Managing and developing African pastoralism

Some practical considerations

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Characteristics of pastoralism

There are varying definitions of pastoralism. Some favour a loose definition such as "The use of extensive grazing in rangelands for livestock production" (e.g. Blench, 2001) in order to encompass all forms of extensive livestock production, including fenced ranching. However, such a definition misses a crucial characteristic of what is more commonly understood (especially by social anthropologists) to be pastoralism, and that is that it is practised on unenclosed land of communal ownership or usufruct. It also misses the point that it is the primary economic activity of those who practise it. Hence, I propose the following, tighter, definition: "*Pastoralism is the utilisation, as a livelihood, of communally owned natural pastures (rangeland) for livestock production*." There is a gradation form pure pastoralism, in which no crops are grown, to agro-pastoralism, in which crop production makes a significant contribution to the household economy.

This leads into a definition of "rangeland" since "range" is a word of American origin used to denote extensive areas of natural vegetation suitable for supporting livestock or wildlife, but which has no direct equivalent in English. In South Africa the corresponding word is "veld". Rangeland can be defined as "Land carrying natural or semi-natural vegetation which provides a habitat suitable for wild or domestic ungulates and which is usually characterised by soils that are too poor, and/or rainfall that is too low or erratic, to support permanent cultivation" (Pratt and Gwynne, 1977).

These two definitions help us understand some important characteristics of pastoralism:

- Practised almost exclusively in marginal areas (poor soils and/or low rainfall; high temporal and spatial variability of rainfall);
- Droughts are a recurrent phenomenon;

- Mobility essential to track grazing and water, hence pastoralists tend to be either transhumant (move seasonally between regular wet and dry season grazing areas, and usually have a permanent or semi-permanent base in the dry season grazing area) or nomadic (move continuously, with no home base). Nomadic pastoralism is decreasing due to restricted mobility and government attempts at sedenterisation;
- Pastoralism is a livelihood, not a supplementary activity (although richer pastoralists may develop businesses such as shops);
- Crop production is insignificant and opportunist (may take advantage of good rainfall). Even agro-pastoralists tend to be opportunist in the amount of land they cultivate;
- Security issues are common (e.g. Somalia, Sudan, northern Kenya).
- Tends to be subsistence rather than commercially oriented;
- Under pressure from expanding cultivation (dryland and irrigated, subsistence and commercial) and blocked access to water points;
- The grazing areas are communally owned (only the croplands are normally considered to be individually owned);
- Most pastoralist societies traditionally have well structured social and territorial organisation for controlling grazing and water resources and livestock movements;
- May be based on one predominant species e.g. sheep or cattle, but commonly entails some mixture of cattle, sheep, goats and/or camels. The choice is influenced by climate, vegetation type, water availability and tradition;
- Reasons for livestock ownership are more diverse than in commercial production;
- The rangelands are often shared with wildlife.

An important factor often missed by aid and extension workers is that both range condition and range degradation should be defined in context of the objectives of the production system

Some of the consequences of these characteristics are as follows:

- Livestock productivity is relatively low (milk yields, growth rates, conception rates, birth rates etc);
- Mortality rates can be high (due to drought, disease, predation, conflicts etc);
- Crop yields tend to be low (agro-pastoralists);
- Returns on investment are low (pastoralists don't necessarily sell more livestock; crops don't respond to fertiliser without adequate rainfall);
- Pastoralists and marginal areas tend to be regarded by their governments as low priorities for in-


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vestment;
- Increasingly, pastoralists and marginal areas are being seen by development agencies as low priorities for investment (low Internal Rates of Return, long time frames needed);
- Pastoralists tend to be remote from schools, clinics, shops etc;
- Levels of literacy and numeracy tend to be low (although increasing);
- Pastoralist tribes tend to have low levels of political representation;
- Working in pastoralist areas can be difficult (remoteness, movements, security issues);
- Management changes take a long time to show quantifiable results (confounding effects of seasonal variations) compared to crops;
- Lack of individual control over utilisation of resources; community agreement and cooperation necessary (Tragedy of the Commons);
- Pressures on pastoralist systems (loss of traditional grazing areas and water points, increased human and livestock populations, reduced mobility, government interference in decision making etc) are undermining the traditional procedures for decision making, management of grazing areas and water points, and control of livestock movements;
- There is an increasing tendency for pastoralists to become agro-pastoralists in order to broaden their economic base;
- There is an increasing tendency of range enclosure, much of it illicit. It starts with enclosure of crop fields and becomes extended to areas of grazing;
- Wildlife conflicts (competition for water and grazing, disease transmission, predation) can be problematic.

Livestock ownership and herd/ flock sizes

In a normal commercial livestock

enterprise the primary objective is to maximise sales (on a sustainable basis) of animals or animal products - meat, milk and/or wool. Where the principal product is live animals (for beef, pork, fat lamb etc), the primary objective is facilitated by maximising turnover, i.e. animals are reared to a desired age or weight and promptly sold. Commercial farmers know exactly the areas and boundaries of their properties, they have direct control over stock numbers and distribution on their properties, they know quite accurately the number of livestock that their properties can support in good and bad rainfall years, they pay close attention to the range condition and trend, and they reduce stock numbers (or buy in feed) when grazing is scarce.

Pastoralists, however, are generally subsistence oriented, their grazing areas are communal or open access (individuals only have control over their own livestock) and seldom clearly defined, and their reasons for livestock ownership are more varied and complex that in commercial enterprises. They include:

- Store of wealth
- Status
- Mobility
- Pleasure in owning and looking at own livestock
- Source of meat, milk, blood, hides and dung
- Transport and draft power

Whereas commercial farmers own livestock in order to sell them or their products, pastoralists own livestock in order to meet their subsistence requirements and, if possible, to increase their herd/flock sizes. Herd/flock sizes tend to be widely skewed in pastoralist societies, with the majority of herders owning tens, while a few own hundreds of head. However, the reasons for selling livestock tend to be the same: to meet immediate cash needs.

The principal reasons for needing to realise cash are household needs; school fees, books and uniforms; medical expenses; veterinary expenses; and animal feed.

Owning a mix of livestock species facilitates selection of an animal, or group of animals, to meet a specific cash need. A cow or steer would not readily be sold where a sheep or goat would suffice. Camels are highly valued and rarely sold if other livestock species are available. Livestock are rarely slaughtered for home consumption unless they are ill or injured. Meat from animals which die is seldom wasted.

An important consequence of only selling animals to meet cash needs is that higher animal prices mean that fewer head need to be sold to meet the cash need. Hence there can be a perverse market response to increased prices, as demonstrated in Swaziland by Doran, Low and Kemp (1979).

Another significant use of livestock in pastoralist societies is payment of the bride price (lobola in southern Africa), which is set in numbers of head and payable by the suitor to the father of the bride. This is the opposite of western dowries, payable by the bride's family to

the groom or groom's family.

Offtake levels tend to be low (<10% for cattle compared to 30+% on a commercial beef ranch) but birth rates are also generally lower and mortality rates higher, so herd/flock growth rates are slow and livestock numbers can be reduced by disease or decimated by drought. The uncertainties of water and grazing, the probability of droughts, the lack of individual responsibility for range condition, and the risks of livestock disease, predation or theft all contribute to a rationale of herd/flock maximisation. Simply put, stock numbers are the best insurance against stock losses.

Whereas, in earlier times pandemics such as rinderpest would wipe out whole herds of cattle and wildlife, the pandemic diseases have been eradicated and vaccination programmes largely control the major infectious diseases. Veterinary programmes enable more animals to be born and more to stay alive, and drought now remains as the major factor limiting livestock populations in pastoralist communities.

A contributory factor to the conflict in Darfur is the blocking by settled agro-pastoralists of access to crop residues and water points by the nomadic pastoralists

Land tenure and range degradation

Traditionally, tribal groups and clans recognise their own territory and, within a tribal or clan area, the grazing is generally open to all members of that group. Owing to vagaries of rainfall and consequent availability of grazing and water, loose reciprocal agreements between clans are common. However, in many countries the governments have reduced the influence of tribes and clans, and replaced it with state jurisdiction (tribalism is seen to be a hindrance to national development). Thus the traditional procedures for controlling grazing and water have been weakened, the recognition of boundaries has been eroded, and pastoralist groups are less able to keep their traditional grazing areas for their own use. These factors, combined with the increase in human and livestock populations and the loss of grazing areas to crop production, put great pressure on the rangeland. Inevitably, the areas selected for expansion of crop production are those with the best soils and/or rainfall, hence the proportional loss of grazing is often greater than indicated simply by the number of hectares subtracted.

Traditionally practised pastoralism is an ecologically sound, low impact form of land use, typified by the Maasai of Kenya and Tanzania. Within tribal and clan groups, land tenure was not an issue as there was enough for all. Such pastoral-

ism enjoyed large areas in which to move in search of water and grazing, low overall stock densities and generally peaceful co-existence with the wildlife. When grazing or water became scarce in one locality, the herders moved their livestock to a new area, and did not return to the first location before the grazing had recovered, thus the grasses were stimulated and fertilised by being grazed but not weakened by being over-grazed. However, as overall stock densities have increased, and there are no longer empty areas to move to, the ecological balance is being lost and in many areas traditional pastoralism has become unsustainable.

In the changed circumstances of human and livestock population pressures, the issue of land tenure has become one of the most significant factors impacting on range condition and range degradation. The implications of open access on responsibility for sustainable resource management have been eloquently described by Hardin (1968) in his seminal treatise 'The Tragedy of the Commons'. In essence this states that the incremental benefit of putting an extra animal onto the rangeland accrues entirely to the individual who owns the animal, but the incremental degradation caused by that extra animal is shared by the community, hence it is always in the individual's interest to add another animal to his herd regardless of the degradation caused: "Each man is locked into a system that compels him to increase his herd without limit - in a world that is limited." Sociologists have criticised Hardin's theory, but its premise does have wide validity to shared use of resources, and not only to grazing.

For decades communal grazing areas have been widely regarded by expatriate agriculturalists as seriously overgrazed and degraded yet they have continued to support larger numbers of animals than would be maintained on commercial ranches. This has brought the concept of carrying capacity and range degradation into question in recent years, and there is now general agreement that in arid and semi-arid areas (brittle environments) carrying capacity estimates have limited value in communal rangelands because seasonal variations in rainfall are so high (Behnke and Scoones, 1993). It is a fact that the lower the mean annual rainfall, the higher the coefficient of variation. Commercial ranches tend to stock conservatively, preferring to have surplus grazing in good years than large deficits in bad years; communal area herders rarely have that luxury of choice.

An important factor often missed by aid and extension workers is that both range condition and range degradation should be defined in context of the objectives of the production system. Thorn bush may be considered to represent poor range condition for cattle or sheep but excellent condition for wildlife or goats. Similarly, a vegetation state that would be considered too poor to support target weight gains in commercial ranching might adequately support larger numbers of animals at a lower level of pro-

duction per head but a higher overall production per hectare (e.g. de Ridder and Wagenaar, 1984).

Nonetheless, there is no doubt that range degradation does exist, is taking place in many communal grazing areas, and has reached disastrous levels in some. However, there is a widespread reluctance among livestock owners to acknowledge that the degradation they can see is caused by the existence of too many livestock (overgrazing), and it is common to hear the cry that the problem is due to rainfall being lower than it used to be - even where rainfall records do not support the contention. Another cry is for more grazing land to be made available. Many pastoralists and communal area herders have not yet accepted that their grazing areas are a finite resource, and that there are no longer any empty areas to move to. Because livestock ownership is so fundamental to their psyche, they tend to regard stock numbers as the independent variable in the relationship with grazing area. Voluntary control of stock numbers by a community is not a considered option, partly for the reasons above and partly because the majority of herders have small herds and those with large herds are the most influential in the community and would block attempts to limit their animal numbers. Compulsory destocking and control of stock numbers has been tried by colonial governments but is too unpopular for most governments to contemplate.

The inevitable consequence of increasing pressure in communal rangelands is a tendency towards enclosure as a means of privatising resources. Traditionally in most agro-pastoral communities the croplands are privately owned but become open access after the crops have been harvested. However, increasingly the croplands are being enclosed and reserved for exclusive use by the owners, and increasing areas of grazing are being enclosed (and appropriated) by more influential stock owners. A contributory factor to the conflict in Darfur is the blocking by settled agro-pastoralists of access to crop residues and water points by the nomadic pastoralists. Similar problems are experienced by the nomadic Fulani pastoralists in Nigeria. In northern Namibia, unauthorised enclosure of substantial areas of communal rangeland has become problematic.

Attempts to introduce ranching into pastoralist communities

A major mistake made by aid agencies has been the attempt to transfer the American ranch model into African rangelands, and assume that the erection of fencing and provision of water points would convert subsistence herders into commercial ranchers. In Botswana a large number of ‘turn key’ (i.e. ready to move into) fenced ranches were established in a block in the western Kalahari and allocated with exclusive tenure to groups or individuals with large herds as part of the Tribal Grazing Land Policy of 1975. The results were disastrous (Bekure and Dyson-Hudson, 1982); the fencing blocked wildlife migratory routes, the ranches were hopelessly

overstocked and a substantial chunk of pristine Kalahari was ruined. In Kenya a number of group ranches and co-operative ranches were established for the Maasai, but they have also caused problems of blocking movements of other herders, eroding traditional authority to control grazing, and pressuring for subdivision to individual tenure (Bekure, de Leeuw, Grandin and Neate, 1991).

In group ranches, a number of individual herd owners share a designated area within a fenced boundary. Each owner maintains responsibility for care and management of his own animals, hence competition for grazing develops as stock numbers increase, unless a fixed limit can be agreed or imposed. In a co-operative ranch, a number of individuals jointly own the livestock herd and a ranch manager is normally appointed. Pastoralists are reluctant to lose individual ownership of their livestock and this system is more suited to wealthy livestock owners than to small herders but it does stand a better chance of being operated sustainably and commercially.

The principal drawback of enclosure is that it restricts mobility to track grazing and water according to availability, unless very large areas are enclosed or conservative stocking rates are applied. Furthermore, fencing is not a guarantee of sound management. In fact, fencing in communal grazing areas causes more problems than it resolves. Commercial ranches use fencing to keep their animals in a designated area, whereas fencing in communal areas is designed to keep other people's animals out.

Enclosure leads to privatisation of communal rangeland by an influential few, and disenfranchisement of the majority. Shareholders in group or co-operative ranches who become disillusioned sell their shares to wealthier members of the group, who gradually increase their holding. A precursor can be the subdivision of a group or co-operative ranch into parcels for each shareholder, but these parcels are invariably sub-economic and are bought by the wealthier shareholders.

Commercial ranches compared to pastoralism

Commercial ranches are generally able to maintain a healthy range condition and high levels of animal production, whereas pastoralist grazing areas in comparable vegetation types and rainfall zones are tending to become increasingly degraded and animal productivity levels are falling. Why?

Some of the differences between the two types of production system are summarised in Table 1.

Principles for management and development of pastoralism

The following recommendations apply widely to all forms of pastoralism and agro-pastoralism (settled and unsettled) in communal areas:

1. The first step is to understand what there is, where it is, how it works, why things are done as they are, who are the stakeholders and what are the decision

Table 1: Characteristics of commercial ranching and pastoralism

Commercial Ranching	Pastoralism
Clearly defined boundaries	Undefined or vaguely defined boundaries
Number of ha accurately known	Number of ha vague or unknown
Number of animals accurately known	Number of animals vague or unknown
Individual or defined group tenure	Communal ownership/usufruct
Number of herd owners per ranch constant	Number of herds and herd owners increasing
Single manager/decision maker	Management decisions must be made by consensus
Centralised control over location and movements of all livestock	Little or no centralised control
Normal carrying capacity known	Carrying capacity of limited relevance
Stocking rates kept within estimated carrying capacity	Stocking rates unknown and largely uncontrolled
Objectives are commercial	Objectives are subsistence and wealth
Narrow range of reasons for livestock ownership	Wide range of reasons for livestock ownership
Aim to combine production/head with production/ha	Animal numbers more important than individual productivity
Cull surplus and unproductive animals	Only cull to meet particular need
Objectives maximised by increasing turnover	Objectives maximised by stock accumulation

making processes – before trying to change anything.

2. The second step is to let the different socio-economic strata of the community identify and prioritise their problems.
3. As far as possible, the problems should be tackled in the order of priority identified by the community, rather than coming in with a pre-conceived idea (such as overgrazing) to be the focus of a project. Overgrazing is seldom high on the list of community priorities and it is important to build confidence by dealing with more basic problems (e.g. human health, animal health, domestic water, school books etc) before, or simultaneously with, tackling complex

issues such as overgrazing. Stock water is almost always stated as a high priority but should be considered carefully in context of range condition and grazing management (see below).

4. Ideas may be introduced but the actual initiative for change should come from the people.
5. Communities and aid/extension workers must understand key principles of grazing management:

- Grazing land that is heavily stocked without rest periods will become degraded;
- Even rest periods cannot prevent grazing from becoming degraded if the stocking rates are too high;
- It is difficult to restore degraded pastures to their former productivity without substantial investment e.g. for bush clearing and/or reseeding;
- It is pointless to invest in rehabilitation while the primary causes of the degradation (e.g. overstocking) remain.

6. Communities must be encouraged to accept that their grazing area is a finite resource and that they must take responsibility for looking after it.
7. Boundary recognition is an important precursor to the acceptance of management responsibility and control of access by outsiders and their livestock. However, rigid boundaries between communities are often inappropriate because rainfall is variable and hence mobility to track water and grazing is important.
8. Reciprocal user rights (with controls) should be encouraged between adjacent communities to allow for spatial variability of grazing and water.
9. Control of water points gives de facto control of the surrounding grazing but permits some boundary flexibility, so reducing boundary disputes. Hence, communities should be assigned ownership and management responsibility for all water developments in their grazing areas.
10. Water point spacing and capacity provide the most effective means of controlling stock numbers and distribution in communal grazing areas. All water developments for livestock should be designed (spacing, capacity, output) to improve the efficiency of utilisation of the available grazing without causing its over-use. Oversupply of water is a major contributor to range degradation.
11. The capacity of water points should be determined according to the required period of supply and the number of livestock to be watered, which in turn is a function of the grazing radius to be served and the estimated carrying capacity of the area.
12. Wet season grazing areas and dry season grazing areas should be distinguished where possible.
13. Permanent water supplies (e.g. boreholes, large dams) lead to permanent settlement and should only be established in dry season grazing areas.
14. Water supplies in wet season grazing areas should be based on surface water catchment (hafirs, dams) and be designed to hold water for a limited period (e.g. 3-4 months) beyond the end of the

wet season.

15. Livestock ownership should carry a realistic cost so that there is a disincentive to maintain unproductive or surplus animals. This means that services should be paid for and subsidies should largely be removed. Cost sharing should be a principle of infrastructural development and maintenance.
16. Communities must feel a sense of ownership or proprietorship over infrastructural developments (e.g. fencing, water) if they are expected to maintain them. The surest way to achieve this is to secure contributions in cash or kind to the developments.
17. Livestock marketing should be facilitated through improved information services (e.g. radio broadcasts) and access (e.g. roads).
18. Drought early warning systems and price incentives can be used to encourage herders to sell stock early in a drought before they lose too much condition.
19. Conventional school curricula in pastoralist areas are often inappropriate as they leave young people with enough education to be dissatisfied with their pastoralist life without equipping them for anything more. There is a need for training pastoralists and agro-pastoralists to be better pastoralists and agro-pastoralists.
20. Development programmes should work through local institutional frameworks where possible, in spaced logical steps, and with realistic time scales. Relatively short time frames imposed by funding agencies demand a sense of urgency seldom felt by the recipients, and carry the risk of acceptance without commitment (Sweet, 1987).

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