



Pastoral Crisis in Successive Drought

Case study (Ngorongoro Conservation Area- Tanzania)

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Acknowledgements

Mosses Ndiyaine wishes to thank the many people who contributed information for this Report. I appreciate and respect the Organizations, Institutions and Individuals who over the last several years have devoted their time, resources and energy to seeking authentic participatory and successful solutions to the important problems addressed here. The result could well be taken as a precedent, not only in Ngorongoro but also in many other parts of the world. I salute the people of Ngorongoro, the Parish Priest and the Catechists of Ngorongoro and more so the East Martin Dosing an individual from Denmark funding my trip to Kenya, Uganda and Tanzania on the course of this research. Many thanks to the young professional like me who are working so effectively for the interest of both the conservation and its inhabitants.

DROUGHT IN A PASTORAL, ECOLOGICAL COMMUNITY

For the past thirty years it has been a common cry in Ngorongoro that the place is drying up and there is much loose talk about the diminution in the rainfall and change in character of precipitation. This popular outburst naturally became more intense during periods of serious drought, which are unfortunately of frequent occurrence in certain portion in Ngorongoro. Rainfall is unreliable, swinging with dry periods / drought alternating with wet ones. The dry periods increased in length and severity, and periodic storms and sandstorms replace the formally normal rainfall. Thus intermittent rainfall is necessarily abnormal. Where it is possible to predict drought, it is doubtful whether human societies could handle that knowledge with perfect wisdom.

Joseph Thomson one of the early tourist in 1885 recorded the impact of drought to the ecological systems of NCA. "Only seeing is believing the desolation brought by a great Ngorongoro drought, the very bush withers away to bare dry sticks; sheep, goats and cattle perish by thousands."

Pastoral Crisis in Successive Drought

The degradation of the pastoralist habitat is hastened by recurrent drought, raising the spectre of desertification in many areas. Devastated by famine times in the last two decades and unable to rebuild their herds, many pastoralists have been forced into what has been called sedentarisation through impoverishment. Sedentarisation is change from mobile pastoralism to Agro-pastoralism, sometimes also known as Semi-Sedentary System.

The general features of semi-sedentary system warrant stress and this is because of loss of mobility. Over the last years the Ngorongoro Maasai have been practising nomadic pastoralism. Now the system is drastically changing from a practise of mobile pastoralism to Agro-pastoralism and with lost of mobility.

Why lost of mobility?

- i. Pastoral territory is lost to other users being hotels and tourism promotion sites and the premier restricted areas (three craters Olmoti, Empakaai and Ngorongoro crater, Northern Highland Forest, Olduvai, Laitoli print sites etc.)
- ii. Losses of livestock due to disease enforced reduced mobility of the herds since they can use smaller areas.

Depending of the causes different systems have appeared. In the last case, the resulting semi-sedentary system arises within the mobile system practised by families with fewer and less mobile livestock than those who move freely.

Drought has in general affected pastoralists by reducing the quality of pastures and the availability of water, thus increasing the range of mobility needed to obtain these insufficient quantities; displacing circuits of movements (Northeast to West South); forcing the Maasai to present petition to government for alternative means of survival (supply of maize/corn or practise of subsistence agriculture.) to supplement their pastoral deity.

Response of livestock and wild herbivores to drought

Drought in Ngorongoro subjects' livestock not only to scarcity of water and poor pasture but also to high air temperature and strong solar – radiation. Animal must therefore deal with an increase of heat load at the same time with the lack of pasture water. Most herbivores like cattle can withstand heat and water shortages quite well, provided conditions do not become extreme. However, malnutrition will inevitable develop as pasture productivity decline under drought and overgrazing. This will affect most seriously animals like cattle that cannot range far from water and that depend mainly of drought susceptible grasses rather than on more resistant shrubs and trees.

Measurements of water turnover and water requirement of different species under comparable conditions have shown that in the summer heat cattle need about twice as much as species better adapted to arid conditions (King 1983). Susceptibility to trypanosomiasis has prevented cattle from being herded in much of the moisture areas, to which they otherwise would be better suited and so they have remained largely confined to drier areas where the annual rainfall is 100 and 750mm.

It is clear from a biological point of view that cattle even the *zebu* are not well suited to drought conditions. They are neither able to conserve water efficiently nor do they withstand dehydrations. The grazing habit discourages them from feeding on the trees and shrubs that provide the best forage in a drought. They lack the salivary protein that, in deer, combines with the toxic tannin present in many browse plants (Robbins et al. 1987). Cattle must frequently return to water and their grazing radius shrinks in the dry season. Consequently pasture near the settlement deteriorates while more distant grazing are under-used and out of reach to the devastating herd. As a result, disease and death during severe droughts are more common among the cattle than among other stocks.

Research shows that cattle are more vulnerable than the other species of grazing livestock since they are loathe eating vegetation other than grass and they are more dependent on frequent watering.

There are several factors for low productivity of livestock.

There is low plane of nutrition for several months since many of the livestock depend mainly of natural herbage, which has a poor quality for most dry seasons. The poor quality is manifested as a lack of available energy and total protein, which in the ruminant animal results in a poor appetite. The above effects combine to give sub maintenance planes of nutrition. Weight losses occur in most animals, any form of production e.g. milk is inhibited and the fertility of breeding female is suppressed.

Food shortage

Pastoralists are constantly malnourished during successive drought periods. In terms purely subsistence only tea blended by water to increase volume is consumed. Nobody die of hunger but children will suffer and at times do die. In these circumstances pastoralists maintained a symbiotic relationship with sedentary neighbours exchanging produce and services. By design, this economy was self-sufficient, but with periodic drought, livestock can not be sold; they are too skinny and not walk to the market centres for sell.

Indigenous Heartland Organisation

Health of Pastoralist under the pressure of Drought

Malaria poses a threat to the Maasai adaptation to harsh environment and of the problems that mobility posed for their health. Research shows that elements of Maasai lives and particularly their complex mobility contributed to Malaria infection. Through movements people were brought into contacts with mosquito vectors at open water sources and improvement that were being affected. Some other movement have led them to areas of tsetse fly, which they would otherwise avoid. Example Olpiro and to other semi-desert areas.

Malaria and syphilis were reckoned to be less of a scourge than in the past, but gonorrhoea remains common. Eye disease particularly trachoma was less common than among sedentary oasis dwellers; tuberculosis is at its apex and due it meat of the dead animals.

In 2004 the Archdiocesan team visited Endulen hospital and there was a report from the curative department.

1. Zoonoses such as hydatid cysts, brucellosis rabies and anthrax, are likely to be relatively common because of proximity to animals. Trachoma is no more prevalent than among other settled groups, though there is a general impression of high infant mortality.
2. No evidence that nutrition is poor, except for some vitamin deficiency through lack of vegetables and fruits; protein intake is high.
3. Rates of endemic and epidemic disease (malaria, typhus, smallpox) are generally not high, but there may be exposure to some of these during movements.

Two problems were encountered over the cause of interview.

- i. Whether pastoralists suffer from more or less poor health than do settled populations in the same or adjacent environment and.....
- ii. The nature of the pastoralists lives (the trans-human mode of production that pastoralist follow) makes it difficult to bring them health care even when there is the will to do so. Thus mobile clinics could be a possible remedy where pastoral life has been partially disrupted through drought, survival strategies have involved some members of pastoral groups moving away to look for alternative employment as a supplementary means of support. In these instances individuals find themselves in other ecological zones from those in which they usually live and subject themselves to risk from diseases to which they are not usually exposed, and also in different social circumstances. (Example in town separated from normal kinship and to other social contacts) where they may be exposed to sexually transmitted diseases and to mental stress.

The Relationship between the Conservation Area Authority (NCAA) and the Maasai inhabitants of the Conservation Area in Drought Periods

Pastoralists have a parasitic relation with their natural environment (Eco-system). In the same sense pasture is solely a natural phenomenon but is culturally controlled being designated or delimited as individuals, family, communal, tribal or national property by pastoralists, who use it to provide natural sustenance to their herd.

Man and herd live in a symbiotic community and the human component of this community takes their form of village composed entirely of semi-nomadic pastoralists. However the pastoral village is found primarily in those cultures given over wholly or in significant degree to pastoralism. In the pastoral community man and herd make social and psychological adjustments to each other; together they adapt to the natural environment in which the herd have their ecological niche, the pasture.

Pasture is often discontinuous and connected by routes of access; village are mobile and maintained as distinctive entities whether they are within or beside the pasture. Thus the pastoral ecological community is based on a man-herd symbiosis, which is in one of its aspect parasitic in the larger eco-system. Man's cultural role is extended to accommodate their behaviours of the herd. Having understood the major characteristics of the relation between pastoralism and the eco-system please consider the outburst court relation of NCAA and the Maasai inhabitants.

One o f the most radical and conservative man I have ever seen is the learned man interviewed by Charles Lane in his video entitled '*The price of Conservation*'. He is from the National Geographic Society. He said "If man, the ruthless enemy of all natural beauty could be banished from this tract (NCA) for a thousand years than the forest might survive."Such ill-

minded people with misconceived ideas and policy brought anti-conservation feelings to the Maasai. The Maasai have been using the forest reserve for grazing during dry seasons (drought) for many years now and the attempt to control and preserve the area failed without their cooperation. It must be noted that the success of the Ngorongoro depends on the co-operation and the good will of the Maasai which is growing with the diminution of suspicion and mistrust.

Relations have become so strained between the Authority and the local Maasai because of the following reasons:

- a) Establishments of frontiers, installing surveillance and control mechanisms eliminating or reducing free access by local inhabitants to pastures and water. The authorities tend to ignore demands for compensation or alternative measures. Under these circumstances the local community suffer the greatest cost and there is no assurance that the resources will be managed by a sustainable basis. Because regulations are defied a permanent atmosphere of conflict prevails.
- b) Lack of a Forum to be used to accept (approve or disapprove reasonable restriction in exchange for controlled access to pasture grounds and water sources.)
- c) Local populace are poorly informed and excluded from the decision processes regarding their lives.

Cases Conflict due to Drought

- In October 1966 thousand of Maasai cattle entered the Ngorongoro highland forest reserves and the *moran* (Maasai warriors) attacked the staff of the unit and police when they tried to arrest them. (Report Tz)
- 1963 Annual Report by the Ministry of Lands, Forests and wildlife stated that "Illicit grazing in the forest reserve has posed a difficult problem"
- It further mentioned that man (Maasai) was not co-operative and untouched by efforts. The report also mentioned illegal fire and cultivation
- 1962 Report -Illegal grazing was detected on two occasions one case being prosecuted by police at Karatu. Three cases of illegal exploitation were compounded. The cutting, burning and grazing experiment initiated on the small paddock at Ngorongoro have been repeated on large scale at Nainokanoka.

To note all

Conflict over natural resources e.g. land, water, forest has prevailed for the last 50 years specifically during the scrabble for pastures and water. The conflict may unfold as a simple war of words, or it may escalate to armed conflict when persecuted by police the Maasai will be fined and sometimes imprisoned. No attempt that has been made to control or at least minimize the impact brought by drought.

MANAGEMENT OF DROUGH EPISODES

- a) Drought preparedness

Migration to avoid drought

Migrating into drought retreats areas will first accommodate acute drought. Where resources are available, grazing radius can be extended by establishing well spaced bore holes or piped water and drought food especially urea-treated crops residues and by-products may be supplied to take the pressure of the pasture. Rotational grazing systems, with well planned schedules can best be a remedy. If migration is not feasible there will be increasing concentration around reliable water points (often in the vicinity of NCA headquarters and increasing dependence on famine relief is an inevitable factor. Mild drought can usually be

borne by using up grazing reserves and perhaps digging deeper to the available reserves, especially brows resources.

Average drought begins to affect customary movement by changing transhumance schedules or detaining animals in their dry-season grazing areas. Thus drought is either absorbed, avoided by moving elsewhere, or under certain circumstances, dealt with by disposing of livestock and turning temporarily to other sources of subsistence. The other thing is relying on local grazing reserves.

Pre-emptive sale of Livestock

Before drought it is inevitable that livestock should be sold. As drought lengthens additional livestock would be sold and herders be able to buy cereal food for the available livestock. The problems will be that, livestock sales are hindered by low demand and depressing livestock prices. The pre-emptive sale of livestock in advance o drought-before their condition worsens and value decrease makes sense economically and also makes it easier to nurture the livestock that remain.

The sale purposes, however that an effective banking and credit system is available to facilitate restocking when conditions improve. It also requires that grain foods be available at a fair price to fill the dietary gap left when livestock are sold. The required feed also needs to be available.

Early warning systems

Early warning system to inform people of impending drought is an important element which addressing drought episodes.

Remote sensing satellite imagery and the digital data from which the imagery derives are needed for determination of drought sensitivity

Field monitoring- information on the availability of grasses and water and livestock production is needed.

Initiating a programme at the district level to effectively manage all phases of drought (preparedness, mitigation and recovery.)

Establishment of a drought contingency fund for immediate drought intervention and an emergency cereal reserve to maintain grain stock at the district level.

Recovery activities should be established to respond to the vagaries of nature. Continued drought recovery activities for people made destitute by the drought is to be addressed very quickly. Example restocking the poor and destitute families and buy-back of livestock.

Over-stocking is often a serious threat, and so markets should be made available and subsidised to encourage the sale of cattle of the land before an impending drought becomes too severe. This will provide pastoralists with money thaty will need to restock once the drought breaks down. Aid is better used to prevent disaster than to ameliorate its consequence.

Switching to more tolerant breeds

Animals that feed on trees and shrubs are more tolerant to severe drought. For example gazelles, antelopes, giraffes and camels, others are goats and sheep. Cattle cannot range far from water and they depend mainly on drought susceptible grasses rather than on more resistant shrubs and trees. Cattle can easily die by dehydration due to water scarcity, heat due to solar radiation, malnutrition due to lack of pasture and finally due to trapanomiasis and severe diarrhoea

In principle drought resistance could be gained by switching to more drought-tolerant breeds as the risk or intensity of drought increases but this degree of flexibility is seldom practised. A pastoral society that is cattle-based tends to favour cattle even when living in an environment that is better suited to goats and sheep. However pastoralist normally change the relative proportion of the species in their hold and many turn to new species an adaptation to radical change in the accustomed environment.

In regions where drought make cattle herding uneconomical, restocking with other domestic animals better able to withstand drought conditions such as sheep, goats, donkeys should be encouraged. Camels have long been the mainstay of nomads and pastoralists in the drier parts of East Africa; especially in Sudan, Somalia, Ethiopia and Kenya (Bornstein 1988). In Kenya some traditionally cattle-herding people such as the Samburu have read the lesson of successive droughts and are rapidly adopting camels; even the supposedly conservative Maasai are beginning to add some camels to their herd.

NB. The essence of drought management is to ensure a capability to respond to drought episodes of different intensity. Medical and veterinary supplies are needed in order to help people and livestock overcome the debilitating effects of drought.

Drought response mechanism

1. Scale of drought alert need to be established ranging from a baseline (situation normal) to increasing level of threats and hardships.
2. Response schedules should be decided for each stage of alert.
3. District committee be convened
4. Measures of preparedness be reviewed. For Example grain stock, state of reserve grazing emergency watering points and livestock market facilities.
5. State of informing other parties in advance.

NB. The effectiveness of strategies depend in part on the timing, whether applied as pre-emptive or reactive response are more usual in pastoral situations except when movement has become so institutional that people move automatically at a time when there is no current threat to life or livelihood. Otherwise the response tends to be left until the last minute, when possibly fewer options are open than would have been the case had action been taken sooner. It is often a project objective to replace some of these last minute decisions by preemptive strategies.

Generally a programme is needed to be initiated within the Pastoralist Council to address the following:

- i. To regulate the use and care of range areas, water and equipment like dips; to watch stocking rates.
- ii. To organise livestock marketing and supply – consumer goods and other required materials
- iii. Assisting the nomads in introduction of improved grazing methods and better veterinary services with the help of mobile training units, radios services development of teaching programme.
- iv. Such other businesses shown on management of drought episodes. Pg. 5

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Words of wisdom -SHARED EVERYTHING IN SUCCESS

Shared power is authoritative and controlling participation in the making of important decisions.

Shared enlightenment is access to the intelligence required for the discovery of common interest.

A shared skill is opportunity to acquire exercise and achieve excellence in professions.

Shared wealth is access to the benefit of production.

Shared well-being is enjoyment of safety, health and comfort.

Shared affections is enjoyment of congenial and intimate human relations and love of inclusive groups.

Shared rectitude is a common demand to act responsibly on behalf of Human Dignity.

Mc Dingal et.al. 1963