examples of ill perceived policy where alternatives to pastoralism are seemingly failing with disastrous environmental consequences (Baardli, *et al*, 1988).

As I see it the real challenges are yet to be faced and the policy makers in our region should appreciate the following (based on Fre and Gemaledin, 1988).

- a) that, pastoralists may have a great deal of technical knowledge regarding livestock and their environment as has been shown by some recent research. Management skills, knowledge of range resources, production concepts and so on show that pastoral production is based on some level of technology which can be improved but cannot be ignored when technical options (e.g. range improvement, veterinary support, breed improvement, etc.) are assessed. Several production and management aspects could form part of a "technical package",
- b) that, pastoral development is not simply a technical matter solved by introducing technical solutions or innovations. Despite the marginalisation of pastoralists, pastoralism should be seen as an extreme form of adaptation which generates extreme degree of instability of minimal social groupings. These groups require a high degree of social organisation but it must be understood that there may be no form of social organisation or other cultural features which are either found in all pastoral nomadic groups or found exclusively in them as is usually assumed,
- c) that, there is a need to look at the specificity of each pastoral group. A much more zonally focused development strategy has to be pursued. Fadl Hasan and Doornbos state:

The strategy suggested for the semi-arid zone should be regional, focusing on local problems and providing for their solution. This represents a shift from national sector development efforts which are usually based on aggregate abstractions, and lack spatial considerations or regional comprehensiveness. (Fadl Hasan and Doornbos, 1977: 137).

- d) that, there is a historical evolving co-dependence between pastoralists, agropastoralists and agriculturalists. These reciprocal arrangements concern exchange of stock, labour, pasture, markets and so on. In the present study area livestock produced by pastoralists and agropastoralists make a major input to the local, regional (and export) markets (Salih, 1989). Planners should introduce or support risk aversion strategies in pastoral areas rather than seek expensive alternatives to pastoralism.



e) that, pastoral destitution due to drought (and sometimes war), spontaneous return to pastoralism after droughts by some groups, change of occupation (wage labour) after drought, complete failure of traditional coping mechanisms, the problem of rehabilitation of both people and the environment have become perennial ills for arid and semi-arid environments of the Horn. Permanent settlement (most of them are semi-settled) of pastoralists per se would not solve the problem of degradation unless the other causes of environmental degradation (agricultural encroachment, fuel wood crisis, overgrazing, political conflict and so on) are jointly tackled.

### **Review of present policies and their rationale**

In many arid and semi-arid environments the policies of governments are normally determined by a multiplicity of factors including external factors (e.g. livestock for export, cash crop economy, etc.). Within the African context, the particular needs of the growing civil, military bureaucracy seem to take precedence over the needs of local populations. Central governments tend to ignore local socio-economic realities which in most instances involve historically evolving relationships between ethnic groups in differing economic activities.

Most government policies in connection with pastoralists tend to view pastoralism in a vacuum and not in the context of agro-ecological regimes. The sedentarist policies perceived and implemented by many governments typify this view.

Pastoralist in general and pastoral nomads in particular are perceived as a problem to developing countries, being difficult to control, administer, educate and in respect of the provision of health services. It is believed that they contribute little to the commercial sector and that they are "environmental vandals" threatening sedentarist agriculture. The logical step is, therefore, to settle them permanently and provide them with services in a modern state.

The counter argument which views pastoral nomadism as an environmental adaptation and appropriate form of land use (Ebrahim, 1984) has never been taken seriously. The basic contention is that sedentary animal husbandry and expanding agriculture (encroaching on traditional grazing territory) are believed to have forced pastoralists to extremely marginal areas of low biomass productivity, as in the case of the Sudan and to some extent Eritrea.

Elsewhere in sub-saharan Africa policies have taken the form of either special programmes for sedentarisation of nomads as in Ethiopia (pre-1974) Mongolia and so on, and the introduction of group ranching and modernisation as in the case of Kenya.

In general technical interventions to improve livestock production in Africa have proved to be failures. According to Moris 1987:

There are to date very few "*technical packages*" for improved livestock production which yield demonstrably superior performance to pastoralists' own practices. The absence of effective innovations explains the low degree of acceptance which many livestock improvement programmes have experienced (Moris, 1987: 6).

Consequently, there is very little project experience to demonstrate that pastoralists have been successfully integrated or "modernized". Sedentarisation of pastoralists in particular proved to be an expensive exercise which well meaning governments cannot afford. Farrington and Martin 1987 point out that successful livestock projects may not be there:

In reviewing the result of livestock research in a range of projects ... few successful livestock interventions have been created for small farmers, except possibly some animal health interventions. (Farrington and Martin, 1987: 41).

In the study area (Map 1) sedentarisation was never planned but rather expected to happen by means of *agricultural induction of pastoralists*. In other words the study area lacks the above (Kenya, Mongolia) sort of experience and there has never been a distinction between pastoral and livestock development.

#### *i) East Sudan*

An important pastoral area like that of East Sudan where many pastoral and agropastoral groups make up the majority of the rural population lacks an effective livestock research and extension service. This reflects the general policy of neglect by administrators and researchers. The only significant service given to pastoralists is the veterinary service which was introduced by the colonial administration in 1920. Significant pastoral and environmental rehabilitation measures (see Table 1) which *are implemented by some NGO's* (OXFAM, ACORD, Norwegians etc.) and some Government post-drought efforts which have yet to bear fruit. Some of these measures include restocking, reafforestation, range and pasture development, development of arid land agriculture soil and water conservation.

The above efforts are really circumstantial (drought induced) and post-drought measures, which do not necessarily reflect a considered government policy or strategy for pastoral development.

The drought conditions have been prolonged and persistent and much of the vegetation in the semi-arid north has vanished. This has forced many pastoralists to move South where they are in conflict with big farmers in the mechanized and irrigated schemes (these were traditionally dry season grazing areas. The complete destitution of some pastoralists led to urban influxes from rural to urban areas, thus overstretching meagre services such as health and education. A careful assessment of government research and development policy leads to three main conclusions:

Table 1. *Rehabilitation and development projects in pastoral areas of East Sudan*

<i>Name of NGO or institution</i>	<i>Base/ Location</i>	<i>Nature of project</i>
1. Kassala Area Dev. Agency (KADA)	Kassala	Rural, urban natural resources dev. etc.
2. Care Sudan	Gedaref	Environmental rehabilitation
3. ACORD (Qala-en-Nahal)	Q.E.N. Gedaref	Tractor hire, natural resources water dev. etc.
4. ACORD (Halaib)	Halaib	Environmental rehabili- tation small scale agric-hort, water dev. etc.
5. Ministry of Finance and KADA	Kassala (Salam Aleikum Project)	Range and water dev. project
6. FAO-Dept. of Forestry	Kassala	Forestry and wood lots development
7. Norwegian Red Cross	Erkowit Sinkat	Soil water conservation, horticulture, range dev. etc.
8. Khartoum-Bergen Research teams	Sinkat	Province wide research ecology society, economy of Beja
9. OXFAM (UK)	Port Sudan & Tokar	Relief rehabilitation & dev.
10. UNICEF/JNSP	Port Sudan	Rural dev.

Source: Fre, 1988

Firstly, over the last three decades, agricultural research, development, and extension was primarily focused on irrigated agriculture/ horticulture, mechanised farming, limited animal health service and poultry development. The main focus for agricultural extension unit (within the Ministry of Agriculture) was horticulture in irrigated areas and agriculture in rain fed areas (see Table 2). Within that pastoral development efforts in Eastern Sudan now have two dimensions (according to Sulleman 1985):

- i) to try to incorporate fodder crops in the rotation of irrigated schemes,
- ii) to try to develop mixed farming systems by originally allocating land for crops and animals.

Secondly, the six year plan of 1977-83 which is the basis of the main livestock development strategy, focuses on animal health measures, beef production, poultry, animal-crop production integration and meat inspection. The main focus is on settled groups and urban meat requirements.

Table 2. *Important irrigated schemes in East and Central Sudan*

<i>Scheme</i>	<i>Area covered</i>	<i>Main crops grown</i>
1. Kashm-el-Girba	450,000 *Feddans	Cotton, ground nuts, wheat
2. Ghezira	2,000,000 Feddans	Cotton
3. Blue Nile Pump scheme	300,000 Feddans	Cotton, ground nuts, wheat
4. Rahad project	450,000 Feddans	Cotton, wheat, ground nuts

\* Feddan = 0.42 ha (1.04 acres)

Source; Hantings Technical Reports, 1976

Thirdly, the Animal Resources Department (formerly known as the Ministry of Animal Resources) was dissolved in 1976 and became part of the Ministry of Agriculture Fisheries and Natural Resources (MAFNR).

Such dissolution has not helped research on pastoralism nor the development of livestock extension. The focus was shifted to agricultural development hoping that pastoral groups would be drawn in.

The Animal Resources Department in the Eastern Sudan Region is limited to three main areas of work, namely veterinary services, meat inspection and animal production (AI service for settled groups in Kassala, distribution of productive bulls to settled groups and poultry). Pastoralist herds and flocks benefit greatly from the prophylactic and curative treatments offered by trained veterinarians on annual cycles. In East Sudan there are 23 qualified veterinary doctors but a much limited number of experts in other fields.

The District Veterinary Officers also provide veterinary services but are crippled by lack of transport, basic drugs, and equipment.

Conceptually, livestock development planners in East Sudan have not developed their ideas to come up with a feasible strategy and a package of suitable technical interventions suited to the region. With no livestock extension service available to it the pastoral sector remains neglected as ever and most of the focus remains on agricultural development.

## *ii) Eritrea*

Veterinary services were introduced by the Italian Colonial Administration and in 1905 the Veterinary Department was created. The Service functioned effectively in eliminating the principal animal diseases (Rinderpest, Anthrax and so on). The number of animals had more than doubled in the 1905-1928 period from 1,109,000 to 2,784,485 (Leonard, 1981).

The upward trend continued in livestock production and in the late fifties the total livestock number was above four million (FAO production year book, 1958d). With the exception of the veterinary services, Italian policy towards the Eritrea peasantry as a whole was that of neglect. The best grazing lands were in fact declared as "*Crown Lands*" for Italian settlement and irrigated agriculture. Several areas around the Gash and Barka rivers in the West were converted to irrigated farming for cotton production.

The state of war between Eritrea and Ethiopia since 1961 has led to complete disruption of the veterinary services as well as rural communities. Traditional production and land use patterns were greatly disrupted and worsened by the decade of drought. Thousands of pastoralists have become destitute and displaced within Eritrea (an estimated 150,000

during 1985, according to the Eritrean Relief Association) and many more had fled to the Sudan as refugees since 1969. The displacement caused by war and drought inside Eritrea made pastoral groups very vulnerable by undermining their traditional survival strategies particularly movement patterns to dry and wet season camps.

The Eritrean Peoples Liberation Front (EPLF) which controls most of the pastoral areas in Northern and Western Eritrea has been implementing rehabilitation and development projects in some pastoral areas since 1985. These include restocking, environmental rehabilitation, health, education, water development, seed distribution, poultry projects, mainly in North and Western Eritrea. In the context of policy the above efforts of rehabilitation were designed to encourage voluntary settlement of pastoral nomads.

In terms of pastoral nomad settlement and development the Eritreans have until recently favoured sedentarisation of pastoralists. Since 1987, this policy has been reviewed and more emphasis is now put on increasing pastoral survival and viability by increasing their self-sufficiency options. It is in this context that one hopes there would be a more positive attitude towards extensive use of Indigenous pastoral knowledge. Already, traditional veterinarians are integrated into the veterinary programme which serves pastoral groups in Northern and Western Eritrea.

The Animal Resources Sub-Commission trains and equips traditional veterinary herders as barefoot veterinarians to serve pastoral groups. The Animal Resources Sub-Commission is the Department within the Agriculture Commission of the EPLF, responsible for pastoral research training and development. At present the Sub-Commission has two main units, namely the Animal Production Unit and the Veterinary Unit. The Production Unit concentrates on rabbit and poultry production. The Veterinary Unit focuses on animal vaccination against Rinderpest, Anthrax, tripe and other diseases. The Sub-Commission is also committed to the study of different types of animal herdsman (permanent, transhumant and nomadic). Studies are also being conducted on livestock mobility, productivity and population (ERA/ACORD Programme Document, 1987). One has to add however, that the EPLF at present has not got a clearly worked pastoral development strategy, mainly due to the prevailing war situation in Eritrea.

Apart from the persistent environmental crisis, the state of war is primarily the main constraint to pastoral and environmental development in Eritrea.

## **The recent drought crisis: Impact and implications**

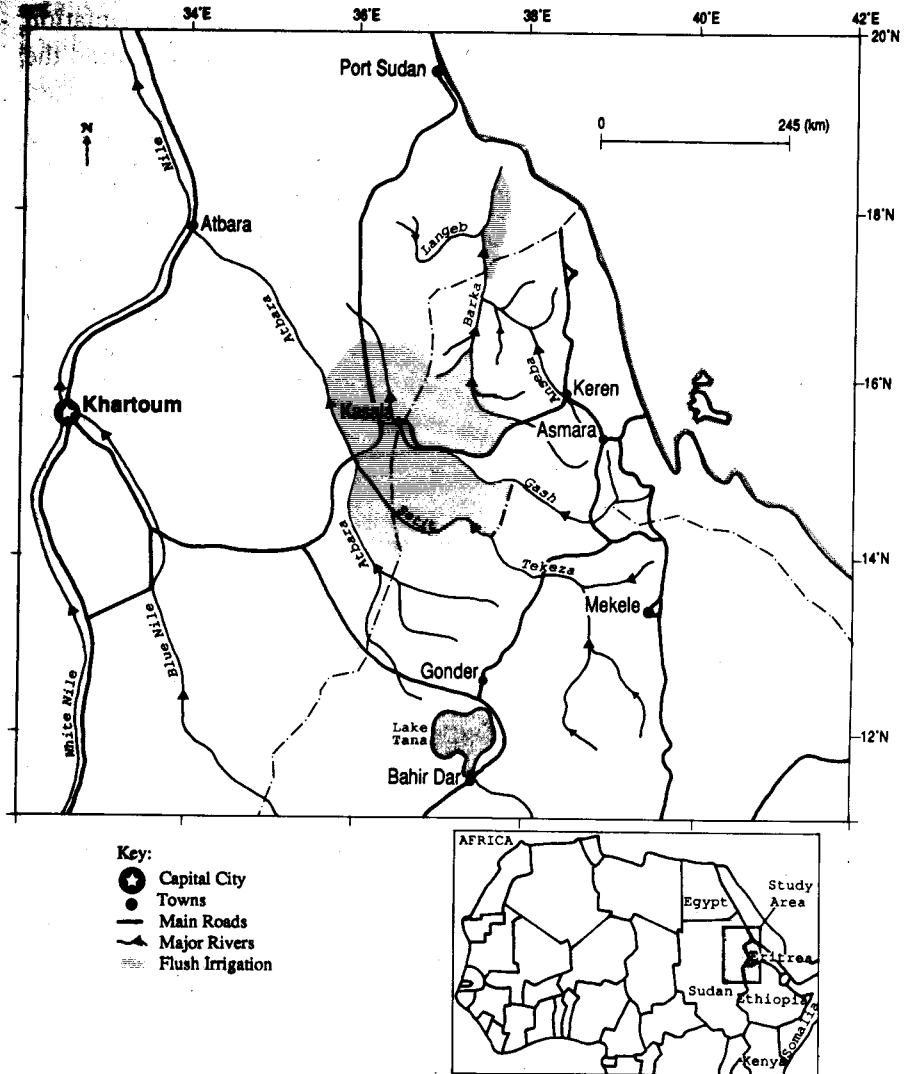
The drought that struck the Sahel and the Horn of Africa during 1973-74 mildly affected the study area. From that period onwards the situation has deteriorated culminating in the 1984 famine which has engulfed the whole Horn of Africa region. For example most of the Beja of the Red Sea Province have lost their entire flocks and herds. Mortality rates by the Regional Agriculture Ministry was estimated as 40% among cattle, 30% among sheep and 15% among camels. OXFAM (1985) estimates in Red Sea however show 95% losses.

Drought has always been a real possibility to all groups in the study area and a number of survival strategies and traditional forms of insurance against loss has evolved in the past and more are emerging.

In both pastoral and agropastoral production systems livestock owners have to construct production strategies to cope with three series of constraints. According to several experts such constraints are firstly *normal*, which are come and go problems including grazing shortage, parasitic disease burden and water shortage. Secondly, normal constraints developing into *disasters* such as disease epidemic and drought. Thirdly, *long term changes* such as loss of grazing lands to cultivators or richer pastoralists or government.

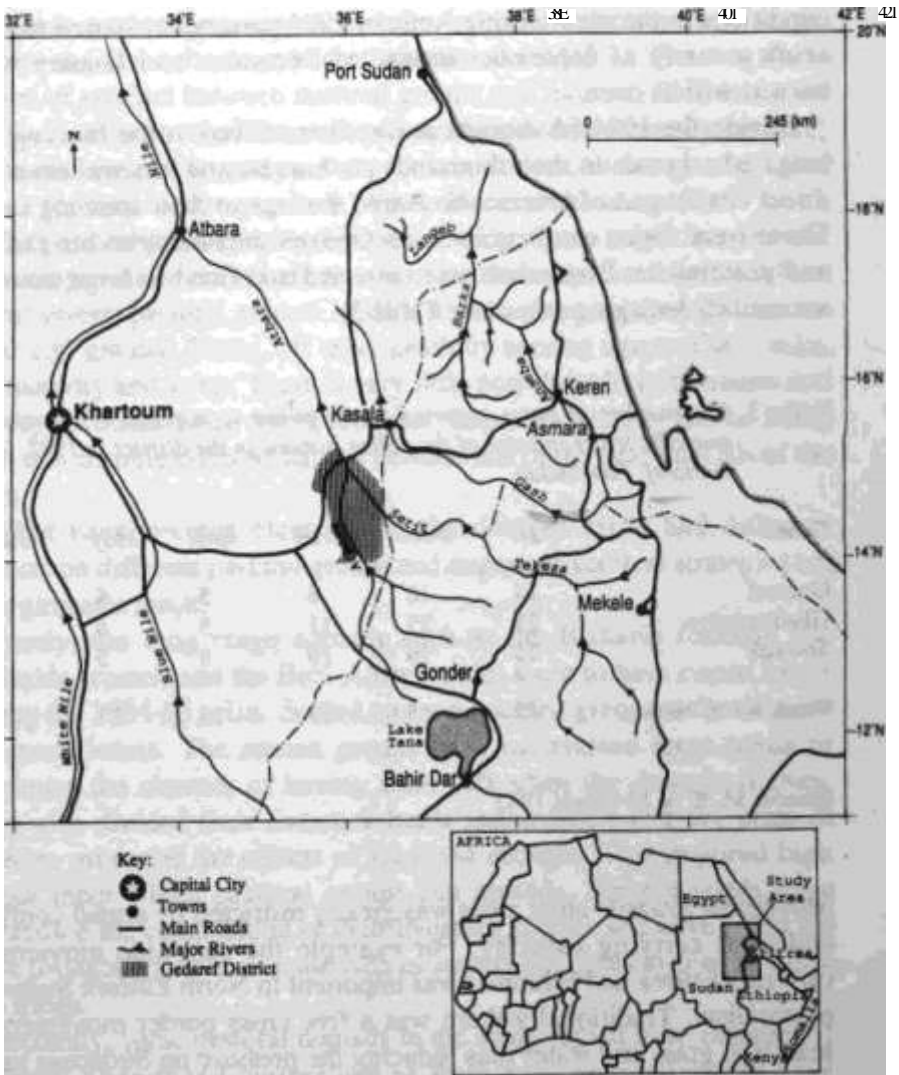
All pastoral groups and agropastoral groups experienced general loss of their livestock. Certain groups of pastoralists may have suffered less losses than others. According to Sulleman (1985 personal communication) the long-range nomads in East Sudan such as the Amaran, Bisharin, Lahawin, Rashaïda and some Beni-Amer have shown more flexibility and mobility with their livestock thus escaping serious losses. On the contrary, semi-settled pastoral groups of short-range movement such as the Shukrya, some Beni-Amer and Hadendowa were more reluctant to move too far from their home base and most of their livestock were wiped out. Most of the people have become destitute and have not fully recovered.

For the pastoralists who still adhere to pastoral nomadism the mixing of formerly independent groups to share the same resources have led to conflict. The well defined traditional routes of movement of several groups have broken down. Traditional patterns of movement have altered. Pastoral nomads have stayed much longer in dry season grazing areas than ever before. The same areas are also agriculturally the most important areas e.g. Southern Kassala in East Sudan, Gash and Setit in Western Eritrea (Map 2). Such a livestock concentration around the



Map 2. Flush irrigation areas in western Eritrea





farming schemes (formerly dry season grazing areas for pastoralists) in the southern part of the study area has been a great source of conflict between farmers and pastoralists (Map 3). Because of the harshest conditions in the north during Autumn 1984 pastoralists started moving south as early as September instead of December and January when harvest will be over.

During the 1984-85 drought pastoralists arrived in the farming and irrigated schemes in their thousands pre-harvest and this was seen as a direct challenge to farmers who feared damage to their standing crops. There were major conflicts in South Gedaref area between big farmers and pastoralists. Pastoralists were arrested and fined in large numbers accused of damaging crops (see Table 3).

Table 3. *The number of cases reported to the police as a result of invasion by nomadic tribes in some of the police stations in the district in 1982. South Gedaref, East Sudan*

Centre	Jan.	Feb.	March	April	May	June
Gedaref	24	16	8	5	6	2
Ghadambalya	25	23	11	5	6	5
Showak	23	16	10	6	5	5
Total No. of cases	72	55	29	16	17	12

Source: M. E. A. El-Moula 1985

Movement towards other areas was greatly restricted by armed conflicts and poor carrying capacity. For example the east side movements (towards Eritrea and Ethiopia) was important to North Eastern Sudanese pastoralists. Traditionally there was a free cross border movement in search of grass and water thus reducing the pressure on Sudanese range lands; cross border trade has also flourished for decades. The drought and war situation in Eritrea and Northern Ethiopia made such movements impossible and cross border trade too risky. The Sudanese pastoralists have long modified their movements and decided to move south or find other means of fodder resources within Sudan. Needless to say the war and drought in Eritrea has created more refugees and more pastoralists driven out of their homelands and had to compete on Sudanese territory. This is particularly true with Eritrean pastoralists

who have for decades converged to Sudan from Eritrea in their thousands and with their livestock.

In their desperate search for alternative fodder resources Eritrean and Sudanese pastoralists approached the irrigated schemes such as the Kashm-el-Girba scheme and other schemes (see Map 3). This was also a source of conflict between pastoral groups and farmers. Between some groups however mutual farmer—pastoral agreements were reached such as the exchange of animal products for crop fodder, exchange of pastoral labour for crop fodder, purchase of crop fodder and so on.

The pastoral production system in the study region is still in crisis and no attempt will be made here to assess the damage caused and its affect of the several pastoral groups. Little is known about the drought process itself e.g. gradual losses, off take, death by species age and sex, sales, productivity and so on. There is very little post drought information and no ways of monitoring future droughts. Important lessons can be learnt from this ensuing crisis which has become one of the perennial ills of the Horn.

What have become clear is that the drought crisis had different impacts on different pastoral groups and important survival strategies are emerging as a result.

Firstly, the long range nomads such as the Bisharin (camel), the Rashaida (camel) and the Beni-Amer (cattle) seem to have *coped better* during the 1984-85 crisis. Settled and semi-settled groups suffered more livestock losses. The named groups have maintained large herds to maximise the chances of having some left when the drought is over. They also divided their livestock herds into milking and dry units in order to minimise the effects of localised drought. This required high labour input which pastoral groups can provide. Some nomads have diversified the composition of their livestock species and have opted for more drought resistant animals such as camels and goats instead of cattle and sheep.

Secondly, some pastoral nomads in the study region have completely or partly *abandoned* pastoralism as their main occupation and have acquired other means of subsistence such as farming, wage labour, charcoal making and so forth. Traditional pastoralists in Sahl Northern Eritrea have taken up paid labour in Eastern Sudan whilst the women looked after small stock. Abusin (1983) and Arifi (1974) make similar observations in East Sudan. This trend is fast growing and is leading to complete detachment from traditional nomadism.

Thirdly, pastoral groups such as the Beja in the Red Sea Hills have shown *willingness to return* from relief camps to their original settlements. Most of the older Beja in particular have opted for such a return to their homelands almost empty handed. An old Beja sheik sums up the feeling, "We want to lead our lonely lives in our distant wells looking after our livestock" OXFAM (1985). Re-stocking such families is seen as a best way to rehabilitation. Such people still maintain their skills and livestock orientation and see pastoralism as a viable means of subsistence.

Fourthly, during the drought several pastoralists have drifted to urban centres some of whom remained there permanently, unable to cope with non-pastoral life they are becoming *perennially destitute* and dependent on food aid. These are the most vulnerable group of ex-pastoralists.

Fifthly, cattle raiding, pastoral *insecurity* and farmer—pastoral antagonisms have increased (see Table 4). Cattle raiding has become a common practice along the Sudan-Ethiopia border as well as Gash in Eritrea. The once peaceful pastoralists of the region may be taking up modern arms to defend their cattle in the bush.

The issues here, namely economic viability of pastoralism, adaptive pastoral strategies, the problem of access to grazing land, pastoral destitution, food, social and environmental security and refugees are so intertwined that one finds it difficult to single out one aspect. None of them have been studied seriously, but we can speak of future strategies.

Table 4: *Showing incidents of livestock raids during 1985-87 in three refugee and Sudanese villages in Qala-en-Nahal, East Sudan. The sample does not represent large scale raids which have become a common phenomenon since 1985*

Village	Goats	Type of stock stolen			
		Sheep	Camels*	Cattle	Donkeys
1. Salmin	150	200	20	160	10
2. Adingrar	10	11	3	2	3
3. Dihema	35	25	2	8	0
Total	195	236	25	170	13

\* Price range for camels is U\$600-1000  
(see Köhler-Rollefson *et al*, 1990)

## **The future**

As such the study region has very little pastoral development experience and institutions, even by Sahelian standards. As mentioned earlier technical interventions to develop pastoralism have been limited to water development (water reservoirs/wells), some breed improvement around urban centres and large scale veterinary campaigns to eradicate major diseases. In other parts of Africa Moris (1987) argues that "the vast majority of official programmes for pastoralists have been technical, economic and social failures" *op. cit.* page 1.

In this part of the Horn there could be a major scope for the development of pastorally oriented productive and adaptive strategies which can make pastoralism more sustainable and viable. In order to achieve this I would like to suggest that particular attention is given to the following areas.

### *i) Building on indigenous breeds and using pastoral information*

Indigenous livestock breeds and their productive characteristics should be fully studied. As the case of the Bgait cattle among the Beni-Amer (Fre, 1989), show there may be several other species e.g. camels, goats which may be relatively productive but the potential of which is not fully realised due to the lack of animal production research. In terms of breed improvement, more resources should be put on assisting pastoralists to expand natural selection processes with which they are familiar. In general pastoralists are highly selective of productive sires (males) and do not allow untimely or free mating. Any breed improvement programme should therefore be placed within wider improvement in the production system which may include range and health improvement.

The considerable knowledge in animal production, management and plant use which pastoralists have, could form some basis for technical intervention. The following are some examples.

Pastoral information on livestock market prices and fluctuations could help drought early warning systems and equip pastoralists against imminent drought disaster. Using information from locally based ethnobotanists could be used in mapping and identifying local vegetation resources. Pastoral knowledge could also be used in designing and communicating extension messages. These may include extensive use of pastoral concepts, vocabulary and so on.

Several examples on the potential uses of Indigenous Pastoral Knowledge can be contemplated but it is important to try to integrate such ideas into a pilot training programme within on-going projects and within given Departmental capacity in the field. Designing a pastorally oriented curriculum is essential and the main focus should be on range management, animal production and health. *Extensive use of Indigenous Pastoral Knowledge could help wider participation of pastoralists in pastoral development and could be a starting point for supporting pastoral institutions* (such as herders' associations, groups) to back up technical and social interventions.

*ii) Securing pastoral access*

Agricultural encroachment of dry season grazing areas and the widespread problem of cattle raiding in the high rainfall areas have been identified as key constraints to pastoral production over which pastoralists have no control. Official demarcation of grazing territory as well as recognition of pastoral land and water rights have to be secured by government intervention.

Much tougher action is also needed against cattle raiders by states in the region. Cattle raiders not only steal cattle creating economic losses to herders but they have made areas of their control inaccessible to pastoralists.

*iii) Alternatives to pastoralism and risk aversion*

Pastoralism and agropastoralism as major forms of land use, production system and rural occupation have not diminished in importance despite the prolonged drought. There are many cases where ex pastoralists have reinvested their agricultural earnings on livestock (Fre, 1988). Others who are the greater majority stick to pastoralism which may have various forms and levels of specialisation.

Other means of subsistence have been introduced (e.g. wage labour, urban employment and farming) in the study area. Reinvestment on livestock is seen as a reliable economic option and such a trend will continue in this fragile ecology where agriculture is always a risky occupation due to low rainfall and technology.

In similar environments in West Africa, Swift (1980) proposes that governments should pursue a policy of risk reduction and aversion. He stated that:

Such a policy needs to do three things: to reinforce the pastoralists' own strategies against risk and encourage new ones, to make possible rapid sale of animals at acceptable prices at moments of general crisis such as major drought and to enable pastoral households to re-equip themselves with animals after the crisis has passed. (Swift, 1980: 359)

In areas where alternatives to pastoralism are limited or insignificant e.g. Red Sea Hills risk aversion should be pursued as a matter of policy. Due to the policy of neglect of pastoralism (in East Sudan) no such policy concept has been previously entertained. In Eritrea such a policy could be entertained but may not be as yet feasible due to the state of war and instability.

#### *iv) Appropriate research and stronger data base*

Planners, administrators and politicians in most cases seem to lack crucial information on key aspects of pastoral production, particularly on a zonal basis. At present there is a major information gap on the pastoral economy (level of offtake and trade, cross border trade, marketing patterns and control), pastoral technology, adaptation and survival strategies. There is, therefore, a greater need for a stronger regional and national data base to help better planning of pastoral development in the study area.

There is also a strong case for establishing Regional Pastoral Networks which could serve as a forum for regional exchange of in country experience and skills.

## **Conclusion**

The emphasis on this paper is centred around the issues of diminishing land resources (grazing, browsing, water), pastoral viability, survivability, policy of neglect and indigenous knowledge.

I have shown that land, as a diminishing asset and encroachment, coupled with insecurity are the most important constraints to pastoral production. There is hardly any evidence which suggests that productivity of their herds is an issue for pastoralists. In fact pastoralists in the study region are known for keeping very productive strains. The Bgait

cattle in Eritrea, the Kenana cattle in East Sudan, the Bishari camels of the Beja in Northern Red sea hills are some of the most productive animals (Fre, 1989; Rollefson, *et al*, 1990). I am implying that these genetic resources and pastoralist knowledge are underused in research, extension and livestock development. Compared to crop species a much wider variety of livestock species have survived recent droughts. Unconfirmed research reports from Eritrea show that almost 80% of traditional seed varieties have disappeared in Eritrea after recent droughts. The same is not true for livestock species.

The main other contention is that the pastoralist community is the most neglected despite being an important economy. My main emphasis on pastoralism and human occupation and a form of viable land use which faces a multiplicity of problems. Some ideas are then put forward to make pastoralism more viable by promoting people-centred development approaches and strategies. People-centred research and institution building would make a positive input to policy formulation and hence to resource allocation, pastoral development, food and social security.

I was unable to address other important issues which in one or another contribute to pastoral security and thus to food and social security. These are:

- Political security and peace in conflict areas. For example no long term development could be contemplated without peace in Eritrea.
- Development of alternative energy resources to tackle the fuel and firewood crisis. Such an energy crisis has led to the stripping off the remaining vegetation and this has serious implication for browsing trees which are an important source of food for livestock.
- Supporting peasant farming and food production in rural areas.
- Thinking "regional" and addressing pastoral and environmental issues in the Horn from a regional perspective.



## **Bibliography**

- Abusin, M. E. H. 1983, Livestock economy and attitude of tenants. Rackam and Kasim el Girba projects. A comparative study. Khartoum University (unpublished report).
- Aken, N. B. 1990, forthcoming, The two wars of the Sudan. Unpublished material, "Green Wars", for Panos Institute.
- Arifi, S. E. E. A 1974, New approach to planning and development for pastoral nomads: In manpower planning and development, pp. 110-123. Proceeds of the 18th Annual Conference, Khartoum University.
- Baardli, G. *et al.* 1988, Qala-en-Nahal refugee settlement scheme—Sudan: A review of environmental aspect. Oslo: NRC Consultancy Report.
- Ba, B. 1990, forthcoming, Environmental conflict in Senegal and Mauritania. Unpublished material "Green Wars" for Panos Institute.
- Brandström, P. *et al.* 1979, Aspects of agropastoralism in East Africa. Uppsala: S.I.A.S, Report No. 51.
- El-Moula, M. and A. El-Amin 1985, The problem of resource management in the Sudan. Environmental monograph Series, I.E.S. Khartoum University.
- ERA 1985, Drought reports, Eritrea. ERA—Khartoum.
- ERA/ACORD 1987, Agricultural research and training programme in Eritrea. Programme and document.
- FAO 1961, Production Yearbook 1958-61 Eritrea Vol. 15. Rome: FAO.
- Farrington, J. and A. Martin 1987, Farmer participatory research: A review of concepts and practices. ODI-Agricultural Administration Research and Extension Network Discussion Paper 19.
- Fre, Z. 1989, Pastoral development in Eritrea and eastern Sudan. Implications for livestock extension programmes. Ph.D. Thesis, AERDD, Reading University, England.
- Fre, Z. and M. Gemaledin 1990, forthcoming, Pastoral development challenges in Eritrea: Notes on policy. Paper presented to R.I.C.E.—Eritrea 1988, Eritrea.
- Fre, Z., Environmental degradation and political conflict in Eritrea.
- Gemaledin, M. 1987, State policy and famine in the Awash Valley of Ethiopia: The Lesson for conservation in conservations in Africa.
- 1987, The political economy of the Afar region of Ethiopia: A study in peripheral dynamism. Ph.D. Thesis, Cambridge.
- Hassan, Y. F. and P. Doornbos 1977, The central Bilad-el-Sudan: Tradition and adaptation. El Tamaddon P. Press Ltd.
- Hissene, M. 1990, forthcoming, Tensions and alliances around pastures. Unpublished material "Green Wars" for Panos Institute.
- Hogg, R. S. 1981, The social and economic organisation of the Boran of Isiolo district, Kenya. Ph.D. Thesis, University of Manchester.
- Hogg, R. S., Z. Fre and J. Morton 1987, Relief and development in the Red Sea Province, Sudan: A strategy for future OXFAM Involvement. OXFAM.
- Huntings Technical Reports, Sudan, January 1976—unpublished report.
- Lane, C. 1990, Barabaig natural resource management: Sustainable land use under threat of destruction. UNRISD Discussion Paper, June 1990.
- Leonard, R. 1981, European colonisation and the socio-economic integration of Eritrea. Milano papers 1981, reproduced by R.I.C.E.—Rome.

- Moris, J. R. 1987, Inventory of technical interventions for Africa livestock development. Discussion Paper, OXFAM. Arid lands workshop, Cotonu Benin.
- Omar, A. 1990, forthcoming, Somali environmental conflict. Unpublished material "Green Wars", for Panos Institute.
- OXFAM U.K. 1985-86, Various unpublished reports on relief and rehabilitation in the Red Sea province of Sudan, by Morton, Hale, Fre and others. Oxford: OXFAM House.
- Rollefson, I. K. *et al.* 1990, Camel production among the Rashaida of eastern Sudan: Problems and potential pilot study of camel production techniques and constraints in Kassala province.
- Salih, M. A. M. 1989, Government policy and options in pastoral development projects in the Sudan. Paper represented to the workshop on: The development of the pastoral network in the Horn of Africa, London 30th November, 1989.
- Sirad, M. S. 1990, Pastoral resources, human displacement and state policy: The Ogaden case. PENHA informal talks series No. 1, May 1990.
- Sulleman, M. 1986, The drought and its impact on Sudanese pastoralists. Taped interviews.
- Swift, J. 1980, The economics of traditional nomadic pastoralism: The Twareg of the Adrar N Iforas (Mali). Ph.D. Thesis, University of Sussex, England.
- Webster, C. C. and D. N. Wilson 1980, Agriculture in the tropics. London: Longman.
- Wilson, R. T. 1986, Livestock production in central Mali: Long term studies on cattle and small ruminants in the agropastoral system. Addis Ababa: ILCA Research Report No. 14.