

ECOLOGICAL FACTORS IN LAND USE CONFLICTS, LAND ADMINISTRATION AND FOOD INSECURITY IN TURKANA, KENYA

Gufu Oba

INTRODUCTION

This paper employs an historical analysis to consider some of the consequences of conflicting resource use and political friction on resource exploitation within and outside Turkana District during this century. Given this historical context, development alternatives tested to ameliorate food insecurity are reviewed.

Turkana District has been described as "an inhospitable environment where drought and famine ... recur with regular frequency" (McCabe and Ellis 1987) and food insecurity is a persistent problem. Drought is a natural occurrence to which adjustments are made, but the outcome can be entirely different if the means hitherto used to cope are disrupted. In particular, predatory raids on livestock and disruption of land use patterns can seriously upset the traditional economy. Following recent drought events (of 1960/1961, 1969, 1973/1974, 1979, 1980/1981 and 1983/1984), provision of relief food, though initially a temporary assistance to impoverished pastoralists, to make up for a short-term loss of self-reliance, is being treated as a permanent programme. Alternative means of survival, such as farming and fishing, have been promoted by aid agencies and the Government, but with little impact. Notwithstanding the huge sums of money invested, problems of food insecurity are still enormous.

If the present trends continue, the Turkana nomads are more likely to rely on food aid during future droughts than ever before. During future events, planning of successful development may require identification of factors which in the past were responsible for project failures. Unfortunately, there are few instances where development plans have relied on historical analysis to deal with development issues at a regional level (cf. Anderson 1981).

My proposition is that the stage for political conflicts, environmental degradation and food insecurity within the region was set decades ago. The indigenous livestock economy has been seriously weakened, following pacification by colonialism at the turn of the century and by the predatory raids which have continued. The after-shocks of these events have created ripples in the social security system, leaving the pastoralists more vulnerable to periodic droughts. The intrinsic capacity of the people to buffer droughts has diminished, forcing the majority to seek assistance in redressing food insecurity. The paper examines these relationships within a historical context and seeks an explanation as to why development measures undertaken to ameliorate problems of food insecurity has so far failed to produce desirable results.

Much of the data reported in this paper are based on archival information and unpublished sources. The archival information is largely from the Turkana District Annual Reports (hereafter referred to as TDAR) from 1928 to 1989.

LAND RESOURCES AND ECOLOGICAL VARIABILITY

The geo-political location and ecological variability of Turkana District has influenced resource use and political conflicts with neighbouring pastoral groups, as well as neighbouring countries, in the past and present.

The District (area 77,000 km²) lies within the Great East African Rift valley and is bordered by chains of ridges and mountains to the west (Uganda and West Pokot, Kenya). Between these ranges of hills are the plains of Turkana, on a north to south axis (Fig.1).

Irregularity of rainfall is a characteristic feature from year to year and within individual years (Soper 1985). Rainfall is expected during March - May in the east and northern parts of the District and during March - June in the south and western parts. When it falls, rainfall increases with rising altitude. Thus, areas of mountain ranges on the western border with Uganda and Sudan receive more than 500 mm/year. The highlands in the north eastern part bordering Ethiopia and the hills in the south and south west bordering with Pokot also register higher rainfall. The lowest rainfall occurs along the shore of Lake Turkana and in the central plains (150 mm year). The longest rainfall record is that of Lodwar (1921-1990) where out of 69 years, 40 years were below the long-term average (208 mm year).

The seasonality and distribution of rainfall is critical to land use patterns. Rainfalls in isolated storms create patchy vegetation production. During intervals of each fall, ephemeral vegetation sprouts, producing flowers and seeds. If the season is prolonged, the cycle of production is repeated with an overall increase of yield above that of a single season. Rainfall variability is extreme both in space and time, with rainfall patterns highly skewed in distribution. When one part of the District receives rain, the other half may experience a drought.

Consequently, range production is strongly pulsed, since duration and distribution of rainfall influences production of ephemeral pastures. Both quantity and distribution of rainfall are critical. Variation of rainfall even by a few millimetres can have a considerable influence on forage production and therefore distribution. Hence, there is a natural dichotomy in the distribution of rainfall and vegetation. The mountains and hills which receive higher rainfall therefore support richer vegetation growth, whereas the plains with low rainfall have a concomitant lower vegetation production (Olang 1983). The other key vegetation resources are the woodlands along the drainage systems of the Turkwel, Kerio, Suguta and Tarach Rivers as well as myriads of seasonal streams.

Population density and distribution partially reflects these ecological factors, as well as security factors discussed below. The District has a low population density with an average of 2.3 persons km². Currently, 45 % of the District is uninhabited, and 35 % is devoid of livestock (Ecosystems 1985). The areas with little or no population are in southern, southwestern and northwestern sections bordering West Pokot District and the Sudan respectively. About 40 % of the population is found in and around settlements and irrigation schemes (Ecosystem 1985).

HISTORICAL FOUNDATIONS OF INTER-TRIBAL RELATIONS

Prior to the eighteenth century, the region of Turkana was inhabited by diverse groups of pastoralists, including the Samburu, the Merille (hereafter referred to as the Dassanech) and the Rendille. The entry of the Turkana into the region occurred during the second half of the 18th century and the middle of the 19th century. The Turkana, having separated from their brethren the Jie, (now in Uganda), expanded their territory in all directions, displacing the Toposa, the Dongiro (Inyangatom) and the Dassanech in the north; the Dodoth (Dodos) and Karimojong in the west; the Pokot in the south and the Samburu in the southeast. Displacement by the Turkana occurred over an extended period of time, at first by exacting pressure on key opponents. In this milieu of change, some defeated groups were assimilated, while some were forced out, themselves exacting pressure on their neighbours and so on.

The Turkana conquest of other pastoral groups during the 19th century occurred for two reasons; firstly, Turkana were isolated from the rinderpest disaster of the 1880s, and were therefore in a comparatively stronger economic and military position than their neighbours, whose livestock was decimated by the epidemic. Secondly, given these favourable conditions, it was possible that the Turkana population was expanding and that they needed more grazing lands (Gulliver 1955).

The peoples of the Lake Turkana Basin are shown in Figure 1. Although stable relationships historically existed between different groups, these relationships fluctuated according to circumstances, in particular conflicts over grazing and water resources, which still continue (Muller 1989).

LAND USE AND INDIGENOUS RANGE MANAGEMENT

The District, although largely marginal, contains pockets of high potential rangelands which are crucial to land use patterns. The mountains, hills, plains, streams, rivers and valleys create a highly heterogenous ecosystem, but the marginal nature of the environment creates survival risks, which the pastoralists must cope with by multi-resource exploitation. In contrast to many East African

pastoralists, the Turkana employ diverse food-procuring strategies which include fishing, farming, and gathering of wild foods, in addition to multi-species pastoralism. It is, however, the latter which characterizes their economy. Mobility is the principal mode of resource use, in response to the patchy rainfall distribution and concomitant patchy vegetation productivity.

To take the best advantage of the diverse land resources and environmental variability, the Turkana manage multiple species of livestock, comprised of camels, goats, sheep, cattle and donkeys. Since each species has distinct dietary needs, the Turkana are able to exploit different expanses of the range during any period of the year. Cattle are confined to mountain areas and river courses during the dry season, and moved to the plains during the wet season, while the plains are endowed with sufficient browse for sheep and goats and camels during the wet and the dry season as well (Little, 1985).

Pasture and water resources seldom reoccur from year to year with any uniformity; rather, their distribution is characterized by patchiness. Thus, movements between different pastures are varied; firstly because of variable fodder and water supplies, secondly, because of poor security and thirdly, because of the particular requirements of each species (McCabe *et al.* 1985, Little 1985).

To contend with these three factors, the Turkana pastoralists have evolved a highly flexible social system. The basic management and social unit is the *awi*, consisting of a man, his wives, children and other dependents. Each *awi* manages the multiple livestock species - sheep, goats, cattle, camels and donkeys - by dividing the management and labour requirements between different sub-family units. The *awi* unit is autonomous from any other family, but each *awi* forms part of a flexible neighbourhood (*adakar*; plural *ngadakar*) composed of members from one territorial group, who negotiate rights for pasture and water rights with neighbouring groups. The association of *adakar* is therefore a strategy to get access to insecure pastures, when mobility is required (Jagt 1989, and see also Akabwai 1992).

Different possible strategies of coping with the variable environment and the insecurity of land rights have been studied by Ellis *et al.* (1985). This type of information is essential for the government and aid agencies to plan stress amelioration measures. Four territorial Turkana groups, inhabiting different ecosystems, are compared; the Ngisonyoka (south Turkana) the Ngiyepakumo and the Ngilukamong (Tarach group), the Ngikamatak (central Turkana) and the Ngibocheros (the lake zone group).

Figure 1: Geopolitical Location of Turkana District, Kenya

The Ngisonyoka of south Turkana are presented as a non-equilibrium but stable production system (Ellis and Swift 1988), whose territory includes both mountains and plains and consequently, diverse vegetation patches. They move about 10-15 times per year between these heterogeneous areas, but avoid the highlands bordering Pokot because of insecurity. On the whole, the heterogeneity of their territory has allowed them to survive severe droughts without depending on food aid (McCabe and Ellis 1986).

The Ngikamatak of central Turkana, on the other hand, established symbiotic relationships with the Karimojong, which allowed access to the dry season grazing across the border, within Uganda.

In contrast to these two groups, the Tarach groups of northwest Turkana have wet season pastures in a drought-prone zone, while their traditional dry season grazing lands are along the border with Uganda, which is insecure due to raids by the Dodos. Their option is to exercise force to get access to the dry season rangelands.

The last group to be considered are the Ngibocheros, who inhabit a barren territory along the shores of Lake Turkana, and are quite prone to recurrent droughts and food insecurity. To cope with this stress, they employ diverse survival strategies, including gathering of wild fruits, fishing, managing small stock and reliance on famine relief.

From the above examples, it is evident that mobility is necessary in deciding to temporarily exploit particular key resource patches and that such mobility therefore requires resolution of land use and management conflicts between different groups. Since the last century, however, patterns of land use have been slowly changing, as after colonization, borders were fixed and access to key resources was curtailed. The integral Turkana tribal land area was placed under more than one political entity, which conflicted with indigenous resource use strategies. This meant that within the new fixed tribal boundaries, the environment was placed under more severe pressure.

TURKANA PASTORALISM DURING THE COLONIAL PERIOD

The British conquest

At the turn of the 19th century, when the European colonial powers were scrambling for Africa, King Menilik II of Ethiopia was also expanding his area of influence into the region south and west of his country. The British, having established a foothold in British East Africa (Kenya) and the Uganda Protectorate, were apprehensive about the Ethiopian motives. The principal factors which influenced British expansion into the region were firstly, the Ethiopians were laying claims to the region of Turkana and Karamoja. Traders and the Ethiopians obtained ivory from the Turkana by bartering with firearms, which the latter used with intense ferocity to raid other tribes (Barber 1968).

Secondly, there was concern that the Turkana threat was forcing other groups southward, thereby posing a serious challenge to settlers in the White highlands (Muller 1989). Establishment of British administration in Turkana was thus aimed at counteracting the Ethiopian expansion. This imperial rivalry had an important consequence on land use and the socio-economic well-being of the Turkana and the peoples of the Lake Turkana Basin at large.

Between 1911 and 1918 a series of military expeditions were mounted by the British, to break Turkana resistance and to seize firearms. Rather than being subdued, the Turkana responded by escalating raids on other tribes and confronting the punitive forces (Lamphear 1976, Barber 1968). But by 1918, after many thousands of cattle and smallstock had been confiscated, the British succeeded in pacifying Turkana resistance (Lamphear 1976, Muller 1989).

The consequence was overwhelming; a complete disruption of the Turkana pastoral economy which left a large portion of its population in poverty. For example, between 1916 - 1918, more than 250,000 livestock were impounded from the Ngikamatak section, ending all resistance to the colonial rule (Muller 1989, Awuondo 1990). Loss of livestock disrupted the social security system of reciprocal assistance (Barber 1968, Muller 1989).

Escalation of Land Use Conflicts

The Turkana, like their pastoral neighbours, have a cattle raiding culture. Memories of past successful raids are passed on through war songs and dances. The songs describe the heroics of the older generation and their exploits, shaping the emotions and attitudes of the younger generation. Raiding of traditional enemies was previously a means of expanding grazing lands, gaining access to new water sources and most importantly, an economic stratagem of self-restocking and improving social status by acquiring livestock from defeated enemies. In Turkana society, men have the responsibility of protecting communal grazing lands and livestock from attack by their enemies. This means that each raid is spontaneously followed by counter raids. Nevertheless, perpetual enmity between opposing groups seldom occurs. Alliances between conflicting groups are forged and broken, depending on prevailing relationships among themselves and with other groups, while individual friendships are formed and marriages arranged between groups. Members of one tribal group may move and settle among former enemies who become new friends, particularly during periodic droughts and famine when less fortunate groups seek refuge among the more fortunate ones.

When relations between groups are good, there is reciprocity in access to grazing and water resources during periods of stress. As one group crosses into another group's territory, access to key resources is governed by the host group's rules and regulations. The hosts, by agreeing to assist, expect reciprocal rights in the future. During such intermittent contacts raids and killings are rare.

However, when the balance of power is upset, between rival groups competing over access to land and water, raiding rather than reciprocity can become the dominant mode of inter-tribal relations.

Following the disarmament of Turkana, the balance of power dramatically changed in favour of the Dassenech. Despite the fact that the colonial administration was concerned with the maintenance of law and order, raids and counter raids continued to dominate events. Table 1 is the summary of raiding incidents on Turkana by other groups and the casualties reported between 1928 and 1983. The figures of livestock stolen by Turkana and casualties caused by them are not available, though expected to be similar to those given here.

The late 1920s was marked by an escalation of conflicts between the Turkana and other groups, especially the Dassenech. The British responded by evacuating the whole country along the western shores of Lake Rudolf (now Turkana) to the north, to create "no-man's" land (TDAR 1929). But, regardless of the strong measures taken, the Turkana continued to be raided. Their response was natural; they opted to defend themselves.

Throughout this period, it was difficult for the Turkana to appreciate British justice. The Turkana were disarmed and weakened in contrast to their traditional enemies, who despite British security measures, continued to kill their people and steal their livestock with impunity. One solution to the problem was to seek compensation from the tribes who perpetrated the raids, but as most of the warring tribes lived outside Kenyan boundaries, the question of compensation became a contentious political issue between Ethiopia and the British.

Despite the stringent measures taken by the British against raids, problems of cattle rustling, raids and counter raids were unabated. The British reacted by confiscating firearms from the Turkana (TDAR 1958). But by the mid-1950s, the Turkana had begun acquiring illegal firearms to fight off and raid their enemies. Raids were becoming more frequent and the incursions of the Turkana across international borders to raid or to pursue those who raided them was intensified. The Turkana were concerned about the inability of the British to protect their livestock and grazing lands. Not yet known to the British was the existence of the underground resistance group of Turkana called *ngoroko*, composed of retired army personnel and young warriors, organized to defend the Turkana against their traditional enemies. The *ngoroko* were organized into fighting forces, who were responsible for most of the raids outside Turkana District, raids which were followed by counter raids from the other side (TDAR 1972). The *ngoroko* activities had an adverse effect on the Turkana economy. Their raiding provoked counter raids, and not being a disciplined group, they created terror and havoc among their own people by forcibly depriving them of livestock to provide rations.

Table I: Cattle Rustling and Casualties Reported between 1929-1983

Year	Source of raid	Casualties	No. stock lost
<i>Pre-independence period</i>			
1929	Merille	94	182
1939	Merille, Toposa, Donyiro	209	600
1948	Donyiro	9	
1954	Donyiro, Merille, Toposa	200	
1957	Merille	183	5,000
1958	Dodos	2	
Total		880	5,782
<i>Post - independence period</i>			
1965	Merille, Toposa, Donyiro, Dodos	45	2,476
1966	Merille, Toposa, Donyiro, Karimojong	207	2,856
1970	Merille, Toposa, Donyiro, Karimojong		
1971	Merille, Toposa, Donyiro, Karimojong	102	1,079
1972	Merille, Toposa, Donyiro, Karimojong	73	7,279
1973	Karimojong, Dodos, Merille, Pokot	28	17,108
1975	Karamoja	120	5,978
1976	Karimojong, Pokot, Merille		11,960
1977	Pokot		2,247
1978	Pokot		5,217
1979	Pokot	87	
1982	Merille, Pokot		8,152
1983	Merille		22,856
Total		762	87,181
<u>Source:</u> Turkana District Annual Reports 1928-1983			
<u>Note:</u> Names as given in archival records are used here.			

Impact of colonial administration on land use

Disarming the Turkana left them at a greater disadvantage against their traditional enemies. In an attempt to deter raids against Turkana by the neighbouring tribes, the British created a no-man's land along the international frontiers. Following the ratification of borders with Ethiopia, the British

administration then embarked on policies which had profound ramifications for Turkana pastoralism. One policy was the prohibition of Turkana from crossing international borders. Violators of these restrictions were punished by an instant fine of 20% of the total number of livestock found trespassing (Lamphear 1976). In spite of heavy fines imposed, and patrolling of borders by the army and the police, the Turkana and other groups continued to transgress when grazing conditions became inadequate in their territory.

The prohibition on crossing borders seriously threatened the Turkana mode of land use, which as discussed above, is based on movements between the wet season grazing within Turkana territory and the dry season grazing movements which took them across international borders. Traditionally, the Turkana and other groups each maintained concessions over grazing and water rights, expecting reciprocal access when conditions were reversed. This important fact, though well known, was ignored by the administration (TDAR 1938). Instead, the administration assumed the responsibility of arranging with those neighbouring countries also under British administration (Sudan and Uganda), but not including Ethiopia, for the Turkana to be allowed to use grazing and water resources across international borders.

Notwithstanding their ultimate submission, the Turkana were alarmed by the attitude of the British, which in their view was only aimed at punishing them, while ignoring their rights to grazing grounds outside British territory. It was their conviction that the border administration and security structures were merely used to reinforce control over them.

Fixed borders are alien to the pastoral mode of land use, as manifested by continuous violations during periods of drought, for example. The effect of British policy was to make important pasture and water resources, which Turkana depended upon during drought years, legally inaccessible.

Turkana-Dassenech Relations: The Ilemi Triangle

British attempts to contain tribes within the delimited borders was a major policy undertaking affecting other groups as well as the Turkana. The Dassenech, for example, were forced out of grazing areas which they were hitherto allowed to use, and confined to areas only a fraction of their former territory, following arbitration of international borders between Britain and Ethiopia. This became a contentious issue, in which the Dassenech were caught up in border conflicts between two foreign powers. When the Ethiopians objected to border arbitration, the British responded by denying the Dassenech access to their traditional grazing grounds in Kenya, while the Ethiopians countered by refusing Turkana fishermen access to the fishing grounds within Ethiopian territory. Whenever the Ethiopians agreed to open up the fishing grounds to Turkana fishermen, the British would reciprocate by giving a limited grazing concession to the Dassenech.

With increased British influence in northern Turkana, once administrative and security structures were in place, the area in the extreme southwest of Sudan, which was inadequately administered by the latter, was placed under the Kenyan administration in 1914 (Carr 1977). This piece of country, popularly called the "Ilemi Triangle," was the traditional dry season grazing area of the Dassenech and was acknowledged as the northern-most limit of Turkana grazing grounds. It served as a buffer zone between the Dassenech and Inyangatom tribes on one hand, and the Turkana on the other. The British discounted the Dassenech claim to grazing and water resources in the "Triangle," on the grounds that they posed a great threat to Turkana (TDAR 1943), and any Dassenech found trespassing were threatened with an instant fine and arrests (Carr 1977). Following the disarmament of the Turkana by the British during the first decade of 1900, the Dassenech had acquired guns from the Ethiopians and later the Italians. This left them in a superior military position vis-a-vis other neighbouring groups.

This decision had serious ecological implications, which had a catastrophic effect both on the Dassanech and the Turkana. The Ilemi Triangle receives more reliable rainfall than the rest of the district and therefore supports a richer vegetation. Loss of the "Ilemi Triangle" resulted in reduction of the Dassenech territory by about 79%, restricting their seasonal movements. Regardless, grazing restrictions were violated each year, preoccupying the administration with law enforcement and imposition of fines.

The British were aware of the fact that enforcing grazing restriction along international borders was an unattainable goal. In the words of the District Commissioner (DC) Turkana:

It is not contended that the present policy of exclusion provides a lasting solution to the Merille [Dassenech] problem. It is clearly not; nor can any policy which entails the permanent closure of much needed grazing be regarded as anything but unsatisfactory. There can be no final settlement of the problem, until some equitable partition of the frontier grazing and water between the Turkana, the Merille and Dongiro [Inyangatom] can be made ... without the risk of inter-tribal fighting ... (TDAR, 1943).

Trials with grazing schemes

The artificial boundaries imposed to control human and livestock movements caused serious ecological problems. Following the droughts of the 1930s and 1940s, environmental degradation became a contentious issue in the whole of northern Kenya, where in some districts, destocking programmes were introduced. When these failed, due to resistance from the pastoralists, controlled grazing schemes were attempted, culminating in the first ten-year development

plan (1946-1955) aimed at rehabilitating rangelands (Migot-Adholla and Little 1981; Dietz 1987).

In Turkana District, poor land use was blamed on increased environmental degradation, which introduced grazing systems were expected to alleviate (TDAR 1943). Earlier attempts to control grazing in specific areas had failed due to inadequate supervision as well as resistance by Turkana. In the words of the DC Turkana:

This question [i.e grazing control] is likely to prove rather more difficult ... in Turkana than it has in other parts of the colony, since it is complicated not only by the natural conservatism of pastoral people but also by an almost unbelievable degree of apathy and incompetence ... permanent water [points] are kept in use throughout the year; thousands of donkeys roam the grazing grounds destroying with their hooves and their teeth the grass and browse needed for sheep and goats and cattle and the Turkana themselves are contemptuous of the need of control ... (TDAR 1943).

The grazing policy for Turkana District in the 1940s centred on providing additional water supplies, to ensure a more even distribution of stock and to rest the areas around the permanent water points. This was to be achieved by vigorously enforcing grazing controls, to avoid further ecological degradation (TDAR 1943). In 1943 a water survey was conducted throughout the District. The goals of water development and the linked grazing controls was firstly, to open up or put to proper use those grazing resources which were poorly utilized and by so doing relieve pressure on the more used areas. Secondly, the goal was to ameliorate the people's condition of life, and thirdly, to ensure grazing at a safe distance from the frontier or from inter-tribal boundaries and to minimize trespassing by Turkana in areas where raids were common.

At that time, the ecological status of Turkana rangelands was summed up this way:

The plains are in a parlous state. The stones and pebbles on the soil surface would appear to indicate a considerable amount of erosion. The apparent lack of soil cover and consequent wind erosion ... is most frightening. The soil cover could of course be restored by reducing the stock, but probably a rotational grazing plan for the whole district would be adequate. By rotational grazing I do not mean the reservation of areas for dry season grazing, letting the rest be gnawed to bare soil, but a rotational closing of all grazing land, which ... would allow for the grasses and herbs to seed and the seedlings to establish themselves. For such a scheme to be feasible it would have to be combined with the provision of water supplies (TDAR 1943, emphasis added).

An evaluation of rangeland condition was also carried out, which noted that although the vegetation of the area was a manifestation of the extreme arid conditions, there was little evidence of dramatic structural changes which could be attributed to utilization, except in a few localities where overgrazing had caused some degree of change (TDAR 1943, 1946). The evaluation noted that the prevailing environmental degradation could not be wholly blamed on the population, but was related to constant encroachment by sand from the direction of the lake, and to the slow process of desiccation which began during remote times, a factor also applicable to other areas of East Africa. The evaluation concluded that the scarcity of grazing and water supplies could induce concentration of livestock and people, with consequent damage to better-watered areas. Recommendations to achieve proper grazing systems were suggested: (a) investigate and regulate the ownership of water supplies and seasonal grazing grounds to improve the distribution of water supplies, (b) determine, and if necessary, regulate, the numbers and ownership of livestock, (c) devise a plan to control seasonal migration between the dry season pastures and the wet season grazing, demarcating grazing grounds on a strictly seasonal basis.

The proposal was based on inadequate ecological and sociological assumptions, as discussed below. Nonetheless, two important points emerged from the analyses and recommendations; firstly, that degradation was localized and that it was occurring in more productive areas and secondly, that although range development was limited on account of aridity, proper range use was necessary.

The scheme was never fully implemented. In the first four years (1949-54), installation of boreholes in strategic areas to control grazing, did not take place as planned. It became apparent that complete grazing control would not be achieved due to the lack of grazing resources over wide areas and the impracticability of closing any area for long periods. This became more obvious in 1950, when after a year of poor rainfall all controlled grazing broke down, leaving Turkana pastoralists to range throughout the district (TDAR 1949). The only exception was in northern Turkana along the borders, where grazing control was affiliated with security measures.

A grazing control scheme based on the Four Block - Four Months Rotational Texas Grazing System was implemented in northern Turkana in 1958, during an exceptionally wet year (TDAR 1958). Although the Turkana were responsive to the scheme, controlled grazing showed deleterious effects on the range. In his annual report, the District Officer (DO) Lokitaung gave the following assessments:

There is reason to believe that grazing, browse and water supplies were slowly deteriorating ... Whether this is due to climatic conditions or overstocking or whether the two are complementary are not known. The implementation of a four block grazing scheme has certainly had the effect of conserving grass in the forward areas, though high winds and

temperatures have taken toll of grass and seed. A probable disadvantage of the scheme is that it would localize stock in areas where water became more easily obtainable with consequent damage to grazing. At the moment, the stock is being uneasily held in Block 'B' and the tribes are due to enter Block 'C' where there is ... no water (TDAR 1958, emphasis added).

By 1959, the Four Block - Four Month Texas Rotational Grazing Scheme had failed and was abandoned in 1960, having not made alternative arrangements for those pastoralists who were excluded from traditional grazing areas under the scheme.

The failure of the schemes was not surprising, since they had ignored three important factors of Turkana rangelands. Firstly, rainfall regimes are highly erratic and varied both in space and time; thus one good year is usually followed by a series of bad ones, occasioning opening up of all grazing resources. Secondly, some grazing areas depended on by Turkana during periods of drought lie outside the District. Traditionally, the Turkana use various methods, including intimidation, to gain access to these areas while the administration's determination to contain Turkana stock within the District borders and resist demands for grazing concessions outside the District denied grazing access to certain groups. Thirdly, the traditional wet and dry season grazing areas are deliberately set aside for use when needed most, and access to these resources is essential for the survival of the Turkana pastoral economy. The schemes failed to incorporate these traditional seasonal movements, superimposing measures which could not work.

The lesson to be learnt is that the introduction of a hard and fast system of grazing control in Turkana is very unlikely to succeed. Any form of grazing system must be extremely flexible, to meet grazing needs in below-average rainfall years. Any new grazing system must be built on the Turkana traditional grazing movements, taking into consideration the need to cooperate with the neighbouring countries of Uganda, Sudan and Ethiopia.

LAND USE CONFLICTS IN THE POST-INDEPENDENCE PERIOD

No endeavour was made to revive the grazing schemes following Kenya's independence in 1963, as the new Government did not have a clear range management policy at the time, and also wished to avoid the association of grazing control and restrictions with colonial repression of the indigenous population.

Border incursions continued unabated following Independence. The new administration relaxed the colonial restrictions enacted to control human and livestock movements, especially across international borders. Moreover, individual groups were allowed to make their own arrangements with other

groups, with regards to sharing of pastures or water points. But, unrestricted movements across the formerly forbidden borders increased friction between opposing groups, leading to an escalation of raids and counter raids in the post-colonial period.

By 1970, hardly a week passed without a raid being reported at the District headquarters of Lodwar, either by *ngoroko* across international borders or by the pursuing enemy into Turkana. For the Kenyan security forces, dealing with the increased level of conflicts became a major pre-occupation. Raids and counter raids resulted in enormous losses of livestock (Table 1), leaving a large proportion of the pastoralists destitute.

Because of poor security, large chunks of grazing lands bordering neighbouring Districts were abandoned, while secure areas became over-used. For example, the Mosol and the Simbol plains, bordering Turkana District to the southwest, have in the past been used by the Pokot people as a wet season grazing area. Following incursions of *ngoroko* into the area, and subsequent raids which resulted in thousands of stock lost and many people killed, the Pokot ceased using the area in 1974 (Conants 1982). Traditionally, the Pokot had managed these rangelands by occasional burning to reduce tree cover and encourage the growth of grass. Since the area has been abandoned, woody plants have proliferated, which although increasing the total woody biomass, has led to the elimination of grass on which the Pokot cattle formerly depended. Consequently, the entire Mosol and Simbol plains have lost their value as a grazing resource.

In the Independence period, eradication of cattle rustling has not been possible, as the rustlers cross international borders and then take refuge in their respective countries, making pursuit by Kenya security forces problematic (TDAR 1979). Most importantly, the poor security situation and political instability in Ethiopia, Sudan and Uganda has increased the availability of illegal arms. For example, the Dassenech, traditional enemies of the Turkana, are one of the sources of the gun trade, while the Karimojong in Uganda, after breaking into the Moroto army barracks during the reign of Idi Amin, increased the level of sophisticated weaponry available on the market (Soper 1985). Again, following the fall of the Government of Col. Mengistu Haile Mariam of Ethiopia, the availability of illegal arms in that country has been boosted with weaponry left behind by the disbanded army. Currently, the secessionist war in southern Sudan is exacerbating the conflict in this geo-geographical region. The availability of modern weapons is likely to exacerbate tribal conflicts in the region for a long time to come.

The introduction of firearms into traditional warfare has had a devastating effect, causing great loss of livestock. This can be seen from Table 1; although the number of human lives lost in raids have not increased in the first 20 years of Independence, total livestock lost during since Independence has been 92 % of the total or an increase of 1,500 % since records began in 1929. Such loss

of livestock has had serious repercussions on Turkana pastoral economy and food security. Coupled with the recurring droughts, the survival of many pastoral families has been threatened, resulting in large-scale dependence on famine relief camps (TDAR 1970, 1980, 1983).

FOOD SECURITY IN RELATION TO THE ECOLOGY AND LAND USE CONFLICTS

Indigenous food security systems

The history of land use in the District has been punctuated by radical disruptions, caused by the containment policy of the colonial period, recurrent droughts and by the intertribal conflicts during the post-Independence period. Insecure borders have led to abandonment of more dependable pasture lands, while more secure areas are over-used. As a consequence, the food security situation has worsened.

The Turkana employ diverse mechanisms to ensure food security options. Livestock are the media through which social security links are maintained. Livestock are exchanged in a reciprocal system of rights and obligations between "bond-friends" (Gulliver 1955), in which mutual insurance is maintained over a wide range of relationships, varying from close affine to members of the same age-group or special friends (Jagt 1989, Muller 1989, Gulliver 1955). In the pre-colonial period, bond-friendships were not restricted to Turkana borders. Livestock transactions served to maintain "pathways of ... social interactions" which cut across societal boundaries and linked neighbouring tribes (Sobania 1990). According to Sobania:

... inter-societal bond friendships grew out of the mutual economic interests between two individuals who previously shared as trading partners, out of the sharing of a grazing area which brought alien herdsmen into prolonged contact or out of the hospitality extended to a neighbouring traveller on a visit (1990).

Such relationships are very beneficial in maintaining individual food security in the event of disasters such as raids, drought and diseases, provided the disaster is not widespread. However, pauperization occurs when the system of reciprocity breaks down, which happens if the local economies of all the bond-friends are devastated by regional drought, epidemics or widespread raids. During the latter part of the 19th century, following famine and epidemics, even wealthy stock-owners were reduced to a state of poverty. The worst-affected groups were forced to seek assistance among neighbouring tribes. On occasion, the Karimojong went to seek food among the Pokot (Dietz 1987), while the Turkana went into the Dassenech country (Sobania 1990), where the Dassenech

allowed Turkana refugees to cultivate food on the Omo River delta and along the lake shore. These relationships built over many generations were, however, broken when tribal groups became separated by fixed borders this century.

Another indigenous food security measure in the Turkana region involves diverse food-gathering strategies. In contrast to many pastoral groups, the Turkana do not practice food taboos other pastoral groups, the Turkana do not have food taboos, which is probably necessary given the limited choices they have. Although culturally predisposed towards cattle production, gathering of wild fruits is an important activity, especially during droughts. The heterogeneous vegetation presents them with diverse plant species which are utilized as food; for example, Morgan (1980) listed 53 plant species in the menu of the Ngisonyoka.

In addition, hunting has been an important means of survival for some Turkana (Clarfield and Lowe 1991). However, colonial reports noted that the District lacked significant wildlife, which probably disappeared after the introduction of fire arms into the region by the *ngoroko*, who were reported to have carried out indiscriminate slaughter of elephants and buffaloes. The Turkana concede that "there are no animals nowadays," which can be interpreted to mean that there must have been a period of some relative abundance in the past.

The Turkana also practice small-scale agriculture, relying on floods along the main rivers and the lake shore (Soper 1985). However, flood-dependent agriculture is a gamble, as crops are washed away whenever floods are excessive, whereas inadequate floods produce insufficient harvests. In spite of its important supplementary role, traditional agriculture does not provide enough surpluses to feed people during the periodic droughts. Furthermore, those groups inhabiting the lake shore are able to supplement their diet with fish from the lake.

Food Insecurity and Famine Amelioration Measures

In the words of the D.C Turkana some 43 years ago:

The District has always depended upon supplies of imported food... unless means are found to grow sufficient food locally and moreover to set aside stocks of food for use during bad years, famines are bound to occur from time to time. The destitute' camp at Ferguson's Gulf must be accepted as a permanent institution. If the colony is not to be committed to annual expenditure on famine relief on a fairly large scale and to facing the much graver problems of a mass out migration (southward), no time should be lost in seeking the means to banish hunger ... (TDAR 1949).

Perennial food shortages had developed during the early phase of the colonial period. The drought risks to food security were compounded by denial of access to sections of Turkana along the north western lake shore, to the fishing grounds and areas of indigenous horticulture along the Omo River delta, on the Ethiopian side of the border. As discussed above, access was complicated by political competition between Britain and Ethiopia over the border. As an early response to food shortages, the British administration imported maize meal to be sold at subsidized price. When conditions deteriorated, free maize meal was provided to feed old people and children at famine camps. The third stage was to distribute free maize meal throughout those areas experiencing food shortage. The fourth measure was to provide food-for-work, on road projects and locust eradication measures. The last option was to send the most desperate paupers to permanent famine relief camps at Ferguson's Gulf and Lodwar (TDAR 1948, 1949).

The total number of destitute in relief camps rose from 26 paupers in 1936 to 700 by 1959. In 1960-1961, when a severe drought occurred, the number of impoverished nomads permanently camped at famine relief centres reached 2,500 persons, and the food situation was so acute that a massive famine relief operation became necessary. According to one source, in that drought over 30,000 people were registered at Lodwar and Loruqumu famine relief camps (Lokaito 1986). By the 1970s, famine relief centres were being overwhelmed. In 1972, about 42,000 people were provided with food aid, while in 1983-1984 some 80,000 people (over 50 % of the total District population) was supplied with relief food.

The main causes of this increased dependence on famine relief have been outlined in this paper. After Independence, the security arrangements along international borders with Turkana were relaxed, and ethnic conflicts, which had ruffled events in the region for many years, were intensified. Over the same period, the *ngoroko* escalated raids against neighbours, which eventually forced the victims into famine relief camps (TDAR 1966).

Long-term Solutions to Food Insecurity

Following the 1980-1981 drought, the Kenyan Government, assisted by donor agencies, took the initiative of seeking alternatives for those people no longer able to survive as pastoralists. The alternatives included development of fisheries, resettlement on irrigation schemes and restocking (Hogg 1986).

As early as 1937, fishing at Ferguson's Gulf on Lake Rudolf (now Lake Turkana) was proposed as the best alternative to famine relief. Between 1936 and 1942, about 26 destitute families on average were maintained at Ferguson's Gulf on the basis of fishing (TDAR 1936, 1938, 1939, 1942). Several problems beset this scheme; mainly being that fish supplies varied as the level of the lake fluctuated (TDAR, 1948). A major scheme to transform the fisheries into commercial exploitation began in the 1950s, after prolonged droughts which

resulted in widespread hunger. In an attempt to rehabilitate the destitute, the Government offered a "new" opportunity to turn herdsmen into fishermen. The transformation required improved technology and organizational structures to meet demands of the external and internal markets. As an initial step, improved fishing gear was introduced and the destitute trained to fish.

The Kalokol Fishermen's Co-operative was set up, and an ice-making and cold storage plant and accessories were installed in 1980 through NORAD funding. Following a short experimental period, however, it was found that the cost of maintaining the plant was uneconomical, while the fish catch dropped suddenly as the lake level fluctuated and Ferguson's Gulf dried up. The dwindling yields together with poor managerial capacity led to the collapse of the co-operative in 1983.

Another attempt to alleviate hunger in the District was based on experimentation with agriculture. Trials with irrigated agriculture began in 1942, on the Omo River delta, a region traditionally farmed by the Dassenech and the Inyangatom. The project, despite enormous capital committed, was a total failure. In spite of this set back, trials with flood irrigation were again started in and around Lodwar town (TDAR 1951). However, the production of the scheme was below expectations, bunds were frequently broken by floods and the trial was abandoned in 1954. Thus, although irrigated agriculture was tried in the District during the colonial period, a solution to food security by this method was far from being established.

Notwithstanding, the protracted history of famine relief in the District meant that finding a long-term solution to food security was urgent. In 1966, a project to develop small irrigation schemes along the Turkwel and Kerio rivers was initiated, but these schemes also failed to provide food sufficiency and food security. Crop yields were highly variable from scheme to scheme and from year to year, and were generally below expectation (Oba 1990). Accordingly, the tenants on the schemes continue to depend on food aid, especially during periods of drought.

Restocking was seen as an alternative to the above-mentioned interventions, whereby each destitute family would be given animals to enable them to resume traditional nomadic life (TDAR 1960). Various relief agencies undertook restocking programmes (Hogg 1980), which, however, failed to increase food security. Since the viability of individual Turkana households depends on managing multiple species - sheep, goats, camels, cattle and donkeys - restocking with smallstock alone is inadequate. Lacking the other necessary species, families restocked with smallstock have simply consumed or sold their smallstock when they became hungry and sought re-admission into the relief camps again. Thus restocked families are still vulnerable to food insecurity.

In the long term, solutions to food insecurity are expected to be related to improving range resources. However, measures aimed at ameliorating range deterioration have been limited and *ad hoc*. The first of these limited activities

tested water spreading techniques at Loringippe, near the border with Ugandan in 1963 under the USAID range development programme (Fallon 1963). Water was diverted from the Loringippe river to trial plots of various species of grass, sorghum, maize and cowpeas. The project was abandoned because of poor security and lack of supervision. Despite this failure, water spreading activities were later implemented in other areas of the District, also without any success (TDAR 1970).

These projects have not included research to test the proposed management system, nor techniques suitable for rehabilitating degraded rangelands.

Livestock continue to be crucial to the Turkana economy. Livestock population estimates from 1966 to 1990 show a recovery following the drought of 1969, a minor decline between 1970-1972 and another recovery phase with a peak in 1976 (5.06 million total livestock). This was followed by another major decline during the 1980-1981 drought (0.8 million), while by 1990, the livestock population had reached 3.9 million. Nevertheless, 1990 and 1991 were again drought years and another cycle of decline is expected.

Dependence on livestock for food security is clearly difficult due to high losses during droughts as well as seasonal variations. As a consequence of feed variability, the performance and productivity of livestock fluctuates depending on season and year. Even during an average year, the ecology of Turkana District results in nutritional stress among livestock (Coppock *et al.* 1986). Livestock development has been synonymous with marketing. Currently, livestock trade in the District is dominated by private traders, using chains of middle men between livestock producers and the terminal markets of Nairobi and Mombasa. In the rural areas, the trade is conducted through barter, as pastoralists exchange smallstock for food and other goods and services. Hides and skins are also bartered in a similar manner.

Since the District is not endowed with many natural resources, trading livestock remains the main income generating activity for pastoralists. One may therefore argue that commercialisation of the livestock industry has a greater chance of improving the District's economy than any other alternative means.

CONCLUSION

This paper has considered the historical consequences on the Turkana pastoral economy of the relationships between ecology, land use systems, and political conflicts. An assessment is made of the alternative strategies designed to help Turkana to better cope with the chronic food insecurity which has resulted from the interplay of these factors.

From the evidence available, the political conflicts involving raids and cattle rustling have not been resolved, nor have proposed solutions to food insecurity, in the form of grazing schemes, fishing or irrigated agriculture, been

successful. Restocking, as a means of reinstating destitute back into pastoral life, has also failed. Overall, development efforts were not built on the results of long-term experience but were instead, based on assumed needs. Relief food, although used as the principal means of ameliorating hunger, has perpetuated dependence and further weakened the indigenous strategies of self-reliance. Livestock remains the principal economic opportunity. Economic growth in the livestock sector can help to meet both local and national goals.

Apparently, there are no easy solutions to the related problems of conflict and food insecurity in the region of Turkana. In the future, solutions may be realized by developing management guidelines which are ecologically sound, sociologically acceptable and founded on the indigenous resource use strategies. In particular, access to dry season rangelands which may occur in neighbouring countries, will remain crucial to the survival of the Turkana pastoral economy. Cattle rustling, which has disrupted normal land use patterns, must also be dealt with. Any solution must therefore have a geo-political dimension.

The history of development in Turkana is similar to that of other arid and semi-arid districts in Kenya. In contrast to the high potential areas, the arid and semi-arid Districts have not benefited from the initial rapid economic growth which followed from Independence; instead, development has been reactive to drought-driven events. For example, targeting development projects on destitute is treating the symptoms rather than causes, and does not reduce the pace at which pastoralists are dislocated. It is hoped that the lessons of historical events discussed in this paper could provide a basis for future development.

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