PARTNERSHIP FOR LIVESTOCK DEVELOPMENT, POVERTY ALLEVIATION & SUSTAINABLE GROWTH

POLICY OPTIONS PAPER: COMMUNITY BASED DROUGHT MANAGEMENT FOR THE PASTORAL LIVESTOCK SECTOR IN SUB-SAHARAN AFRICA

An ALive Policy Note[1]

1. Introduction

The recurrence of severe drought is a cause of human suffering and a major blockage to pro-poor livestock development in sub-Saharan Africa, particularly in pastoral and agro-pastoral systems. Drought kills millions of animals, and reduces millions of people to destitution and reliance on food relief. But drought also affects the reliability of supply of livestock to markets, is a disincentive for investments in livestock improvement, exacerbates conflicts and may play a part in environmental degradation.

This Policy Options Paper seeks to inform African policy-makers, and decision-makers in international aid and development organisations, of the urgency of managing drought for the livestock sector, particularly in pastoral and agro-pastoral systems, and the main options for doing so, at policy and investment level. It provides a summary of the rationale for involvement, stressing the public good elements, provides an overview of the current and to be expected trends, which clearly point to an increased vulnerability of pastoral peoples, and gives recommendations for policy adjustments and investments, stressing the need for community involvement in drought management.

2. Rationale for Involvement

There are multiple reasons for investing in drought management. They are detailed below.

2.1. Drought Causes Major Losses in Livestock

Drought affects pastoral and agro-pastoral livestock systems essentially by reducing the amount of forage available[2] and thereby leading to the death of livestock. It may also directly kill livestock through lack of drinking water. By weakening livestock, drought may also increase their vulnerability to a range of animal diseases, both during the dry phase and also during a succeeding recovery phase when internal parasites may flourish in newly rainy conditions. Table 1 shows some quantitative data

Table 1: Quantified Impacts of Selected African Droughts on Livestock, 1981-1999

[1] Prepared by Mr. John Morton with additional inputs from Cees de Haan
[2] Tooling 1995

1981-84	Botswana	20% reduction in national herd	FAO 1984 cited in Toulmin 1986
1982-84	Niger	62% loss of national cattle herd	Toulmin 1986
1983-84	Ethiopia (Borana Plateau)	90% of calves, 45% cows, 22% mature males	Coppock 1994
1983-85	Ethiopia (Borana)	37% of cattle	Desta and Coppock 2002
1991	Northern Kenya	Cattle 556,000 (28%) Sheep and Goats 723,000 (18%)	Surtech 1993 cited in Barton and Morton 2001
1991-93	Ethiopia (Borana)	42% of cattle	Desta and Coppock 2002
1993	Namibia	22% of cattle 41% of goats and sheep	Devereux and Tapscott 1995
1995-97	Greater Horn of Africa (average of 9 areas)	29% of cattle 25% of sheep and goats	Ndikumana *et al.* 2000
1995-97	Southern Ethiopia	78% of cattle 83% of sheep and goats	Ndikumana *et al.* 2000
1998-99	Ethiopia (Borana)	62% of cattle	Shibru 2001 cited in Desta and Coppock 2002

In some cases, economic values have been estimated for drought losses, either in terms of the livestock lost, or in terms of the food aid and other relief measures that had to be put in place to prevent gross human suffering. An indirect estimate of the value of livestock that died in Kenya due to the 1999-2001 drought comes to US$ 77.3 million, whereas the value of food aid distributed by the Kenyan government, the World Food Programme and other agencies during this same drought comes to US$ 200 million.[3] Depending on the precise method of calculation, losses to the valuation of livestock sector in the national accounts of Niger were up to FCFA 61 billion (about US$ 145 million at the then exchange rate) and FCFA 42 billion (about US$ 90 million) in the drought years of 1984 and 1985 respectively.[4] These costs can be considered as the "costs of doing nothing" in terms of not actively managing drought. Much smaller sums if spent on building resilience to drought and on mitigating impacts on livelihoods at an early stage can, it is increasingly clear, drastically reduce costs of livestock losses, relief expenditure, and indirect socio-economic impacts.

2.2. Drought Reduces Pastoralist Purchasing Power

Pastoralists generally depend for their staple food, and in particular their energy requirements, on cereals purchased with the proceeds from sales of livestock and livestock products (agro-pastoralists by definition grow some, perhaps most of their own food, which makes them vulnerable to drought in very different ways). During droughts, a number of things may happen: a) pastoralists lose stock through mortality and thus cannot sell them, b) the stock that pastoralists do sell are in poor condition and thus fetch lower prices, c) pastoralists sell more stock, and thus market prices, even per unit liveweight, decline sharply, and d) grain prices go up, if drought has also affected the grain-supplying regions. The combined result will be a sharp decline in pastoralists' ability to purchase food, and thus a risk of famine. Of these points, c) the price effects of gluts on the market, remains somewhat controversial. Systematic selling of stock has been assumed by many authorities

[3] Aklilu and Wekesa 2001
[4] Le Nay and Mathis 1989

on pastoralism as part of the way pastoralists respond to or "track" rainfall[5], if not hampered by lack of transport and market infrastructure.[6] Some careful large-scale surveys in East Africa now suggest that livestock sales fail to correlate with drought cycles.[7] The picture in the Sahel is clearer: livestock prices in Niger plummeted during the drought of 2005, reaching 10% or less of pre-crisis levels, even for healthy animals, and cereal purchasing power of livestock-dependent households dropped by 75%.[8]

2.3. Drought Makes Flows to Market Unpredictable

If there is a lack of response to drought by sales of stock, this is probably not because of an irrational attachment of pastoralists to their stock, but for combinations of reasons, such as the knowledge that restocking after drought will be difficult (as there will be few female animals on the market), the intention to ride out the situation in the hope that full drought will not materialise, and physical difficulties in getting livestock to markets.

But whatever the pastoralists response to sell during drought (and it is likely to vary among pastoral communities, and between them and agro-pastoralists and mixed farmers), drought is still likely to cause a disruption in flows of animals to both domestic and export markets, possibly by gluts during drought onset, probably by scarcities during drought and post-drought phases. This will make the physical and financial planning of livestock marketing more difficult, both for government authorities and for the private sector. Drought may also decrease the quality of livestock presented to market and increase the risk of disease. As markets become increasingly interdependent, regulated and quality conscious, in traditional importing countries for African livestock such as the Gulf States but even within Africa, these factors will become more important.

2.4. Drought Discourages or Prevents Investment in Livestock

As well as concern about discouraging government and private sector investment, recurrent drought may make it difficult for pastoralists themselves to invest in improving animal health. Over recent years, the failure of government veterinary services to provide for pastoral areas has become apparent. There has therefore been increased interest in alternative models of animal health care, involving Community-based Animal Health Workers (CAHWs) and other sorts of para-veterinarians, based on cost recovery from pastoralists (usually through a mark-up on drugs sold).

The concern is that in periods of drought pastoralists may find it difficult to continue to pay for animal health services. This will mean a risk of disease outbreaks, and also diminish the viability of the CAHWs' businesses. Intervention by donors and NGOs to provide free or subsidised veterinary drugs (as has been practised by several NGOs in Kenya and Ethiopia) may alleviate short-term animal health crises but, unless well designed, undermine the long-term viability of CAHW systems based on cost-recovery.

2.5. Drought Contributes to Desertification

As with the relation between drought and livestock sales, the links between drought and desertification are controversial. Some claim that desertification is too broad a concept, used excessively and unscientifically, and in a way that fits governments' and donors' preconceptions about pastoralists.[9] They also draw support from scientific views known as

[5] Toulmin 1995, Scoones 1995
[6] Morton and Barton 2002
[7] McPeak and Barrett 2001 for pastoralists in Northern Kenya and Southern Ethiopia
[8] ILRI 2005
[9] Swift 1996

the “new range ecology” that suggest that the productivity of African rangelands is defined more by rainfall than by grazing, and that “overgrazing” is a seriously problematic concept.[10]

Against this many argue that gross environmental degradation is taking place on African rangelands, which can be considered desertification, and which is at least triggered by episodes of drought, even if both are influenced also by socio-economic factors.[11] Some would also point to the importance of trees in African rangelands, their absence from the new range ecology literature, and their vulnerability to prolonged overbrowsing or overcutting.[12] Others would focus on the effects of drought-driven sedentarisation in small towns or relief centres and the resulting *localised* degradation and deforestation.[13]

2.6. Drought Contributes to Conflict

Drought undoubtedly contributes to violent conflict, between pastoralist groups and between pastoralists and farmers. Obviously conflicts in which pastoralists are involved have other causes: poor governance, unequal resource allocations, uncertain rights over land, spillovers from national- and international-level conflicts, easy availability of firearms, large-scale cattle theft for sale by criminal elements and in some parts of East Africa deep-rooted social and cultural patterns of raiding. In the Sahel, many explanations of conflict focus on the erosion of former reciprocal relations between farmers and pastoralists as farmers increasingly keep livestock, and pastoralists settle to farm.[14] But drought has had a role in triggering violent conflict, as in the Sahel pastoralists move deeper into settled zones, and earlier in the season, than they are accustomed to do,[15] and as competition for water points, key grazing resources and livestock itself intensifies between different groups in many parts of Africa.[16]

2.7. Public Sector Involvement in Managing Drought is Justified

As can be seen, many of the benefits of managing drought are in principle open to all, and no-one’s enjoyment of them subtracts from anyone else’s: that is, they are “public goods” in economic terminology. A natural environment free from degradation, a social environment free from violent conflict, and with adequate protection to its citizens from mass death and destitution, and an enabling environment for livestock trade based on consistent throughput and a high reputation in export markets benefits all, and no private individual can capture the benefits exclusively for him or herself. While some responsibility for providing them can and should be taken by local communities or traders’ associations, governments’ role is to facilitate and guarantee them.

3. Recent and Future Trends

3.1. Increase in the Frequency of Meteorological Drought

While there is still debate on whether the frequency and severity of meteorological droughts in dryland areas of Africa has increased or remained stable in recent decades,[17] there is an increasing consensus that meteorological drought (Box 1) is likely to become more frequent and more severe in decades to come, as part of global climate change. In arid or semi-arid

[10] Behnke 1993
[11] Dregne 2000
[12] Illius and O’Connor 1999
[13] McPeak 2003
[14] Toulmin 1983 and many references since
[15] ICE 1997
[16] Reuters 22nd July 2005 for Niger and Nigeria, BBC 6th February 2006 for Kenya
[17] Hendy 2001 reviews data for Northern Kenya

areas, warming will decrease available soil moisture. Significant changes in precipitation distribution in space and time are also expected, including an increased frequency of extreme climate events, such as drought. "Increased summer continental drying and associated risk of drought" is "likely over most mid-latitude continental interiors." Further, "even with little or no change in the El Niño amplitude, global warming is likely to lead to greater extremes of drying and rainfall intensity and increase the risks of droughts and floods that occur with El Niño events in many different regions".[18] Without significant changes in policy towards the drylands and their inhabitants, such an increase in the frequency of meteorological drought will go hand-in-hand with a continued increase in vulnerability. These are pressing reasons to take drought, and drought management, seriously.

Box 1 Drought – Some Definitions and Concepts

A very simple definition of drought reads "drought is an occurrence of significantly below normal rainfall which impacts on productive activities".[19] However, there are more focused definitions:

- *Meteorological drought* is defined "solely on the basis of the degree of dryness (often in comparison to some normal or average amount) and the duration of the dry period" and must be region-specific.
- *Agricultural drought* focus on factors such as differences between actual and potential evapo-transpiration and soil-water deficits, are crop-specific and depend heavily on the timing of rain and dry periods relative to crop-cycles.[20] Agricultural droughts can therefore occur in the absence of meteorological drought, and vice versa.
- *Pastoral droughts*[21] could be defined as lack of forage availability as a result of particular sequences of meteorological drought, in terms of length, seasonal timing and the intensity of the deficit. Definitions will need to take into account the differences between areas of bimodal rainfall (as with many but not all of the pastoral areas of east Africa) and of monomodal rainfall (as in the Sahel), but for some areas it has been suggested that pastoral drought be defined in terms of rainfall failure in two successive years.[22] However, the impact of drought on pastoralism is determined by many factors, socio-economic as well as bio-physical. Most important is the fact that pastoralists can move from areas of meteorological drought to areas of better rainfall. Equally importantly they can also be constrained from moving: by land tenure systems and administrative action, by conflict and by their own desire to remain in settlements.
- *Vulnerability* is closely linked to drought. It can be defined as the "capacity to anticipate, cope with, resist, and recover from the impact of" drought.[23] Different communities, and even different households, may have different levels of vulnerability and therefore suffer differently from droughts of the same meteorological severity. Vulnerability is a socio-economic fact, determined at the level of communities and regions by socio-economic trends, policies, markets and institutions, and at the level of household by wealth, labour availability, knowledge and networks.

3.2. Increased Vulnerability to Drought of Livestock Producers

It is almost certain that the *vulnerability* to drought of livestock-producers is increasing, and thus that the impacts of drought are worsening. There are many reasons for increasing vulnerability, and some of them form vicious circles of causality:

[18] direct quotes in this paragraph from IPCC 2001
[19] Williams 2000
[20] Wilhite 2000
[21] Bruins 2000
[22] Ellis and Swift 1988
[23] Willhite 2000

a) The impacts of drought are cumulative, as affected households are less able to cope with the next drought;
b) Pastoral mobility, which allows pastoralists to migrate to areas of better rainfall, becomes more and more restricted by encroachment on rangelands by non-pastoral forms of land-use, and by changes in land tenure systems in the direction of individual plots and group ranches; this is of great importance in West and Central Africa, where areas of critical importance for dry season grazing, such as the areas of high potential such as the Niger and Senegal river valley, are encroached upon by arable farmers;
c) Sedentarization by pastoralists, undertaken because of their inability to practice pastoral migration, the attraction of access goods and services found in small towns, and their dependence on food aid distribution, can result in localised land degradation around settlements and can further increase vulnerability;
d) Conflict and insecurity are a cause of vulnerability, as they limit mobility and access to rangelands, and an effect, as resource scarcity fuels further conflict; and
e) On many West African and some East African rangelands, livestock is increasingly concentrated in the hands of absentee, town-based owners, using hired herders, who have fewer incentives to use distant pastures and are less subject to community pressures; this may also be increasing localised degradation and reducing the ability of the remaining self-employed pastoralists to cope with drought.

4. Policy Recommendations

The main focus of public policy in drought management needs to be that of making pastoralists and agro-pastoralists less vulnerable (or *more resilient*) to drought. This would include policies promoting general good practice in pastoral development, policies promoting reduced vulnerability and policies promoting participation.

4.1. Policies promoting general good practice in pastoral development

Because drought is such an important feature of pastoral livelihoods, many of these interventions will in any case be part of general good practice in pastoral development:

a) Protecting pastoral rangelands, and most critically dry-season grazing areas from further encroachment, and establishing or strengthening land tenure and natural resource management systems that allow collective management of resources, and facilitate pastoral mobility;
b) Establishing or strengthening institutions for pastoralists to manage their own affairs as much as is feasible, to represent their concerns effectively to higher authorities, and to manage conflicts between themselves, or between pastoralists and farmers;
c) Improving pastoral marketing opportunities: removal of unnecessary constraints on marketing such as inappropriate veterinary policies, investments in infrastructure, provision of market information;
d) Improving of animal health, particularly enabling the development of sustainable delivery systems;
e) Providing the enabling institutional environment for the integration of drought management activities along the drought cycle of planning-mitigation-relief-rehabilitation, across the levels of community, district (or appropriate local government unit) and nation, and between investment and policy; and
f) Supporting livelihood diversification, both directly by stimulating non-pastoral employment opportunities and indirectly though provision of education.

4.2. Policies Promoting Institution-building to Reduce Vulnerability

Other policies may involve the building of institutions more specifically concerned with reducing drought vulnerability. There has been much recent discussion of three sorts of intervention, which must all still be considered speculative, or in a pilot phase:

a) Promoting banking and other forms of savings (in forms other than livestock) among pastoralists, particularly in order to save the value represented by surplus male livestock in some pastoral systems[24]
b) Promoting new types of livestock insurance, particularly index-based systems which pay out on the basis of large-scale patterns of mortality that are beyond the control of individual livestock-owners [25] and
c) Disseminating weather forecasts derived from climate modelling and remote sensing directly to pastoralists: recent work shows that pastoralists are able to understand and ready to listen to "scientific" weather forecasts, but that lack of information is not a limiting factor – the problem lies with their ability to act on that information.[26]

4.3. Policies Promoting Participation

Drought management among pastoralists and agro-pastoralists has to involve the participation of communities. This is true for two main reasons.

a) Firstly, the participation of communities will maximise the chances of interventions, particularly mitigation and rehabilitation interventions, being *appropriate* to their needs, their perceptions of what constitutes drought, and to the ways in which they already manage drought. Pastoralist knowledge of what constitutes a severe drought, and what the signs of such a drought are during its onset, will be a necessary part of early warning systems. Much has also been written about how pastoralists themselves respond to drought, using terms like *coping strategies*: the most important strategies include migration, herd accumulation with (debatably) sales of livestock during drought onset, and supplementation with purchased feed, and non-pastoral employment.[27] The successful design of mitigation and rehabilitation interventions, as part of drought contingency planning, clearly needs to be founded upon these strategies that pastoralists already adopt. While some knowledge of these strategies can be provided by outside researchers gathering information and reporting back to governments and donors, a better foundation will be provided by a truly participatory dialogue on the design of interventions, between the communities and the agencies.

Box 2 Drought Coping Strategies among Sahelian Pastoralists

In the Sahel as elsewhere, pastoralists' strategies for coping with drought are diverse may be pursued by different households in different orders, and raise questions as to when coping strategies can be said to have failed, or to have become more permanent *adaptations.* One indicative list of strategies, drawn from studies of Fulani pastoralists across several Sahelian countries, includes as short-term strategies:

- New, longer-distance, and possibly trans-boundary, pastoral migration routes
- Splitting of households into smaller family groups to spread the herds geographically

[24] Coppock 1994, Swift 2002
[25] Swift 2002
[26] Luseno et al. 2003
[27] This literature is summarised, mainly for Kenya and Ethiopia, by Morton (forthcoming)

❖ Redistribution of animals to the destitute, according to traditional stock-loan customs
❖ Selling of more animals, at lower prices, than in normal years
❖ Use of wild resources as food, and shift from milk to grain as the basis of the diet
❖ As more permanent adaptations, a shift to wage-herding for others or into other non-pastoral occupations, and sedentarization.[28]

Engaging in violent conflicts and more low-level disputes, such as attempts to gain and maintain control over wells, is also a form of coping, albeit one with significant costs.[29]

b) Secondly, involving communities will give drought management a better chance of being *sustainable.* Sustainability is not necessarily a straightforward concept in the context of drought management (as discussed below), but the sustainability of the ongoing activities (early warning, contingency planning and policy formulation) will be greatly enhanced by the participation of communities, and their sense of ownership of the process. The dominant trend in thinking and practice within the pastoral livestock sector has been toward strengthening the capacity of appropriate local government units, as described in Box 3.

Box 3 District-level Drought Management in East Africa

A system designed for Turkana District in 1985 has subsequently been scaled-up, under Netherlands and then World Bank funding, across the arid Districts of Kenya.[30] It has also been adapted for use elsewhere, such as the pastoral areas of Ethiopia, where the relevant level of local government is the *woreda*. At the heart of this model is:

❖ an agreed District-level drought policy, expressing why District-level bodies should manage drought
❖ a bureaucratic structure (an emergency drought management sub-committee and a District Drought Contingency Planning Officer)
❖ an early warning system, whose outputs are summarised by assigning each administrative division to one of four warning stages: normal, alarm, alert, emergency (some versions add a recovery stage); and
❖ a system of phased responses to those warning stages in the form of appropriate mitigation, relief and rehabilitation measures, already planned and "on the shelf".

Such a District-based model is not necessarily "participatory" or non-participatory: it can involve either a high or a low level of participation by drought-affected populations.

It is best to think about increasing the level of community participation in relation to each of the main components of drought management. For each activity there are:

a) Arguments for increasing participation (largely as set out above but with different emphases)
b) Constraints on community participation, or reasons why going beyond a certain level of participation is not possible or not desirable for that activity
c) Practical measures and methods to increase participation towards the optimum level

These are outlined in Table 2.

[28] Bovin 1990
[29] Thébaud and Batterbury 2001
[30] Swift 2001

Table 2: Opportunities for Increasing Community Participation in Drought Management			
Drought Management Component	Arguments for increasing community participation	Constraints on community participation	Actions to increase community participation
Early Warning	• To make use of local knowledge on environment and drought impact • To increase cost-effectiveness	• Can lead to over-collection of hard-to-analyse information: • Can make geographical standardisation difficult • Can encourage exaggeration of drought severity	• Use of PRA methods in questionnaire design and in regular surveys • Community appointment (and remuneration?) of data-collectors
Contingency Planning	• Shelf projects must incorporate knowledge of environment, impacts and existing coping strategies	• Overall co-ordination and management of external resources should rest with local government • Analysis of vulnerability should go beyond traditional coping strategies	• Use of traditional decision-making bodies or creation of new committees to plan projects and be prepared for their implementation
Mitigation and rehabilitation	• Most projects will benefit from strong community governance, e.g. to target, to promote trust with private-sector operators or other communities, and to minimise supervision costs	• Where mitigation is intensive of external funds, need to ensure accountability through independent monitoring	• Use of local bodies (as used in contingency planning) in project implementation
Relief	• Community participation may aid targeting of most vulnerable	• Need for accountability and independent monitoring	• Appointment in advance of local relief committees linked to broader drought management bodies
Community-level development	• Should be based on local knowledge, local understanding of needs, and local organisation	• Fewer quick-win technologies may be available than for crop-farmers • Policy issues (e.g. land tenure, conflict) will be highly limiting	• Strengthening of local decision-making bodies or creation of new committees
Policy-level development	• Allows local knowledge and local needs to be incorporated in policy	• Policy must respond to different sectors and processes, which may be beyond experience of livestock-keepers	• Careful and innovative participatory investigation, • Scope for innovative advocacy methods, e.g. participatory video

Box 4 Community-Based Development and Community-Based Drought Management in West Africa

While there are few examples of community-based drought management programmes in West Africa, research carried out there has contributed greatly to understanding of how to manage drought, and innovative programmes emphasising other aspects of pastoral livelihoods are building resilience to drought in important ways. For example: The long-term research around the Widou Thiengoli borehole in Senegal has demonstrated very clearly what so many authors have asserted - the inappropriateness of rangeland management based on static carrying capacities, and the need for herders to use mobility during droughts.[31]

Based on action-research in Chad, IRAM has constructed a schema for development of water resources among pastoralists. This addresses water planning in the context of understanding and protecting pastoral mobility, land-tenure and resource management, achieving sustainability through institution-building and conflict management, and appropriate monitoring and evaluation procedures. The schema lists five different stages of analysis, consultation and implementation, each with its recommended tools. While emphasis is given to the provision of different water technologies at different points of pastoral migratory cycles, much of the schema is more generally applicable to drought management.[32]

In Burkina Faso, a GTZ-funded project established decentralised and participatory structures for joint management of grazing resources, by multiple ethnic groups, pastoral and agro-pastoral, some with deep-rooted historical conflicts.[33]

However, there are also strong limits to the degree to which communities can participate in its management. Communities cannot be expected to judge their own rightful share of scarce relief resources compared to other communities, neighbouring or distant. Communities are unlikely to call a halt to free food distribution on the grounds that it is creating "relief dependency", or incentives against productive work or for potentially harmful sedentarisation, although all these are very real concerns for food donors. They are also unlikely to have the same concern as donors in the transparency, accountability and monitoring of food relief.

5. Investments

Drought management has to involve the collaboration of national and local government, communities, and in many cases aid donors and national and international NGOs. This section deals with the major investment tasks that have to be performed to manage drought, with particular attention to the role of local level communities.

5.1. Early Warning

Those managing drought must, to the extent to which it is practical, equip themselves with the best available knowledge of the likelihood of future drought and major impacts of drought. This knowledge can come from various sources. Increasingly, international technological capacity in remote sensing and climate modelling can provide useful seasonal forecasts of drought. Large scale quantitative surveys of the availability and price of food in markets can pick up economic impacts of drought at an early stage. Community-based early warning can relay to drought managers peoples' own perceptions of the progress of drought and its impacts. Livestock keepers' knowledge, of their own environment and their past

[31] Thébaud, Grell and Miehe 1995
[32] Bonnet, Marty and Demante 2005
[33] Banzhaf, Drabo and Grell 2000

experiences to cope with drought will be invaluable in designing and implementing systems that can detect severe drought in its onset phase. Such knowledge will be locality-specific, and needs therefore thoroughgoing participation of livestock keepers in early warning systems, by the use of "participatory rural appraisal methods, including semi-structured interviews, social mapping, food ranking and seasonal calendars, to elicit mainly qualitative information."[34] Early warning systems must also meet two other criteria.

a) Firstly, they must be cost-effective in order to maximise their chances of financial sustainability. Generally speaking, a high degree of participation is likely to favour this, as community labour can be substituted for that of paid enumerators. There are dangers, though, if community participation results in pressures for the collection of unfeasibly large amounts of information, or information, which being mainly qualitative, is difficult to aggregate and analyse.

b) Secondly, early warning systems must generate information that to some extent can be standardised across geographical areas, as it will be used in government and donor decisions to commit resources to relief and to subsidised mitigation programmes. A system that relies too heavily on the participation of livestock keepers and therefore unduly favours locally-identified indicators and qualitative information jeopardises such standardisation, and can lead to manipulation by politicians and present a "moral hazard" if beneficiaries and their representatives slant responses to exaggerate drought severity and claim relief resources. The Kenyan Arid Lands Program (see Box) has been able to arrive at an acceptable mix between beneficiary participation and reliable quantified and verifiable drought indicators.

Box 5 Early Warning Systems in the Kenyan Arid and Semi-Arid Lands

Early Warning Systems have been a key component of the district-level drought management structures in Northern Kenya described in Box 3, while also being linked to national and regional early warning.[35] The most important forms of information gathering are:

- Monthly questionnaire-based interviews with a sample of households, conducted by contracted part-time monitors, who are local literate people
- Monitors' own observations on a set of community indicators
- Information collection form government departments
- Incorporation of seasonal forecasting and resource monitoring supplied by the regional office of FEWS (Famine Early Warning Systems)

Information from these sources is collated and used to produce a regular assessment of the situation in each sub-district according to the fourfold schema of normal, alert, alarm and emergency, each triggering certain sorts of action. The systems are documented as having produced rapid responses to "alarm" warnings in the form of greatly increased delivery of food aid, then its reduction as status returned to "normal". Such systems are now in place in 21 districts, and a similar system is being constructed for pastoral areas of Ethiopia.

The major sorts of questions raised by such Early Warning Systems include:

- The details of sample sizes, cycles of repeat interviews, numbers of monitors and the use of participatory methods alongside questionnaires
- The identification and use of community indicators, and their triangulation with/quality control through quantitative information
- Trade-offs between locally-designed data collection that reflects local reality and standardization of data for processing and analysis.

[34] Swift 2001
[35] Swift 2001

- ❖ The need for formal mechanisms for feedback from users
- ❖ The question of long-term sustainability, institutional and financial

5.2. Contingency Planning

Knowing about oncoming drought is of little use, if the participants in the drought management system are not able to act upon it, either because they do not have plans or because they do not have resources. Making sure those plans and resources are in place is the task of *contingency planning*. Contingency planning can cover any or all of the responses to drought now outlined, especially taking into account livestock keepers' traditional and existing coping strategies, including mechanisms of mutual assistance which they should take care not to erode. But they should also recognise the limitations of such coping strategies in the face of deeper and more widespread vulnerability to drought described above. Contingency plans prepared at the local level should be put "on the shelf" for activation when the appropriate stage of drought is signalled by the early warning system. The final decisions should be made by using traditional-decision making bodies or by creating new "community drought committees". In either case, attention must be paid to capacity building and to avoiding problems of inequity of gender, age, livestock holding or social stratum. Some participatory evaluations in Kenya have shown a strong preference for elected committees over variants on traditional bodies

5.3. Responding to Drought

Governments, donors and NGOs, across Africa, and elsewhere in the world, have responded to droughts among pastoralists and agro-pastoralists in a great variety of ways. These responses have varied by when in the drought cycle they have been made (or when they should have been made) and whether they have aimed at saving lives or at preserving or rebuilding livelihoods. There is no single standard terminology for classifying these responses, but the following terms have been found useful:

5.3.1. Mitigation

Mitigation activities are aimed at preserving livelihoods, and typically planned for the early stages or onset of drought. However, mitigation activities are generally still practised only on a pilot scale, and largely by NGOs, because of high transaction costs that the careful planning and in-depth knowledge of local conditions requires. If mitigation activities are successful, they are preferable to food relief, because they are more cost-effective, strategically provide inputs to livelihoods and let people feed themselves, and take place early in the drought cycle before people are totally destitute. In principle, mitigation activities should involve low levels of subsidy, at least of explicit subsidy, per benefiting household. They provide a better basis for sustainable livelihoods post-drought, and they are generally regarded as preferable, morally and in terms of human dignity, to mass distribution of free food.

a) *De-stocking* involves the purchase of animals from pastoralists during the onset of drought and the distribution of the meat to those or neighbouring poor communities as relief food. A smaller number of experiences have involved subsidising private traders to buy livestock in areas where normal market linkages were not functioning, for various reasons. Both forms therefore salvage value from animals that might otherwise die, and boost pastoralist purchasing power; de-stocking to redistribute also has important nutritional benefits. Both forms of intervention can be highly successful given their objectives, although it is crucial to be clear about what those objectives are. De-stocking to redistribute meat is costly, though not necessarily

more costly than the relief operations it partially replaces, and the barriers to scaling it up are chiefly logistical. De-stocking through subsidy is potentially a more sustainable intervention – it may be possible to finance it through levies on sales in good years or insurance-like mechanisms – but its ultimate success depends on our understanding more about why and in what circumstances pastoralists are prepared to sell animals during droughts.[36]

b) *Veterinary Interventions,* involving emergency provision of free or subsidised veterinary drugs and vaccination services and can be extremely cost-effective in terms of livestock losses prevented. However, it is also important that such measures do not erode the sustainability of emerging community-based animal health schemes which practice cost-recovery through a mark-up on drugs sold.

c) *Water Provision*, involving emergency drilling of boreholes, repair and maintenance of existing boreholes appear to be highly cost-effective in preventing livestock losses as well as mitigating the hidden costs of the labour, particularly women's labour, used in water collection. There is an issue of financial sustainability, but the institution of cost recovery arrangements up to and including contributions to depreciation has been successful. There is also an issue of environmental sustainability, of preventing boreholes becoming perennial and contributing to localised overgrazing, but there is evidence that local management arrangements, linked to use of grazing resources, and including the capacity to shut boreholes in "normal" years, can work.

d) *Supplementary Feeding* livestock, particularly selected breeding stock, has some appeal to pastoralists, and there is some evidence of its cost-effectiveness. However, to import feed on large scale is a massive logistical task, unless there are specially favoured areas that can be set aside as "cow-calf camps", and this is likely to depend on the availability, formal or informal, of commercial ranch land[37] or protected areas. Large scale feed distribution also raises the issue of the overgrazing and environmental degradation which has arguably resulted in North Africa and the Middle East, though few sub-Saharan African countries are likely to scale up feed distribution to that extent.

5.3.2. Mixed Mitigation and Relief Operations

Many drought responses sit between mitigation and relief, because of their large scale and high levels of explicit subsidy. These include labour-intensive public works programmes paid for by cash or food, free or subsidised distribution of animal feed, and de-stocking programmes where the animals are slaughtered and the meat distributed as food relief. The questions around such interventions are less whether they should be classified as mitigation or relief, but whether they fulfil their objectives in a cost-effective way (and in the case of animal feed whether they are environmentally sustainable). However, as interest in mitigation grows, there is a growing consensus that *relief* should be reserved for the worst period of the drought cycle, and for the most destitute households and individuals that mitigation has been unable to reach. Communities may offer very useful assistance in the targeting of food relief to the most needy. It cannot be assumed that they will always have the same views on targeting as food donors, e.g. in some cases there may be a strong belief that all households, wealthy or poor should receive equal shares, and donors strong concerns for targeting food to children or pregnant/lactating women may not be shared. Nevertheless, if these concerns can be discussed openly, the devolution of some targeting

[36] Morton and Barton 2002, Morton (forthcoming)
[37] Heath 2002

and delivery to a local committee, perhaps a sub-body of a more general drought management committee, and preferably with strong female representation, will be very useful.

5.3.3. Rehabilitation

Rehabilitation activities should take place at the end of the drought cycle, as rainfall returns. They aim to restore people – either to their "normal" livelihoods or, as is increasingly realised, to improved and less vulnerable livelihoods. They are:

a) *Restocking* – the gifting or subsidised sale of large numbers of animals. There have been many restocking experiences, mainly on a pilot scale and mainly implemented by NGOs, and there is now a substantial literature on the subject, as shown in Box 6.[38]

b) *Range rehabilitation* – while technical solutions can only be successful in the context of understanding and working with local collective resource management structures, there are positive experiences of the use of physical soil conservation measures, and reseeding of carefully-chosen annual and perennial species.[39]

Box 6: Some of the most important questions about restocking include:
❖ How can beneficiaries be selected to maximise the chances of the gift of animals being efficiently used?
❖ Should external agencies use their own staff or other outsiders to manage restocking, or devolve stock purchases to communities?
❖ How can restocking be done on a large scale, particularly as female stock are likely to be very rare and costly on local markets after a drought?
❖ If severe droughts are frequent and restocked animals may be lost in a future drought, under what circumstances can restocking be justified?

5.4. Promoting Long Term Drought Resilience

As discussed above, there is ultimately no clear boundary between promoting drought resilience, and general good practice in pastoral development. But certain investments can definitely be recommended under a banner of long-term drought management:

a) Reaching agreement on the conservation of certain areas of rangeland as drought-time grazing reserves[40]
b) Developing sustainable animal health services[41]
c) Under certain conditions, encouraging feed storage
d) Where it is an issue, promoting the maintenance of indigenous livestock breeds against the unplanned importation of exotic, and less-drought resistant, genes.

[38] Summarised, with practical decision tools, by Heffernan *et al.* (2004)
[39] See the 2003 LEAD Virtual Conference of 2003, Theme "Degradation and Rehabilitation of Rangelands": http://www.virtualcentre.org/fr/ele/econf_01_pasto/download.html#33,
[40] Hendy and Morton 2001
[41] Catley, Blakeway and Leyland 2002

e) Where it is an issue promote the development of drought resilient crop-livestock systems (see box 7).

Box 7: Drought Management in Crop-Livestock Systems
Experiences in "community-based drought preparedness" or "community-based drought mitigation", concerned with crop-based or mixed crop-livestock systems, tend to emphasise the promotion of drought resilient crop-livestock systems. Besides guidelines to help drought-vulnerable communities self-organise these documents emphasise ongoing farm and community-level activities and technologies, such as soil and water conservation, preservation of crop biodiversity, livelihood diversification, grain and livestock feed storage, and forest management.

It is important to examine how drought management can be made more sustainable, and mechanisms such as using insurance markets are certainly interesting in this connection. But as the likelihood of drought increases in dry-land Africa, it is important not to take a narrow view of sustainability. At times, governments will have to make transfers to drought-stricken households as a form of social protection, without regard to short-term or long-term recovery of those costs. Attempts to make each household sustainable, or to separate, institutionally or conceptually, the "development" efforts to make households sustainable from the "welfare" efforts directed at households judged unsustainable, will be counterproductive for sustainability at ecosystem or national level.

5.5. Building an Evidence Base

Finally, drought management for pastoralists and other poor livestock-keepers is still a new form of development. There is much we do not know about what works, especially in mitigation. Donors and governments must continue to invest in pilot activities, in research, and in building frameworks that allow real comparative evaluation of different experiences.

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