POLICY SERIES

Policy Series 15

DROUGHT CONTINGENCY PLANNING FOR PASTORAL LIVELIHOODS

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(Livelihoods and Institutions Group)

Natural Resources Institute
University of Greenwich

The Natural Resources Institute (NRI) of the University of Greenwich is an internationally recognized centre of expertise in research and consultancy in the environment and natural resources sector. The Institute carries out research and development and training to promote efficient management and use of renewable natural resources in support of sustainable livelihoods.

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POLICY SERIES

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PREFACE

This series is principally concerned with current policy issues of importance to developing countries but also covers those relevant to countries in transition. The focus is upon policies which affect the management of natural resources in support of sustainable livelilhoods. Much of the series will be devoted to concerns affecting the livelihoods of poor people in rural areas, recognizing the linkages with non-natural resource-based livelihoods. It will also include the interests of the urban poor, where these are linked to the use of natural resources as part of livelihood strategies.

The series will take a holistic view and cover both the economic and social components affecting livelihoods, and associated factors notably with respect to health and education. The aim is to provide topical analyses which are based upon field research where appropriate, and which will inform development practitioners concerned with issues of poverty in development.

The series is timely, given the increasing focus upon poverty and poverty elimination in the agenda of the development community. It is also timely with respect to the growing body of recent work which seeks to replace earlier, simplistic structural adjustment programmes, with more flexible approaches to livelihoods, institutions and partnerships.

Policy analysis is often assumed to be the remit of social scientists alone. Whilst it is recognized that social science may play a pivotal role, interactions with other disciplines may also be critical in understanding and analysing policy issues of importance to the poor. The series therefore draws upon a wide range of social and natural scientific disciplines reflecting the resource base at the Natural Resources Institute.

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EXECUTIVE SUMMARY

This publication highlights issues arising from approaches to the mitigation of the impact of drought on pastoral households in Africa. It draws heavily upon drought management experience in Kenya and describes those policies most likely to have a positive impact on pastoral household livelihoods.

Fluctuating rainfall and the occurrence of drought are intrinsic features of arid and semi-arid lands. While the frequency of meteorological drought may not have changed over the long term (in East and southern Africa), the impacts of drought may have increased in severity (partly because of increasing human and livestock population densities). As a result, the provision of emergency relief and drought recovery interventions are now a common response by governments and donors to mitigate the effects of drought.

Pastoral communities have mechanisms for coping with drought such as livestock mobility, herd splitting/sharing, etc. Other mechanisms include household livelihood diversity, trade and other linkages to the wider economy. Understanding these strategies and practices is essential for the development of policy, infrastructure and support services that enhance their ability to cope with drought.

Fluctuations in livestock holdings and subsistence production and income during drought are inevitable. Government and donors should, therefore, seek to support pastoral households through the development of appropriate policy. Such a policy should have three components:

- policies to support drought resilience
- early warning
- drought contingency planning.

Forms of *land tenure* for pastoralist areas that meet the long-term needs of pastoralists have still to be identified. Key issues include agreement about processual rules for discussing claims and solving disputes, and agreed use patterns for key resources. Successful community-based natural resource management in other environments could inform pastoral development.

The support and development of *pastoral institutions* may be essential to assist in the mitigation of drought impacts. Pastoral associations should be based where possible on traditional social organization. They have a role to play in:

- conflict resolution and negotiated tenure regimes, water management
- the delivery of services and input supply
- revenue collection
- collective and co-operative marketing
- community-managed insurance schemes.

The effectiveness of *marketing* interventions to improve purchasing power and enable emergency restocking require:

- relaxation of quarantine regulations during drought
- investment in infrastructure to aid the flow of livestock
- better market information to assist producers to market stock.

In the longer term the issue of providing non-livestock-based savings institutions ('pastoral banking') must be broached.

Planning for the provision of *security* will be a key element in drought contingency preparation. Directly negotiated agreements between pastoralist groups are important but government must enforce such agreements.

The rationale behind *early warning systems* (EWS) is that it allows government and donors to respond rapidly and avert humanitarian crises. Kenya has pioneered EWS as part of a national policy to reduce the risk of famine and food insecurity and the range and type of indicators are well established. EWS must be combined with a strategy to enable government and donors to respond to, and mitigate the effects of drought. If there is no capacity to respond then the investment is wasted.

Drought contingency planning must allow for the implementation of three kinds of measures:

- mitigation: to minimize the impact of drought on livelihoods
- relief: for the welfare of those made destitute by drought
- rehabilitation: of pastoral production systems in the aftermath of drought.

The contingency plans themselves are likely to consist of the following elements:

- the provision of credit or cash/food for work
- emergency animal purchase (provision of subsidy to transport animals to market)
- maintaining the water supply for animals and humans
- provision of emergency grazing ('cow-calf camps' or other special arrangements to protect breeding stock)
- maintaining cereal availability
- human and livestock health service provision
- flexible taxation systems that do not tax pastoral populations during drought
- support for the private sector.

Drought almost inevitably brings destitution for the poorer members of society and *famine relief* is essential. This relief almost inevitably results in settlement, hence the importance of seeking to support the diversification of income-generating opportunities.

Post-drought there is a need for pastoralists to restock their herds. A credible promise of restocking will assist emergency livestock purchase at the onset of drought. No mechanisms for linking purchase and restocking have yet emerged. Major difficulties are associated with sourcing large numbers of livestock.

To assist policy-makers to devise strategies for the more effective use of *drought-time grazing resources*, more information is required on:

- drought movement patterns
- land-use protection
- water development and management.

The provision of *water* in areas where grazing is unused should not be dismissed because of the negative impact associated with boreholes. These problems are associated with free access to water. The use of water must be managed by herders through appropriate institutional arrangements to ensure equitable operation and sustainable maintenance.

Disease prevention and management during drought are essential. In particular:

- identification of specific disease risks
- development of veterinary infrastructure (community animal health workers)
- mechanisms for emergency delivery of necessary vaccinations and treatments.

Private sector retail stores play an important role in providing services to pastoral communities providing an outlet for stock and a source of essentials (medicines). Contingency plans should seek to maintain the purchasing power of pastoral people so that cash continues to circulate within the local economy.

Finally, the economic justification for investing in EWS, contingency planning and drought mitigation is to lessen the impact of drought and reduce the need for costly food relief. There is, however, a need to further quantify the benefits of contingency planning and to compare this with the costs of more conventional relief approaches.

1

INTRODUCTION

Fluctuating rainfall and the occurrence of drought are intrinsic features of arid and semi-arid lands. However, under current conditions, the human, economic and environmental costs of drought seem to be rising. These costs are disproportionately borne by pastoralists – communities mainly dependent on livestock for their livelihoods and generally nomadic or transhumant. The management of drought for, and with pastoral communities presents significant differences from drought management with sedentary cultivators. Experience to date in certain forms of drought intervention with pastoralists has not been properly reviewed and reflected upon, or put in the context of a model of integrated drought management. This publication highlights some of the most important lessons for policy-makers and planners. It draws largely but not solely from research in northern Kenya, reported at greater length in a recent volume of case studies (Morton, 2001).

Pastoral communities in the drylands have long developed mechanisms for coping with these conditions. Pastoral livestock systems themselves are the core element in these strategies but a wide range of additional features contribute to the long-term security of pastoral livelihoods. These include household livelihood diversity and flexibility, trade and other linkages to the wider economy, and many others. Understanding these strategies and practices is essential for the development of policy, infrastructure and support services which enhance and do not undermine the ability to cope with drought.

Pressures on resources in arid and semi-arid areas have been growing in recent years. Pressures have derived from human and livestock population growth at the same time as the loss of some resources (such as land and water) to other uses (agriculture, forestry, wildlife reserves). Consequent

changes in resource conditions have occurred in some areas and it is not clear to what extent these may be manageable or reversible. In general, land-use systems increasingly make use of more of the available natural resources in non-drought times, leaving fewer resources to cope with drought conditions. Changes in livelihood diversity, growing links to the wider economy, and the development of local services (especially health and education) have also occurred, leading to various changes in resource utilization and pressures. These may include settlement, the adoption of semi-sedentary or sedentary pastoralism in combination with other activities (including reliance on remittance earnings or relief), or investment in livestock by wealthier family members engaged in the wider economy. Clearly pastoral communities are changing and there is increasing interest in the accumulation of cash as well as livestock. School fees need to be paid and pastoral communities increasingly realize that access to cash reserves can assist households to cope with drought-related calamities.

There are indications that pastoral systems are failing to adapt sufficiently rapidly to some of these external pressures. While the frequency of meteorological drought may not have changed over the long term (in East and southern Africa), the impacts of drought may have increased in severity and in the rainfall thresholds at which they occur (Hendy and Morton, 2001). Besides these possible trends, the tolerance by pastoralists and wider society of the impacts of drought has certainly altered so that emergency relief and an increasing array of drought recovery interventions are now applied in drought-stricken areas. These interventions themselves have changed the long-term balance between resources and their utilization, as well as the nature and diversity of household livelihoods.

Drought is thus both an integral feature of natural resource management in dry areas, as well as a feature of growing importance which local land-use systems may be less able to accommodate. As such, it is a critical issue to be considered in development initiatives in pastoral areas. Failures to recognize the essential dynamic nature of pastoral systems to accommodate drought or to support drought management may have been factors contributing to the non-adoption and failure of some past development initiatives in pastoral areas (Pratt *et al*., 1997).

A number of factors now combine to make possible a more comprehensive approach to integration of drought management into pastoral development. These include a better understanding of the nature,

impacts and causes of drought and of the adaptation of pastoral systems, at the same time as the development of natural resource monitoring technologies and institutional capacity to better monitor and manage drought occurrence and responses. Such programmes should include support for more traditional drought coping strategies as well as early warning, contingency planning, mitigation intervention and recovery assistance (see Pratt *et al.*, 1997). The specific elements of these components and the best practices to be adopted for their implementation are now the concern of newer pastoral area support projects such as the Kenya Arid Lands Resource Management Project (World Bank, 1995).

2

THE ECOLOGICAL AND PASTORAL CONTEXT FOR DROUGHT MANAGEMENT PROGRAMMES

PASTORAL SYSTEMS AND ECO-CLIMATIC ZONES

While pastoralism can occur in a wide range of eco-climatic zones, the major systems in Africa occur in the sub-humid, semi-arid and arid tropical zones. The characteristics of these zones differ significantly in the occurrence and management of drought. By definition, the zones represent higher to lower rainfall, but in association with declining predictability and increasing variability of rainfall. The arid zone, in which most African pastoral systems occur, is characterized by unpredictable variability (including the occurrence of drought) which influences the pastoral ecology of the zone, the types of pastoral systems adopted and the strategies of livestock and household management. In particular, recent reviews of the ecology of rangelands in different eco-climatic zones have resulted in the distinction between equilibrium and non-equilibrium environments in the wetter and drier rangelands respectively (Behnke *et al.*, 1993).

Equilibrium environments are relatively less variable and more predictable, with expected vegetation responses to grazing pressures (including degradation in a short time frame as pressures increase). Non-equilibrium environments are driven by variable rainfall and fluctuating livestock populations (and grazing pressures) in which vegetation conditions are less determined by grazing pressures than by other environmental factors (such as drought). While much remains to be discussed on the ecological basis and implications of this dichotomy, an important distinction of pastoral management objectives and strategies can be made. In

equilibrium environments, more prescriptive and stable management approaches may be adopted (including ranching), while in non-equilibrium environments reactive 'tracking' management approaches are essential, with key components of flexibility, mobility, and access to a variety of resources. In these circumstances, maximizing herd size during favourable periods is a rational strategy pursued by many pastoral households so that losses during drought do not reduce the size of the herd below a viable level (see Behnke and Kerven (1994) and Illius *et al*. (1998), though these authors disagree on how pastoralists survive drought periods, and how external agencies should help in this). Those households with large herds are much better able to cope with drought than households with small herds. They may be more willing to sell stock and should be able to maintain breeding stock, which is vital for post-drought recovery of herds.

Drought is an expected component of non-equilibrium pastoral systems, which have evolved and managed to accommodate it, but may be less expected and have a different impact in equilibrium systems.

DROUGHT AS A METEOROLOGICAL AND ECOLOGICAL PHENOMENON

Drought may be defined in either narrow meteorological terms, in relation to expected rainfall, or in terms of impacts on potential vegetation growth (accounting for a wider range of climatic and soil factors affecting moisture availability). In meteorological terms, annual drought (the failure of two successive rainy seasons) may occur anything between 1 year in 3 and 1 year in 30 in areas such as northern Kenya. There is, however little evidence that meteorological drought is increasing (or decreasing) in frequency.

Apart from climatic conditions, a number of additional factors influence the availability of grazing. These include firstly the interaction of climate and livestock in preceding years (the sequences or mixtures of high and low rainfall years). Thus as livestock populations change through high or low rainfall periods so do grazing requirements and the impacts of subsequent reduced rainfall. There is strong evidence that it is 2-year droughts that are the major source of livestock mortality in pastoral areas (Ellis and Swift, 1988, cited in Illius *et al.*, 1998).

FACTORS INFLUENCING THE IMPACTS OF DROUGHT

It is widely thought, though difficult to demonstrate in a quantified manner, that drought impacts on pastoralists are worse than formerly for meteorological or ecological drought. This is often expressed as the increased *vulnerability* of pastoralists to drought. The ecological impact of climatic conditions over a year or run of years is dependent on features of the pastoral production system: these include the mix of grazing and water resources accessible to the pastoral system. The mix of resources available may be more or less able to support successful responses to reduced rainfall (e.g. areas with a mix of grazing in different ecological or altitude zones will offer more support than areas of more uniform resources).

At the socio-economic level, vulnerability to drought is a complex of multiple circular causalities. Care must be taken to distinguish indicators of increased vulnerability from its assumed underlying causes, but vulnerability itself contributes to those causes. Figure 1 is a preliminary attempt to map these relationships in a northern Kenya context and it indicates the complex cause and effect relationships.

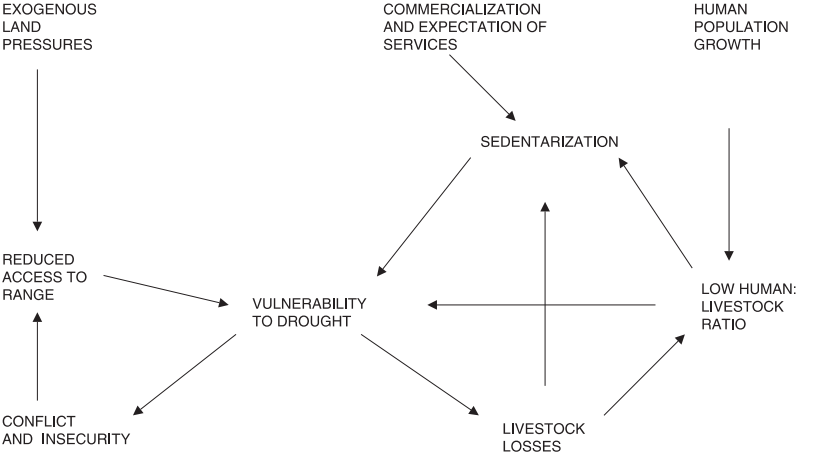

Figure 1 Vulnerability to drought: schematic representation of causes and effects

Studies such as those by Ellis *et al*. (1989) and Oba (1997) have identified some of the characteristics which tend to produce increased vulnerability and those that support *drought resilience*. Amongst the former are:

- sedentarization
- relatively lower livestock to human population ratios
- reduced access to dry season and drought ranges
- high densities of livestock and human populations.

Amongst the latter are:

- continued access to large ranges
- freedom of movement
- relatively higher ratios of livestock to human populations
- relatively low overall stocking densities.

Other socio-economic factors favouring resilience include the degree of integration of the pastoral system in wider land-use systems (such as links to ranching or feed-lot systems with capacity to absorb animals or provide feed), or links to meat markets and processing industries with capacity to absorb and purchase surplus livestock. At the same time, some trends amongst the populations on the fringes of pastoralism may increase drought resilience, including diversification of incomes (e.g. through some family members undertaking waged labour, or involvement in trading activities). How secure these will be in the long term remains uncertain.

Livestock and human population densities, and the ratio of livestock to human populations are clearly key variables, even if their interpretation is subject to controversies around the concept of non-equilibrium grazing systems. Additional socio-cultural and household factors contribute to drought coping mechanisms of local populations, such as mutual support mechanisms, the flexibility to be mobile, adaptability to different diets, and others, as outlined below.

Drought impacts, therefore, depend on the severity of drought in meteorological and ecological terms, the recent history of drought events, and the underlying resilience of the pastoral system. The correct diagnosis of the origins of drought impacts is still essential for effective planning to support drought resilience and promote drought management (Pratt *et al*., 1997). Proper diagnosis will thus require the monitoring of a number of

key indicators of the status of the pastoral system as well as climate variables, hence the importance of community-based early warning systems (see Swift, 2001; Sommer, 1998).

COPING STRATEGIES AND ADAPTIVE STRATEGIES

A wide range of responses to drought may occur in pastoral systems, including changes in livestock and grazing management, and changes in household economy and subsistence. Responses are generally progressive as drought conditions persist, and are dependent on the severity of drought and the 'health' of the system, as discussed above. In the fluctuating pastoral environment, responses are also variable between years with apparently similar climatic conditions, depending on a wide range of additional factors as noted above. Responses are thus not predictable or consistent and drought policy and services must be able to accommodate and support this flexibility.

Pastoral people have developed a variety of strategies to cope with the fluctuations in forage availability that is associated with drought. These include both responses to specific single-year and multi-year droughts and longer-term shifts in production strategies to increase resilience: categories often referred to as 'coping strategies' and 'adaptive strategies' (Davies, 1996), but between which it is often hard to draw clear boundaries. Several major strategies, such as livestock mobility, livestock marketing and livelihood diversification show features of both coping and adaptive strategies. It cannot be assumed that short-term coping strategies are necessarily desirable or sustainable, at household or ecosystem level, in the longer term. Some grazing practices and increased charcoal production are examples of ecologically unsustainable practices; sale of breeding stock is an example of a coping strategy unsustainable at a household level (sometimes known as an 'erosive' coping strategy). Adaptive strategies are likely by their nature to be more sustainable; the adoption of drought-tolerant breeds and species of livestock is a case in point.

Mobility

A major common element in response to drought is the long-distance movements of livestock. Such movements occur across district and sometimes international borders. In Kenya at least, drought-time movement is most often to fairly well defined (amongst pastoralists) refuge grazing

areas and water sources, particularly if movements are within district or ethnic group territories. Access to drought grazing areas and water at more distant sites almost always requires negotiation and agreement between different users, increasingly with a particular local group recognized as the local resident group. Generally, the joint users of refuge grazing areas are well known to each other and some long established access or reciprocal grazing agreements do exist. It is not clear if changing land tenure and perceptions of land tenure are changing the relationships between pastoralist groups, or the nature of drought-time access negotiations and agreements. The precise mechanisms of these negotiations and agreements need to be much better understood by planners and administrators so as better to support them as part of contingency planning.

Drought movement actually proceeds through a series of recognized grazing areas, from local extended dry-season areas on the outer fringes of permanent water (until either water or grazing are exhausted), through the nearest and safest drought refuges, terminating in the most distant and risky refuges. In general, long-distance movement is avoided until absolutely necessary and pastoralists commonly report heavy losses of livestock if such movements have to be undertaken.

Drought-time movement and survival of livestock are still affected by livestock disease risks. These risks delay movements to highest risk areas but eventually pastoralists have no option. The combination of poor nutritional conditions and disease significantly raises losses of livestock. Specific disease problems vary in different districts. The major common problems, however, are tsetse, ticks and helminth parasites. Options for protection of animals entering high risk areas do exist and could be an important component of contingency measures. Water provision is also important, not only within the drought-time grazing areas, but on routes to them, where animals are likely to be particularly stressed.

Sale of livestock

The other classic response to drought is to sell livestock. Some element of livestock sales forms an adaptive strategy in most if not all pastoralist societies, but the extent, regularity and rationale of marketing vary greatly, and for some societies appear to be changing over the medium term (Barton and Morton, 2001). Livestock sales as a short-term coping strategy need to be understood within this context, but while regular

adaptive livestock sales concentrate on surplus males and cull females, drought-time livestock sales may, as drought impact worsens, include breeding females, thus eroding households' core assets. For regular livestock sales pastoralists have some freedom to choose time of sale according to livestock condition, season and other market conditions, whereas drought-time livestock sales occur when livestock prices are lowest and when animals are rapidly losing condition.

Herd splitting and exchange

Herd-owners often respond to drought by dividing their livestock into small herds grazed separately and by prioritizing milch animals or some other category. Sharing of livestock within kinship networks, where animals are borrowed for subsistence purposes and reproduction, is common in many pastoral societies and acts as a form of insurance for poorer households, as well as a way for wealthier households to spread risks and ensure a supply of herding labour. In this way networks of obligations are developed and the survival of the extended family and the clan assured. However, in some areas these customs are in decline as livestock becomes more of a marketable commodity and as more commercial wage-labour relations develop for herding. Even where they are maintained, they may be insufficient when the impacts of drought are felt widely across the whole of a pastoral society (as seems increasingly to be the case).

Food sharing

If other coping strategies do not work, even more direct ways of sharing resources between households may come into play. For example, the social norms of the Turkana in northern Kenya stress that families that can afford to share food with poorer relatives should do so. Large herdowners, therefore, often support dependent relatives. However, as with livestock loans, this will be insufficient during a prolonged and widespread drought.

Changing species composition of herds

Longer-term strategies for coping with drought include changing the species composition of herds. There has been a shift in northern Kenya towards keeping camels as opposed to cattle. Small stock (sheep and goats) may also have replaced cattle in some communities. Cattle herds reproduce faster than camel herds and some camel-keeping ethnic groups

have traditionally transferred surplus human population to cattle-keeping groups through marriage and adoption (Spencer, 1973), but under conditions of frequent and widespread drought these trends have been partially reversed. Camels are much more drought tolerant than cattle and need watering only once in two weeks and are, therefore, able to graze ranges that are inaccessible to cattle. Different species also feed on different components of the available vegetation, camels and goats prefer browse (and camels can access high-level browse more easily than any other species), whereas cattle and sheep prefer grass. With a multi-species herd a larger spectrum of the vegetation can be used. Keeping more than one species permits faster rebuilding of herds post-drought as the feeding habits and physiology of camels allow them to survive droughts better than cattle, even though their reproduction is slower, and sheep and small ruminants recover more quickly than cattle or camels.

Changing species composition of herds has some limitations, particularly if pastoral communities need to generate cash from time to time. For example, the market for camels is often much less developed than that for cattle or sheep.

Diversifying income sources

A further set of strategies involves seeking other sources of income during drought. Many pastoral societies have historically exhibited a surprisingly wide variety of income-earning opportunities, and these can be taken up on a more intense basis to cope with drought (Morton and Meadows, 2000). Although opportunities may be limited, some households diversify their income-earning activities and become involved in the collection of firewood, charcoal burning or collection of gum arabic. Those households with access to remittances may place extra demands upon these sources during drought. Longer-term processes operate by which some pastoralists (usually wealthier ones) take voluntary advantage of non-pastoral income and investment opportunities, while others (the poorer) are 'sloughed off' into a relief-dependent existence, or life on the margins of agricultural or urban society.

THE IMPACT OF DROUGHT

The severity of drought impacts varies between drought events and within the course of a drought event. One framework for understanding temporal

variation is a model of phases of drought incorporating the well-known price scissors effect, whereby oncoming drought triggers forced sales of livestock, driving down the relative price of livestock against grain and other goods. As grazing recovers, pastoralists (and others) seek to re-invest in livestock, driving up livestock prices and making recovery more difficult (Toulmin, 1994). However, as Sommer (1998) observes, this is only an ideal representation of the phases of a drought and cannot account for variations between specific drought events and, in particular, the distinction between single-year and multi-year droughts.

As droughts worsen, the coping strategies adopted may either fail to protect livelihoods or (in the case of sales of breeding stock) actively erode the core assets necessary for long-term recovery. The result can be famine, or various forms of destitution, as pastoralists who have lost their livestock exit pastoralism for a semi-permanent dependence on relief, or urban poverty, losing any chance of accumulating enough stock to return to pastoralism.

3

DROUGHT MANAGEMENT IN PASTORAL ZONES: PRINCIPLES AND EXPERIENCES

This section will describe the key approaches that are required to ameliorate the impact of drought in pastoral societies. It provides a synthesis of current experience and aims to describe a series of policy options and interventions that would assist pastoral producers reduce the impact of drought on their livelihoods.

DROUGHT AS PART OF THE SYSTEM

The first guiding principle in designing comprehensive drought management programmes is the recognition that the occurrence of fluctuating and low rainfall is the expected course of events in arid and semi-arid zones. Coping with variable rainfall and drought has, therefore, to be a major aim of pastoral systems and of support programmes. A prerequisite for support programmes is a clear understanding of the nature of, and responses to drought, as described above.

Fluctuations in livestock holdings and the subsistence production and income they provide for their owners are inevitable. However, there are means whereby this production can be captured before it is lost to drought, or it can be saved by the adoption of appropriate strategies by government, donors, NGOs and pastoralists themselves.

The strategies of pastoralist producers have been outlined above. Coping and adaptive strategies have been developed over many years and generations. They should be considered, at least at the household level and in the short term, as rational responses to drought, even if they require closer scrutiny as long-term responses and at an ecosystem level.

Government and donors should, therefore, seek to support them (selectively) through the development of appropriate policy.

COMPONENTS OF DROUGHT MANAGEMENT POLICY

A drought management policy for pastoral areas must have three components:

- early warning
- drought contingency planning
- policies to support drought resilience.

Drought contingency planning must in turn allow for the implementation (when indicated by early warning systems (EWS) or in other ways considered appropriate) of three sorts of measures:

- mitigation: to minimize the impact of drought on production systems and livelihoods;
- relief: to cater, preferably in a targeted manner, to the welfare of those made destitute by drought;
- rehabilitation: of pastoral production systems in the aftermath of drought.

There are close logical and practical connections between each of these components, illustrated in Figure 2, and between drought resilience policy and general development good practice (because drought is so much part of the pastoralist environment). Specific policies for resilience relate closely to, and are necessary for, specific mitigation measures. Thus plans to guarantee drought-time access to specific grazing reserves must be developed in the general policy on pastoral land tenure, and the efficacy of emergency marketing interventions may be severely limited by a lack of marketing infrastructure and price distortions in end markets.

There are also complex interrelations between mitigation measures, relief and rehabilitation. Relief should ideally be targeted on particularly vulnerable sections of the population that cannot be reached by mitigation measures. It is sometimes argued that a credible promise of restocking after drought will make the tasks of agencies promoting emergency livestock purchase as a mitigation measure easier, though there is a lack of experience in integrating the two operationally.

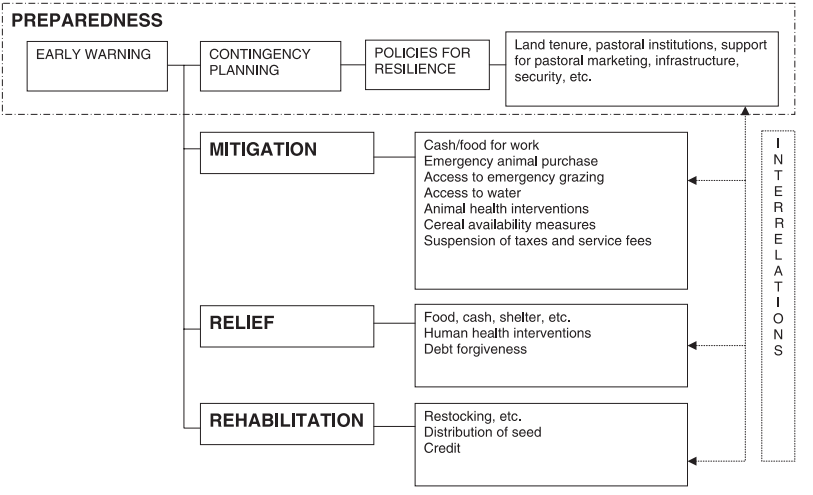

Figure 2 Components of drought management

POLICIES TO PROMOTE DROUGHT RESILIENCE

As stated above, there is no logical boundary between promoting drought resilience and good development practice among pastoralists. It is worth mentioning, however, a number of specific policy areas where governments, at either local or central level can contribute to drought resilience, and provide preconditions for the functioning of specific mitigation policies.

Land tenure

A trend towards clearer establishment of home or even exclusive territories of pastoralist groups (begun in the period of the colonial administrations) has been continued to the present day. Nowadays it is encouraged by a number of factors such as settlement, the development of local administration infrastructure and the requirement to provide security. It is currently popularly supported amongst pastoralists for fears of land alienation and in view of generally increased pressures on rangelands. Such territories usually include some local drought grazing areas but not the more distant refuge areas. There is a danger of greater restriction of movement and access to drought grazing through this trend.

Forms of land tenure for pastoralist areas that meet the long-term needs of pastoralists in the real world of modern administrative systems have still to be identified. Attempts to introduce demarcation and individual tenure, as carried out in southern Kenya, have been disruptive in some areas of northern Kenya (e.g. in Samburu) and strongly resisted by pastoralists in others (e.g. Marsabit and Isiolo). Some form of group tenure is needed but one which does not support the further consolidation of 'territories' to the exclusion of other users. It may be preferable to start with processual rules for discussing claims and solving disputes, and agreed use patterns for key resources (including drought refuges), leaving the more vexed issues of general tenure for the time being. Tenure on areas of extensive wet-season grazing is in any case likely to be less controversial.

The extent to which pastoral land tenure reform can be separated from broader land policy and fundamental jurisprudence is a matter for debate. In Kenya it has been argued that the fact that pastoralist communities are not 'legal personalities' is a fundamental problem for establishing an appropriate land tenure regime (Research and Training Consultants, 1997). Others would argue that much can be done administratively within existing legal frameworks, perhaps by stressing contractual rather than administrative/hierarchical relations, on the model of Joint Forest Management (Jeremy Swift, personal communication). More effort is needed to distil lessons from successful community-based natural resource management in other environments to inform pastoral development.

Pastoral institution building

The support and development of indigenous institutions may be essential to assist the mitigation of drought. Although the history of the development of these institutions (by donors and governments) is mixed (Sylla, 1994), any approach that seeks to build upon traditional coping strategies cannot ignore the importance of indigenous institutions. The development of democratic and accountable institutions may be one of the keys to effective drought mitigation.

The experience of Oxfam in Wajir (Odhiambo *et al*., 1998) suggests that assistance to the further development of pastoral associations can result in positive developments in natural resource management, input supply, infrastructure development, water management and resolution of conflicts.

Pastoral associations should be based where possible on traditional social organization. However, there are potential conflicts between the aim of strengthening traditional organization and equity considerations (including gender). In many post-colonial situations it is not always easy to determine how traditional current leadership is, or in what sense it is traditional. They should also be legally constituted bodies that raise their own income and support traditional systems of natural resource management which are flexible and encourage mobility. Pastoral associations also have a role to play in:

- conflict resolution
- negotiated tenure regimes for dry-season and drought-time grazing
- community management of water
- the protection of grazing rights where absentee owners exploit free access to the range
- the delivery of services (animal/human health and education)
- revenue collection (taxing sales of grazing rights and water use)
- collective and co-operative marketing (community-owned transport)
- community-managed insurance schemes to enable restocking post-drought or to fund community projects (employment) during drought
- supply of inputs to pastoral production systems (veterinary and human drugs, diesel for pumps, etc.).

Pastoral associations should be a link between government/donors and the people. They should be involved in/consulted about government actions that affect pastoralists (such as investment in infrastructure), but also have the capacity to lobby government proactively and without prior restrictions on what is considered to be their remit. Higher-order federations of pastoral associations (e.g. at district level) may be beneficial in a number of roles, not least because routine co-operation of different communities and ethnic groups may make the resolution of serious conflict easier.

Support for pastoral marketing

As Barton and Morton (2001) make clear, the effectiveness of marketing interventions to enable emergency restocking and boost pastoralist purchasing power in the early stages of a drought will ultimately be limited by the end-demand for low-quality meat. As Pratt *et al*. (1997) demonstrate, a range of macro-economic and sectoral policies constrain

the appropriate development of pastoralism: exchange rate policies, external trade policies on livestock and livestock products, and subsidies on crop inputs and feed. Governments also need to consider whether they should intervene when market forces fail to generate meat processing and canning capacity or to develop a market for immatures for fattening elsewhere, but this depends on the structure of national livestock industries, and the quarantine restrictions that are in force, justifiably or otherwise.

Government with the support of donors should create an enabling environment for the livestock sector. There is a need to consider legislation which reduces the bureaucratic burden on owners and traders in livestock. This will increase the trade in livestock in general but also facilitate the removal of stock during drought. For example:

- traders need to be able to transport livestock at night, particularly if they are travelling long distances
- the need for veterinary *cordons sanitaires* should be reviewed with provision made for relaxation of quarantine regulations during drought
- investment is required in infrastructure to aid the flow of livestock (roads, stock routes, water and markets)
- producers need better market information to allow them to make informed decisions about when to sell.

Finally, the important issue of providing non-livestock-based savings institutions ('pastoral banking') must be broached. This has been powerfully advocated as a key intervention in the rangelands (Coppock, 1994), but there may be severe obstacles, economic, cultural and practical in its way (Morton and Meadow, 2000).

Infrastructure

A variety of public infrastructure is desirable to support drought resilience, and as a precondition for specific drought mitigation interventions:

- roads and some market infrastructure to enable sales of livestock
- water-points to facilitate movements of stock (dependent on careful consideration of ecological and social impacts) to enable drought-time grazing
- infrastructure for human and animal services.

Security

It is clear that large areas of most districts of northern Kenya, for example, are currently subject to restricted access and utilization because of conflicts, and that this has been the case for one reason or another for most of the last century. Responses to this have included the development and arming of local militias. Improved security is a prerequisite for more efficient grazing land-use and especially drought-time grazing in the region. Many of the areas of worst security happen to be in the remote ranges used for (or left for) drought-time grazing.

Planning for the provision of security will need to be a key element in drought contingency preparation, but also in government's more general policy towards pastoral areas. While other sections of this paper stress the importance of directly negotiated agreements between pastoralist groups, in the last instance it will be up to government to enforce such agreements.

DROUGHT EARLY WARNING

Kenya has pioneered district-based drought Early Warning Systems (EWS) as part of a national policy to reduce the risk of famine and food insecurity in the arid districts of the country. These attempts to mitigate the effects of drought have combined the resources of government, NGOs and donors (Swift, 2001). Kenya is one of the only countries in the world to have designed and implemented EWS targeted on drought in the pastoral livestock sector, as EWS around the world overwhelmingly concentrate on staple crops. The Kenyan EWS are efficient and effective in terms of identifying the various stages in the run up to emergency. However, they are expensive to run and cannot be justified unless funds are immediately available to enact contingency plans.

The principles are well established, in particular:

- the importance of collating local and national information and indicators
- the range and type of indicators (weather, natural vegetation, crop production and storage, animal disease, nutrition, animal production and mortality, unusual movements by herders, livestock sales and

prices, cereal prices, herders taking unusual jobs, human health and nutrition)
- aerial survey where resources permit
- warning stages and phased responses.

Some of the most important issues for EWS in the pastoral sector, in Kenya and globally are as follows.

- The need to create systems based on socio-economic as well as technical data, which is broadly equivalent to Sommer's (1998) distinction between entitlement-based and endowment-based systems.

- The issues of cost-effectiveness and institutional capacity raised by intensive monitoring of complex indicators. EWS must be evaluated to determine whether all the data collected is necessary. The concept of technical monitoring triggering more intensive socio-economic monitoring at certain stages is worth considering.

- Pastoralist involvement in collecting monitoring information may be a means to reducing the costs of GIS, but is unlikely to be sustainable unless there is a *direct* benefit to pastoralists, for example, as users of information on range quality.

- The need to incorporate new technical possibilities of vegetation monitoring by remote sensing and climate forecasting, given the very complex conceptual and institutional issues involved in disseminating and using such forecasts (Sear, 2001; Blench, 1999).

- The need for decentralized systems based on an understanding of locally specific factors, but the problems of standardizing such data for wider-scale analysis and triggering action from central governments and donors.

- The link between early warning and response; the need to bridge gaps between different levels of government and donors, and to ensure that information is transmitted in a user-friendly form across those levels.

Given the detailed information required, ongoing donor assistance and political commitment are essential for the sustainability, at least in the medium term, of the types of EWS that are currently in use in northern Kenya.

CONTINGENCY PLANNING

EWS must be combined with a strategy to enable government and donors to respond to, and mitigate the effects of drought. If there is no capacity to respond to the information gathered by the EWS, then the investment is wasted. The rationale behind early warning is that it allows government and donors to respond rapidly and avert humanitarian crises by early intervention to mitigate the impact of drought.

Following the early example set by Turkana (Swift, 2001), northern Kenya, more than any other part of the world, has developed effective drought contingency plans that are decentralized to district level. The Turkana plan had the following main components:

- an overall drought policy, setting out the plan's objectives of minimizing the impact of drought
- a set of preparedness measures; creation in advance of necessary physical infrastructure, a bureaucratic structure to manage the plan across line ministries, plans to negotiate with donors at an early stage of drought, agreed procedures and information provision and training about them
- a definition of warning stages to be generated by the EWS and to trigger responses from government
- a set of plans for specific mitigation, relief and rehabilitation measures
- a commitment to the general promotion of drought resilience.

The mitigation of the impact of drought on pastoral communities' livelihoods will be dependent upon a range of activities/strategies, not all being required under each circumstance, some supported by the government, others by donors and, perhaps most important of all, by the communities themselves. Most northern Kenyan districts now have a Strategic Drought Management Plan with a set of contingency shelf plans to be activated at 'alert', 'alarm', 'emergency' and 'recovery' warning stages. Plans are in place for the following sectors:

- food security
- water
- infrastructure/strategic access (roads)
- human health
- livestock health
- livestock marketing
- human displacement.

These plans have yet to be fully tested and it will be interesting to observe the speed of response when an emergency occurs.

Some of the major issues for drought contingency planning are:

- the need to involve communities in drought contingency planning, through well-constituted and supported pastoral associations
- the continuing difficulties in guaranteeing a flow of funds from donors; at issue here is the continuing reluctance of donors to mobilize funds or food aid in the light of early warning, hard evidence of famine and the donors' own appraisal being preferred, by which time it is too late for mitigation
- the administrative difficulty in some countries (including Kenya) of keeping contingency funds anywhere other than the central treasury
- the need for a national-level body to interact with district drought planning, and the tension between the ideas of national drought planning and national disaster planning
- the need to generate a broad national consensus that drought mitigation and as a last resort drought relief are worthwhile activities.

DROUGHT MITIGATION

The contingency plans themselves are likely to consist of the following elements:

- the provision of credit or cash/food for work to prevent the collapse of the purchasing power of poor people
- emergency animal purchase or the provision of subsidy to transport animals to market to enable herders to realize some cash for their animals before prices collapse
- maintaining the water supply for animals and humans, or opening new water supplies

- provision of emergency grazing, including 'cow-calf camps' or other special arrangements to protect breeding stock
- maintaining cereal availability
- rapid increase in the availability of human and livestock health service provision
- flexible taxation systems that do not tax pastoral populations during drought, or submit them to other charges (e.g. for services)
- support for the private sector including pastoral associations in the provision of relief food and other services, either directly or by ensuring that pastoral household purchasing power is maintained
- providing fodder for drought-affected stock.

There are several examples from Kenya which demonstrate the impact of contingency planning and its impact in terms of mitigating the impact of drought on pastoral populations.

- The provision of *cash for work* has proved to be relatively successful in Wajir (Buchanan-Smith and Barton, 1999), although it is important to have a range of public type works planned in advance.

- Intervention in *marketing of livestock* places cash in the hands of vulnerable households. It is essential that livestock are removed from the range before they lose too much condition (Barton and Morton, 2001). The most effective means of intervening in markets is to subsidize the transport and leave the purchasing and selling to the private sector. It may be worth experimenting with various forms of animal mortgage against advance payment which can be used to buy feed (Chris Field, personal communication).

Less success has been achieved with:

- *contingency funds and cereal reserves* as Kenya government financial management rules do not allow government funds to sit unused anywhere except the treasury (Swift, 2001) and donors rarely respond to EWS or pleas for assistance until central government declares an emergency
- provision of *human and veterinary assistance* suffers from the same problem as contingency funds and cereal reserves
- although *revenue collection* probably ceases to function during drought this is by default rather than a result of deliberate policy

- support for the *private sector* has never been explicitly stated policy, although cash for work and livestock marketing interventions have ensured that local shopkeepers and traders have more business as a result of cash circulating within communities
- provision of emergency grazing and cow-calf camps has been limited and *ad hoc* (Hendy and Morton, 2001; Heath, 2001); cow-calf camps and similar institutions elsewhere have had very limited success (Scoones, 2001)
- there is little experience of the *provision of fodder*; elsewhere in the world (and under different macro-economic conditions) provision of free or subsidized feed has been criticized strongly on environmental and other grounds (Morton and Sear, 2001).

RELIEF AND REHABILITATION

For pastoralists today, drought almost inevitably brings (and probably has always brought) destitution for the poorer members of society. It is, therefore, essential that governments and donors are prepared for the provision of famine relief during periods of drought. Donors and NGOs in countries such as Kenya have become expert at providing *famine relief* to all sections of society. However, until recently the response was often 'too little, too late'. Unfortunately the provision of food relief almost inevitably results in settlement for those who are no longer able to provide for their subsistence from pastoralism, hence the importance of also seeking to support the diversification of income-generating opportunities in these settlements (towns).

The suspension of direct taxes and the variety of some of the other charges, levies and service fees pastoralists pay to the government can be considered a form of relief. The difficulty of paying such charges, and in particular school fees, during drought is frequently mentioned by pastoralists. It can be argued that these fees have to be paid at some level in the system, and suspending them is both paternalistic and inefficient compared with other ways of increasing pastoralists' purchasing power. School fees at least would seem to present a special case, where drought can be prevented from having an impact on the education of the next generation.

Governments and donors must also be prepared to support post-drought rehabilitation, of which, for pastoral economies, the most important form is

restocking. Restocking is not only an important form of activity in itself, but it is also argued that a credible promise of restocking will make the task of emergency livestock purchase measures earlier. However, not only have no mechanisms for linking purchase and restocking emerged, but models for truly large-scale restocking have themselves yet to emerge. With restocking other than on a pilot scale there are problems of sourcing large numbers of livestock of appropriate (drought-resistant) breeds, and of devising purchasing systems that are transparent and yet not supervision-intensive, which have yet to be solved.

Relief and rehabilitation measures have not been covered in detail in the research on which this paper is based (but see the copious literature on restocking such as Oxby (1994) and Heffernan and Rushton (2000), also more general works on relief and rehabilitation such as Van Brabant (1994)). However, it is the nature of drought contingency planning that they need to be considered as a part of the web of long-term and short-term measures to manage drought.

4

LESSONS FOR DROUGHT CONTINGENCY PLANNING

The preceding section has set out the key issues for drought management as a whole, including drought resilience policy, early warning, contingency planning and mitigation. This concluding section will set out in more detail some of the practical steps required, primarily at a local level, to plan for effective drought mitigation.

STRATEGIC RANGE PLANNING AND MANAGEMENT

One specific form of contingency planning is the investigation and planning of drought-time grazing. This links both to finding appropriate models of land tenure as a drought resilience policy, and practical measures to open up drought-time grazing as a drought mitigation measure. To assist planners and policy-makers to devise strategies for the more effective use of drought-time grazing resources, more information is required on:

- drought movement patterns and drought-time grazing areas
- land-use protection of drought refuge grazing areas
- water development and management in drought refuge grazing areas.

Characterization of drought grazing areas will need to include an inventory of resources, study of the current constraints on access (water, vegetation conditions and trends, security, etc.), as well as information on likely users and numbers, current land tenure status and likely pressures for land-use change. Pastoral communities must themselves be involved in the research process, so that planning proceeds from a common understanding of present conditions and requirements. Options for enhancement and protection of the drought grazing areas can then be

examined, again jointly with all users. Additional drought grazing areas which are not currently used because of rectifiable constraints (animal health challenges, protected area status that can be waived in emergencies, etc.) may also be identifiable.

Because of their special status, drought-time grazing resources may require a dual approach to their tenurial status and management. Some administrative action such as gazetting will probably be needed to offer users of these resources some kind of protection and recognition. The legal basis for this will need to be prepared. Such gazetting will not always be straightforward as many drought-grazing areas serve other purposes, or are partially occupied and grazed in non-drought periods. Other forms of agreement on drought-time access may need to be established in these areas.

In all areas, longer-term goals should be the empowerment of local-level institutions, but also the maintenance of the greatest possible flexibility of access for all groups. It will be important to maintain the principle of drought-time access to resources across 'tribal boundaries', and the building of negotiation and arbitration capacity at local administration and range-user level to deal with these resources. Recent approaches to conflict management are likely to be useful here (see Hendy and Morton, 2001; Warner and Jones, 1998). As well as 'traditional' institutions involving tribal elders, the personnel associated with formal local government, both elected and appointed, and above them national MPs, all need to be involved. There are now in many areas Pastoral Associations, Environmental Management Committees, etc., set up by development projects to manage natural resources and community development processes at local level. These institutions may be the key to the negotiation of agreements.

COW-CALF CAMPS AND RELATED INITIATIVES

In countries with a commercial-ranching sector, there are possibilities of using these resources to protect small and select numbers of pastoralist or agro-pastoralist breeding stock. In Kenya this has happened in an *ad hoc* and often confrontational way, and is unlikely to be expanded while ranches remain private. However, in Kenya as elsewhere, the private ranching sector is in economic downturn and this creates possibilities for

collective purchase of ranches by pastoralists for the specific and planned purpose of protecting breeding stock during drought (Heath, 2001).

WATER DEVELOPMENT AND MANAGEMENT

The development and management of emergency water supplies will be a key element in opening up new or unused grazing resources and improving the utilization of drought grazing areas. The provision of water in areas where grazing is unused should not be dismissed because of the negative impact (settlement, and environmental degradation) associated with boreholes. These problems are associated with free access to water, rather than the provision of water *per se*. It is essential that the use of water be managed by herders through appropriate institutional arrangements to ensure equitable operation and sustainable maintenance. It may also be appropriate to devise use systems that restrict borehole use (during the rainy season, for example) on the understanding that water is for use during the dry season and drought only. There are examples of local pastoral institutions managing remote water sources in northern Kenya (Hendy and Morton, 2001). The possibilities of encouraging the construction or rehabilitation of traditional open wells, micro-catchments, etc., should also be considered (Swift, 1999). The involvement of all concerned communities and pastoral associations will be essential before water development can proceed.

DISEASE PREVENTION AND CONTROL

Much may be done to reduce the impacts of disease on livestock both before and during drought. The necessary components of preparation of mitigation programmes will include the following elements:

- further study to identify specific disease risks, particularly in drought refuge grazing areas where the risks are often greater (for all species of livestock)
- development of necessary veterinary infrastructure and community animal health workers including stores of vaccines and other drugs with pastoral associations or other indigenous institutions
- development of mechanisms for emergency delivery of vaccinations, prophylactics or treatments to exposed livestock during drought.

Vaccination at the onset of drought may prevent losses. Early warning systems will be required to report disease outbreaks and risks. Contingency plans should include the development of any necessary veterinary infrastructure on key livestock movement routes, as well as the institutional arrangements for communication with pastoralists and mounting of campaigns.

SUPPORT TO THE PRIVATE SECTOR

Retail stores play an important role in providing services to pastoral communities. They provide an outlet for stock (stock are often assembled at stores until a truckload has been accumulated for transporting to market) and a source of consumer goods and essentials (medicines). They often act as informal banks as some pastoral households sell livestock but draw their payment in goods over a period of time. In some circumstances herders deposit large sums (Buchanan-Smith and Barton, 1999). Stores provide vital services both before and after drought, particularly the supply of food grains and could be the focus for animal health service provision.

Contingency plans should seek to maintain the purchasing power of pastoral people as a priority (rather than to provide famine relief across the board) to ensure that cash continues to circulate within the local economy. Under these circumstances the private sector will continue to haul food and consumer goods while backloading livestock to southern markets (in Kenya).

CONCLUDING NOTE

Managing drought is an integral part of developing arid and semi-arid rangelands, and thus has important long-term economic, environmental and ethical justifications. A shorter-term economic justification for investing in early warning, contingency planning and drought mitigation is to lessen the impact of drought on pastoral households thereby reducing the need for costly food relief and any necessary rehabilitation. The social costs of destitution, including increased conflict and problems of peri-urban squatting, are also a factor to be considered. One need for future research is to further quantify the benefits of drought contingency planning and its

various components, and the true costs of conventional relief approaches or simply doing nothing.

Experience in northern Kenya and elsewhere can tell us much about EWS and institutional contingency planning (and famine relief) and a certain amount about specific drought mitigation measures. What has become clear, however, during the course of this research is that drought management cannot be separated from policies that foster drought resilience, and those in turn cannot be separated from good development practice for pastoralism. Meteorological drought is a fact of life in arid and semi-arid lands: preventing it manifesting itself as famine ultimately means empowering the communities who inhabit those lands and allowing them to play a productive role in national economies.

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