



Livestock, livelihoods and vulnerability in Lesotho, Malawi and Zambia: Designing livestock interventions for emergency situations

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HA Freeman, S Kaitibie, S Moyo and BD Perry



Food and Agriculture Organization of the United Nations



International Livestock Research Institute

Authors' affiliations

HA Freeman, International Livestock Research Institute (ILRI), Nairobi, Kenya

S Kaitibie, ILRI, Nairobi, Kenya

S Moyo, ILRI, Nairobi, Kenya

BD Perry, ILRI, Nairobi, Kenya

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Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ECF	East Coast fever
EFI	Extremely food insecure
FAO	Food and Agriculture Organization of the United Nations
RIACSO	Regional Inter-Agency Coordination Support Office for the Special Envoy for Humanitarian Needs in Southern Africa
FEWSNET	Famine Early Warning Systems Network
FI	Food insecure
FMD	Foot-and-mouth disease
FS	Food secure
GDP	Gross domestic product
GIS	Geographic information systems
HIV	Human Immunodeficiency Virus
ILRI	International Livestock Research Institute
LMS	Lesotho Meteorological Services
LVAC	Lesotho Vulnerability Assessment Committee
PRA	Participatory rapid assessment
M&E	Monitoring and evaluation
MVAC	Malawi Vulnerability Assessment Committee
NGO	Non-governmental organization
SADC	Southern Africa Development Community
VAC	Vulnerability Assessment Committee
VAM	Vulnerability Analysis Mapping
WFP	World Food Programme

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Executive summary

Vulnerability and poverty are key factors explaining the deepening crisis in food security in many countries in southern Africa. This vulnerability of households to food insecurity, particularly among the rural poor, is attributed mainly to worsening economic conditions, policy failures, natural disasters such as droughts, floods and crop or livestock disease epidemics, and the high incidence and impacts of HIV and AIDS.

Emergency responses to shocks that cause widespread food insecurity have largely focused on food aid and cropping interventions. Livestock is crucial to the livelihoods of many households in southern Africa but its role in food security and emergency response has not been fully understood or exploited. This study assesses the contribution of livestock to livelihoods and its role in risk management and coping strategies with a view to identify livestock interventions that can be used to save lives and livelihoods in crises and emergency situations in southern Africa.

The livelihoods framework provides the conceptual framework for examining the roles of livestock in household livelihood strategies and identifying the links between vulnerability and livelihoods. Understanding the links between vulnerability and livelihoods leads to a systematic identification of appropriate emergency response options that can guide the design and implementation of relevant and effective interventions in emergency situations.

Assessing livelihoods is an important component of efforts aimed at preserving assets and supporting livelihoods in emergency situations. This study attempts to identify the livelihood assets and strategies of households, taking into account differences between men and women as well as the contexts that translate household capabilities into livelihood opportunities. The study suggests marked differences in ownership of productive assets, in livelihood strategies and in vulnerability between men and women. These findings are consistent with results from other studies on vulnerability in southern Africa which show that women and female-headed households were more likely to be vulnerable than the general population.

Economic shocks, drought, livestock losses due to animal diseases and declining efficacy of delivering livestock services to poor people are identified as major sources of vulnerability. Households use a wide range of informal and formal strategies to manage and cope with risks. Effective livelihood responses in emergency situations should help households preserve their livestock assets and avoid coping strategies that deplete critical assets. Key recommendations for designing and implementing livestock-based emergency responses include:

- a sound analysis of livelihoods and vulnerability, including an understanding of the roles of livestock in livelihoods, and of how livestock assets are affected by emergencies;

- the identification of clear linkages between livelihood analysis and program design, clarifying the objectives for emergency responses and generating a tool kit of emergency response options;
- the use of geographic and household targeting of interventions;
- a focus on context-specific interventions;
- an improvement in knowledge and understanding of the emergency context;
- the use of monitoring and evaluation in order to learn lessons and identify issues appropriate for use in scaling up.

Development agencies involved in supporting livelihoods in emergency situations can build on the study results as a basis for the design and implementation of effective livestock-based strategies and interventions.

1 Introduction

1.1 Background

Vulnerability and poverty are key factors explaining the deepening crisis in food security in many countries in southern Africa. The continuing food crisis, apparent since the early 1990s, underscores the vulnerability of the region to food insecurity. A recent estimate indicated that more than 10 million people in the region were vulnerable to food insecurity (UN-RIACSO 2005). This vulnerability of households to food insecurity, particularly among the rural poor, is attributed mainly to worsening economic conditions, policy failures, natural disasters such as droughts, floods and crop or livestock disease epidemics, and the high incidence and impacts of HIV and AIDS. The cumulative impacts of these shocks have widespread social and economic effects that threaten the livelihoods of millions of people and reduce the ability of households, communities and governments to manage risks and cope when such shocks occur.

Emergency responses to shocks that cause widespread food insecurity have largely focused on food aid. Distributing food to poor people saves lives and reduces suffering. However, food aid alone does not provide long-term development solutions that support the livelihoods of poor people. Donor and government response to food insecurity in emergency situations has mainly focused on cropping interventions, often ignoring livestock. The consequences of negative coping strategies such as distress sale of livestock assets to survive a disaster can have irreversible impacts that trap households in chronic poverty. Livestock is crucial to the livelihoods of about 60% of households in southern Africa: it is a key productive asset, a store of wealth and provides transportation and other social functions. Yet, its role in food security and emergency response has not been fully exploited. Two major factors have contributed to the neglect of livestock interventions in emergency response mechanisms. First, there is little systematic research on the role of livestock in household livelihoods, risk management and coping strategies. Consequently, there is limited information on the impact of livestock losses on household food security and livelihoods. Second, links between understanding the roles of livestock in livelihood, program and project design and implementation are not clear. The unclear links between livelihood analysis and program and project design present formidable challenges in setting realistic objectives, defining appropriate criteria for targeting geographic regions and beneficiaries, and identifying sound monitoring and evaluation systems that can be used to assess achievements and learn lessons in the implementation of livestock interventions in emergency response.

1.2 Objectives

The main objectives of this study were to assess the contributions of livestock to risk management and coping strategies and to identify livestock-centred interventions that can be

used to save lives and livelihoods in crisis and emergency situations in selected countries of the Southern Africa Development Community (SADC). The specific objectives were:

- Analyse the roles of livestock in household livelihood strategies
- Examine different sources of risks and household risk management and coping strategies, paying particular attention to livestock-based strategies
- Identify emergency response interventions including targeted livestock interventions for reducing food insecurity and vulnerability
- Provide a framework for identifying guiding principles for linking livelihood analysis, project and program design, and implementation in emergency situations.

The countries covered in this study are Lesotho, Malawi and Zambia. The ratio of vulnerability to food insecurity appears to be growing in all of these countries with vulnerable households facing dwindling food stocks and rising prices of staple food at the time of the study (UN-RIACSO 2005).

1.3 Methodology

Key features of the methodology used in this study were consultations with the Food and Agriculture Organization of the United Nations (FAO) and country stakeholders, desk studies, and the use of research methods for site selection and fieldwork, sampling and fieldwork.

1.3.1 Consultative processes and workshops

There was an initial dialogue between the International Livestock Research Institute (ILRI) and FAO to discuss the overall objectives and approach to be used by the study team. Stakeholder consultations were held with FAO officials and other stakeholders in southern Africa and the case study countries. The purpose of country consultative meetings was to share information on the study with key stakeholders and initiate a dialogue process that would help FAO/ILRI explore the options for using livestock as an instrument to reduce poverty and address vulnerability. The dialogue involved interactive sessions focusing on key questions such as:

- What do we know about livelihoods, food security and vulnerability, particularly the role of livestock in these processes, in the study country?
- Who is doing what on reducing vulnerability and what are the major instruments for intervention at the household, community and national levels?
- What are the major gaps in knowledge and what are the key areas for action in research, policy, operational work and advocacy?

1.3.2 Desk study

A desk study was conducted to review available published and grey literature on poverty, vulnerability and the contribution of livestock to livelihoods, particularly in the southern

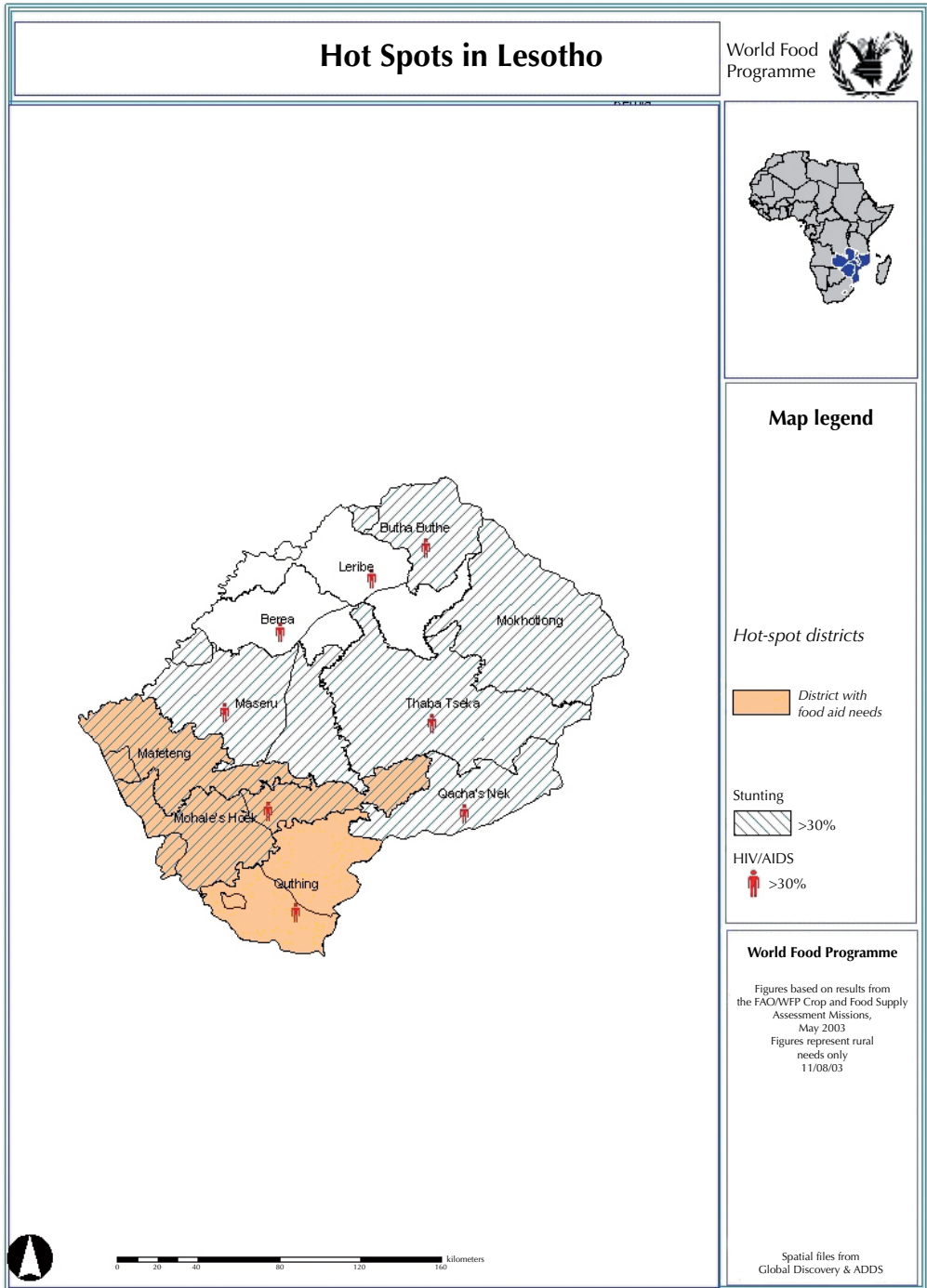
African region. The study also analysed secondary data including macro-economic and sector data that help explain the proximate causes and effects of vulnerability, as well as their effects on key macro-economic variables such as staple food and livestock prices. In addition, information was provided on the complementarities between social protection programs and traditional household and community coping strategies.

1.3.3 Sampling

(i) Selecting sample districts

A district site selection exercise was conducted by ILRI in collaboration with country research teams. A major objective of site selection was to identify locations where livestock was particularly important in livelihoods. The World Food Programme's (WFP) Vulnerability Analysis Mapping (VAM) was used to identify geographic locations and the varying degrees of exposure of populations to the risk of having inadequate quantities of food to eat following a climate induced or economic shock or HIV/AIDS. Spatial data on agronomic potential, market access and population density were used to capture additional dimensions of food insecurity at the study sites using geographic information systems (GIS) approaches. The spatial data overlays were then used to identify potential study sites that represented specific development contexts which were comparable within and across the study countries. Rapid appraisal approaches were used to validate study site characteristics in each of the study countries.

Study sites were characterized into 'hotspot' and 'non-hotspot' areas. The VAM criteria for hotspot included thresholds for the incidence of HIV/AIDS among the active population, stunting and the proportion of the population with food aid needs. In Lesotho, a district was characterized as a hotspot if it had food aid needs, if stunting was greater than 30% of the population and if the HIV/AIDS incidence was greater than 30% of the population (Figure 1). The hotspot districts in Malawi and Zambia had similar food aid needs as in Lesotho, but the threshold for stunting was set at more than 50% of the population and incidence of HIV/AIDS at more than 15% of the population (Figures 2 and 3). This information was overlaid with data on livestock production for each district to identify the distribution of livestock production by vulnerable groups and vulnerable populations. Non-hotspot districts did not meet the thresholds identified above. Two hotspot districts and one non-hotspot district were selected as study sites in each country. The hotspot districts selected for the fieldwork were Mohale's Hoek and Thaba Tseka in Lesotho, Nsanje and Chikwawa in Malawi and Kazungula and Sinazongwe in Zambia. The non-hotspot districts were Leribe in Lesotho, Kasungu in Malawi and Namwala in Zambia.



Source: WFP data files.

Figure 1. Vulnerability assessment mapping of hotspots in Lesotho.

Hot Spots in Malawi 2003



Map legend

Hot-spot districts

District with food aid needs

Stunting (no wasting data available)

>50%

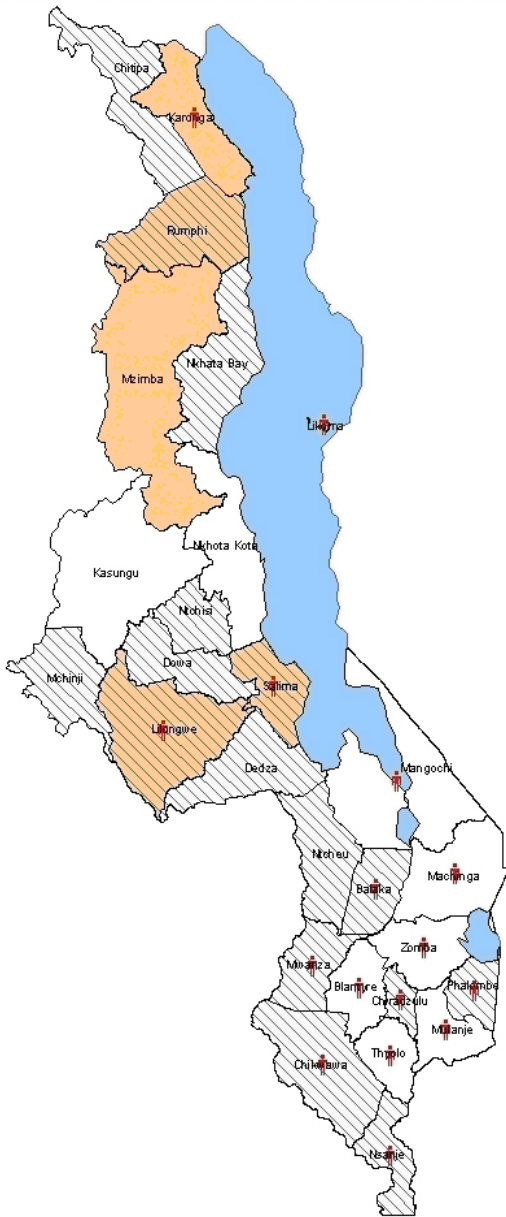
HIV/AIDS

>15%

World Food Programme

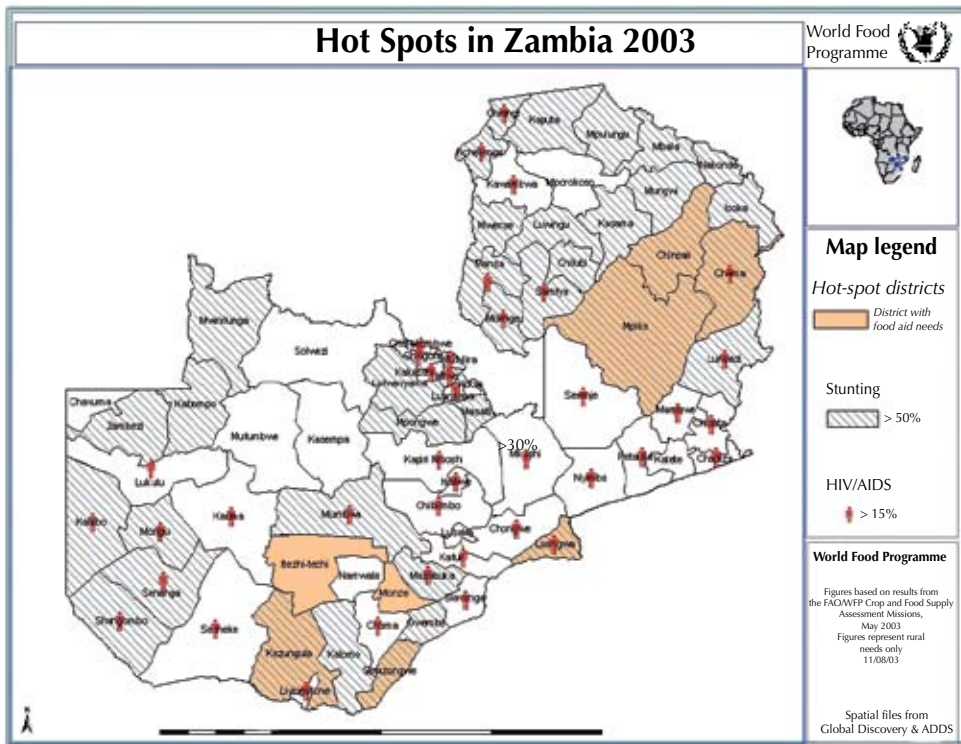
Figures based on results from the FAO/WFP Crop and Food Supply Assessment Missions, May 2003
 Figures represent rural needs only
 11/06/03

Spatial files from Global Discovery & ADDS



Source: WFP data files.

Figure 2. Vulnerability assessment mapping of hotspots in Malawi.



Source: WFP data files.

Figure 3. Vulnerability assessment mapping of hotspots in Zambia.

(ii) Selecting sampling units and villages

Data on market access and agricultural potential were used as additional criteria to identify study villages in each selected district. Two levels of market access (low and high), and two levels of agricultural potential (low and high) were used. The combination of the data on market access and agronomic potential provided four market access-agricultural potential domains in each district. One study village was selected in each domain in the selected districts using random sampling techniques. This multi-stage sampling process resulted in four case study villages or communities per district in each country. This sampling procedure ensured that there was sufficient variability in the choice of study locations. With a sampling approach based on statistical principles, this allowed the study team to draw statistical inferences that were comparable across different study sites, even though data collection was based on participatory methods.

1.3.4 Field survey

An important consideration in this study was the need to obtain consistent data using a range of methods and scales of enquiry that could facilitate comparative analysis between

and within countries. The fieldwork was preceded by intensive training in participatory rapid rural and vulnerability assessment techniques, sampling protocols, survey instruments, implementation of the field survey and data analysis.

Given the limited time and resources available for the study, data collection relied mainly on qualitative methods, using instruments such as focus group discussions, semi-structured interviews and key informant interviews. Lists and rankings were used to quantify relative changes in livelihood activities. At the village level, the participatory assessment process began with a community mapping exercise involving key informants to identify the location of every household in the village. Households were then stratified into different categories, based on the degree of vulnerability to food insecurity, as food secure (FS), food insecure (FI) or extremely food insecure (EFI). FS households were defined as those with enough food to eat throughout the year from the last harvest to the present harvest; FI households were those that normally had enough food to eat for up to 7–8 months following the last harvest; and EFI households were defined as those which experienced longer periods of food shortages. The same criteria for food insecurity were used in all the study locations and were designed to be consistent with universally acceptable definitions of food insecurity.

Households were purposively selected from each food security group for focus group discussions using semi-structured questionnaires, and in some cases limited household questionnaires. Key informants were used to provide additional information or triangulate data from the community surveys. Important elements of the field survey included:

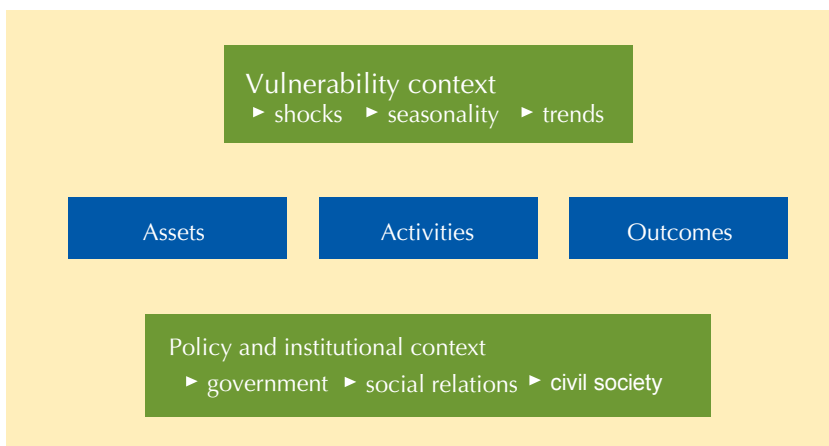
- Social mapping of vulnerable households at the community level using key informants (4–8 people) to develop a local typology of groups based on differing degrees of vulnerability to food insecurity.
- Focus group discussions, with representative individuals from the vulnerability categories identified above (5–12 people), to determine livelihood and vulnerability profiles and to validate the social mapping exercise.
- Semi-structured questionnaires to assess livelihood and vulnerability profiles of selected households, the importance of livestock in livelihoods, the categories of risks they face, and risk management and coping strategies of different social groups.

The study report is presented below as follows: Chapter 2 presents a conceptual framework that can be used to guide response options in emergency situations. This framework was applied in the analysis of livelihoods and vulnerability to food insecurity, focusing on the role of livestock. These study results are reported in Chapters 3, 4 and 5. Specifically, Chapter 3 identifies the roles of livestock in livelihoods, Chapter 4 highlights specific shocks that households face, and Chapter 5 describes the responses of households and communities to shocks. A synthesis of these results is presented in Chapter 6. The report concludes with recommendations that can be used in the design and implementation of response options in emergency situations.

2 Livelihoods and vulnerability: Developing a conceptual framework

The livelihoods framework (Ellis 2000, 2003) provides the conceptual framework for examining the roles of livestock in household livelihood strategies and identifying the links between vulnerability and livelihoods. Understanding the links between vulnerability and livelihoods leads to a systematic identification of appropriate emergency response options that can guide the design and implementation of relevant and effective interventions in emergency situations.

The key components of the basic livelihood framework used to guide responses in emergency situations are presented in Figure 4. The concept of livelihoods includes the assets that determine the capacity to make a living, the activities that people undertake to earn a living, the risk factors that are important in managing their assets and the policy and institutional contexts in which the assets are used. The policy and institutional contexts largely define the outcomes or opportunities that are available to households and can either help or hinder attempts by households to create viable livelihood strategies that provide sustainable pathways out of poverty. The focus on assets, activities and outcomes within the vulnerability and institutional context provides a strong link between vulnerability and livelihoods.



Source: Ellis (2003).

Figure 4. *The basic livelihoods framework.*

According to the livelihoods framework, households own assets that include physical capital (tools, equipment and livestock), natural capital (land, water, trees and access to communal grazing), human capital (education, skills and health), financial capital (money, savings and access to loans) and social capital (networks, membership in associations, norms and social trust). Households draw on these assets to construct livelihoods and their ability to generate

income and manage risks is largely determined by their asset position. An understanding of asset status is therefore fundamental to identifying entry points for raising the assets of the poor, increasing asset productivity or mitigating the impacts of shocks.

Households allocate assets to activities. In a livelihood framework, activities refer to the actions that households engage in to earn income or make a living. Livelihood activities may include those undertaken in the community where the household resides, such as crop and livestock production, wage work and non-farm activities. Livelihood activities may also include those undertaken in distant locations, such as migration and income from remittances by family members. Households consider the returns to alternative enterprises over time as well as the risk of alternative activities when allocating assets to activities. For example, investment in improving land productivity typically involves increased investment in natural resources management (NRM) practices, such as improvement of soil fertility or water management techniques. But some rural households may not adopt these technologies if the returns to these investments accrue at a later date or are lower than the returns to investments in alternative off-farm or non-farm activities (Barrett et al. 2002). Households may need liquid assets as a precondition to pursue certain livelihood activities. For example, livestock is often used as a liquid asset that facilitates entry into other livelihood activities that have higher but more risky returns (Dercon 1996).

The ability of households to generate income from the assets they possess depends on the quality of the contexts where assets are used. This context can be summarized as the policy and institutional context (structures and processes associated with governance, markets, public goods and rural institutions) and the vulnerability context (the risk factors involved in pursuing livelihoods) (Ellis and Freeman 2005). The livelihood opportunities available to households within these contexts result in outcomes that can be manifested in different levels of well-being, vulnerability and food insecurity. For example, good asset endowment in a disabling institutional and policy context and a highly vulnerable context will not support the efforts of households to escape poverty or improve their food security status.

Before illustrating how the conceptual framework outlined above can be used to inform the choice of appropriate emergency response options, it is useful to define key concepts that are used in the analytical framework. The study uses the widely accepted definition of food security as physical and economic access by all people, at all times, to sufficient, safe and nutritious food for an active and healthy life (World Food Summit 1996). This definition of food security covers the key dimensions of food availability, food access, utilization of food and stability of food supplies.

The concept of vulnerability refers to the relationship between poverty, risk and risk management (Alwang et al. 2001). It is a forward looking concept defined as the probability

of an individual, household or community falling below a socially acceptable benchmark value of welfare such as food consumption or income. A household can be said to be vulnerable if it faces high probability of falling below this benchmark. Vulnerability depends on household conditions and exposure to risky events. A household's or individual's level of vulnerability is determined by the characteristic of the shock or risk they are facing and their ability to respond to risk over time. Describing vulnerability as exposure to risk and inability to deal with the occurrence of risky events is important in predicting the onset and livelihood impact of food crises (Devereux 2002; Ellis 2003). Rising vulnerability arises from a combination of increasing occurrence of risky events and diminished ability to cope with adverse trends and shocks. In this study, the vulnerability concept refers to vulnerability to food insecurity, defined as exposure to shocks that undermine access to food.

A useful organizing framework in designing emergency response interventions is to describe risk management interventions along a 'risk chain' (Alwang et al. 2001). In this perspective, vulnerability is comprised of a) risk or risky events that people encounter in pursuit of their livelihoods, b) risk responses, or the options that people have for managing risks and c) the outcomes that describe the loss in well-being that is below some socially acceptable benchmark of food consumption. Risk is characterized by the probability of a risky event that in turn is characterized by its magnitude, frequency and duration and history. Risky events can occur at the household level, such as illness, death, livestock disease, own crop failure and loss of a job. These can be single isolated events and are referred to in the literature as idiosyncratic shocks (Dercon 2002, 2005). Risky events can also occur at the community level such as droughts, floods and widespread crop and livestock diseases. Such community-wide shocks are referred to as covariate shocks. In many instances, shocks at household level are linked to community-wide shocks like when a drought causes widespread crop failure and distress sales of livestock that result in higher food prices and lower livestock prices that turn the terms of trade against rural households.

Households can manage risk in many ways. In some cases people can respond to risk before the risky event occurs (*ex ante* risk management) or after the risky event is realized (*ex post* risk coping). *Ex ante* risk management activities, such as building livestock herds, growing drought resistant crops or diversifying livelihood activities, can reduce risk or lower exposure to risk. *Ex post* risk coping activities deal with the losses arising from a shock; these include selling livestock, migration, eating fewer meals, etc. The combination of risk and household response leads to outcomes that determine whether an individual or household can succeed or fail to deal with an emergency induced crisis in food security.

The close connections between household asset positions, their activities to manage and cope with risks, and the resulting outcomes provide the links between the livelihoods

framework and emergency response. This conceptual framework is used to provide guidance on the identification of emergency response options that are faced by vulnerable households in emergency situations, drawing largely from case studies in southern Africa.

3 Livestock and livelihoods

This chapter describes livelihood settings in the study area, and investigates the contributions of livestock to these livelihoods. Assessing livelihoods is an important component of efforts aimed at preserving assets and supporting livelihoods in emergency situations. This section attempts to identify the livelihood assets and strategies of households, taking into account differences between men and women, as well as the contexts that translate household capabilities into livelihood opportunities. Households or social groups that own limited assets or hold assets with relatively low productivity are more likely to be vulnerable to food insecurity when a shock occurs. Similarly a community that lacks key resources such as infrastructure, institutions and organizations will be less able to undertake emergency response activities or sustain outcomes that arise from livelihood interventions.

3.1 Livelihood setting

According to the Lesotho Vulnerability Assessment Committee assessments (LVAC 2004), one of the hotspot districts in this study, Thaba Tseka, lies in the mountains where 80–100% of the population faced income or food deficits of 13–18%. This densely populated area is usually isolated from markets and other services. However, the level of livestock holdings is very high, with less vulnerable households holding fairly large stocks of livestock. LVAC estimates that up to 60% of the population are poor, whereas 16% are better off. The other hotspot district, Mophale's Hoek, and much of the non-hotspot district of Leribe, are located in the foothills, where 80–100% of the population faced food deficits of 8–26% of their annual food needs. The area has a higher population density than the mountain regions, and livestock holdings are relatively large, with food secure households holding large stocks of sheep and goats. Approximately 58% of the population are described by the communities as poor, with nearly 11% considered better off. This area has higher agricultural potential and market access opportunities than the mountain region.

The Malawi Vulnerability Assessment Committee assessments (MVAC 2005) reported that approximately 348 thousand people in the hotspot district of Chikwawa were at risk of having insufficient food to meet their needs for the period July to September of 2005. At 175 thousand, the numbers were slightly lower for Nsanje District, the other hotspot district. In the non-hotspot district of Kasungu, the number of people at risk was much lower, at 143 thousand. In the Lower Shire area, where the hotspot districts are located, land holdings for the 'poor' and 'middle' groups amounted to a mere 3–4 acres, with only about 1–3 acres being cultivated. In 2005, household income in this area ranged between MK (Malawi kwacha) 10,600 and MK 11,960. The 'poor' group lack farm inputs and they normally subsist on their own farm production from the harvest in April/May to August.

The Forum for Food Security in Southern Africa (FFSSA no date) reports suggest that the proportion of household income spent on buying food in Zambia is on the rise, making it increasingly difficult for households to feed themselves. Some 45–47% of the rural population is stunted, while malnutrition affects about 6% of rural households. In 2000, the gross domestic product (GDP) grew by 3.5%, the agriculture sector by 1.8% and population by 2.9%. In much of the study area, road infrastructure and veterinary infrastructure and services were poor. The poor communications usually constrain access to markets for many of the vulnerable households and communities in this study area.

3.2 Livelihood activities and the role of livestock

In Lesotho, livestock farming was the most important livelihood activity in Thaba Tseka District; it was second only to crop farming in Mohale's Hoek and Leribe districts. Other important livelihood activities include vegetable farming and establishing small business enterprises such as brewing beer. The types of livestock owned by households included cattle, sheep, goats, pigs, poultry, horses and donkeys, whereas the main crops grown were maize, sorghum and beans. Communities in Thaba Tseka had larger herds. Donkeys and horses were used for transport because of the relatively poor communications infrastructure in the district. The proportion of households owning cattle in the study villages ranged from 40 to 70%, with fewer households owning other types of livestock. Households with few or no livestock were faced with food shortages at a higher rate than other households. Households in the FS group owned more livestock than the FI and EFI households. Donkeys and horses were sometimes rented out, while products such as mohair and wool were sold to build up cash reserves. Households reported that men mostly owned the cattle while women owned the smaller stock such as poultry and pigs. Cattle ownership was an important determinant of draft power for tillage in areas where they were used in farming. In many cases lack of access to draft power was cited as an important tillage constraint in female-headed households.

FS households were able to maintain their livestock asset levels when a climatic shock, such as snow, occurred. They were also more likely to obtain advice from the Lesotho Meteorological Services, so the households could move their livestock to lower elevations to avoid snow and stockpile fodder and fuel. Some FS households reported building shelters for their cattle. To manage risks, this group sold livestock assets and grew fodder.

Key informant interviews revealed a few cases where households had moved to a higher food security group. In all cases, households that moved upwards into a higher food security category were male headed. Most people who experienced upward movement ascribed it to investing their retrenchment packages from their employment in the mines of South Africa.

This investment was in agriculture, mainly buying livestock and agricultural implements. Some people experienced upward movement through acquisition of livestock when their daughters were married.

Information from village headmen and focus group discussions in Malawi revealed that livestock farming was the second most important livelihood activity after crop production and sale. In the hotspot districts of Chikwawa and Nsanje, cotton was listed as the major cash crop, although it had fairly limited market potential. Tobacco was the major cash crop in Kasungu District, but its market potential had been declining. Very few households owned cattle or produced crops beyond subsistence levels. However, almost everyone in the study villages owned chickens and a few owned goats as well. Most of the livestock was owned by households in the FS category. The FI households kept small stock such as goat and poultry. Women who were dominant in the FI and EFI categories mostly kept poultry. Animals were mainly held as assets and they were rarely sold in numbers that would contribute significantly to augmenting their household income. The sale of poultry provided cash to meet emergency household needs and therefore played a significant role as safety nets, particularly in female-headed households which were among the most vulnerable groups at the study sites. The acquisition of hardy goats, resistant to many common diseases, was also used as an important risk management strategy by FI households. Households did not report many cases of movement between food security categories.

In Zambia, crop and livestock production were listed as the two most important sources of income, together representing almost half of the total income earned by rural households. While field crop production received a higher score as a livelihood activity than livestock rearing, livestock and livestock products represented a more important source of income. Cattle were the most important livestock species, especially among male-headed households in Namwala, the non-hotspot district, followed by goats and poultry. None of the households in any of the food security groups kept sheep, donkeys or pigs. Households reported few differences in livelihood activities between men and women.

The relative importance of certain activities across food security groups in Zambia may be the same but the contexts in which households made decision varied. Compared to other food security groups, FS households were more likely to pursue commercially oriented livelihood activities. Crops and livestock, for example, were produced primarily for sale. Maize and cattle were the most common commercial commodities among the FS, with cattle being sold to large private dealers and abattoirs such as Zambia Beef (ZAMBEEF). Conversely, the FI and EFI groups produced crops and livestock mostly for subsistence. Livestock were kept mainly as a safety net, were only sold during times of hardships and were rarely consumed by households. Livestock plays an important role in managing risks. Many households reported

that they often sold livestock to meet emergency cash needs, such as purchasing food or meeting health expenses, when shocks occur. Income from livestock sales is an important component of household income, contributing over 25% of total incomes in all food security categories (Table 1).

Table 1. Sources of income and their relative importance across food security status and district in Zambia

Source of income	Hotspot districts			Non-hotspot district			Total
	Food secure (FS)	Food insecure (FI)	Extremely food insecure (EFI)	Food secure (FS)	Food insecure (FI)	Extremely food insecure (EFI)	
	(1)	(2)	(3)	(4)	(5)	(6)	
Mean score (out of 100)							
Field crops sales	20.4	13.9	25.4	25.3	27.0	17.5	20.9
Livestock sales ^a	27.4	24.9	20.1	43.3	26.8	25.0	26.2
Other animal products ^b	12.5	3.1	3.0	10.3	5.3	12.0	7.1
Hiring out animal draft power	11.3	7.1	2.3	3.4	4.8	3.0	5.9
Piece work	10.9	14.3	26.8	0.0	5.3	19.3	14.6
Gardening	6.3	13.6	9.8	0.0	6.5	7.3	8.3
Fishing	3.5	6.9	1.5	0.0	3.5	5.0	3.7
Other ^c	7.9	16.3	11.3	17.7	21.0	11.5	13.3

a. Livestock are sold both live and as meat.

b. Other animal products mentioned by the communities included milk, eggs, skins and manure.

c. Other income sources include hammer mill revenue (service and crop by-products), remittances, selling of forest products, crafts, beer brewing, trading, traditional healing, guest house services and cash transfers from non-governmental organizations (NGOs).

Source: Focus group discussions in Sinazongwe, Namwala, and Kazungula districts (September 2006).

The contribution of livestock to income was largest among FS households, particularly in the non-hotspot district where it contributed to over 40% of total household income. Piece work, however, was most important among the EFI and most visible in the hotspot districts. Compared with all other food security groups, FI households appeared to have the most diverse set of income sources, with a significantly higher proportion of income coming from low return off-farm activities in the 'other' category.

Households reported few gender differences in livelihood activities. Activities related to field crop production, livestock rearing and sales, gardening, piece work and trading were carried out by almost all household members, irrespective of gender. However, there were several

other activities that were gender-specific. For example, fishing, hiring out of animal draft power and crafts were largely undertaken by the men in the family while brewing beer was mainly the responsibility of women.

3.3 Assets

The household classifications into FS, FI and EFI groups were consistent with FAO definitions on access and availability of food. This measure of food insecurity was meaningful to the study participants, simple to categorize households into different groups, and capable of differentiating households (Barahona and Levy 2003). Several vulnerability assessment committees in southern Africa have used similar definitions or household wealth rankings that are based on household asset status. For example, LVAC and MVAC have characterized communities or households into wealth groups of 'better-off', 'medium/middle' and 'poor', using the household economy approach or food economy approach (LVAC 2004; MVAC 2004).

Social mapping exercises of households at the community level in Lesotho revealed that about 17% of households were FS, 34% were FI and 49% were EFI. These proportions were not significantly different across the study sites except for Malawi, where no FS households were identified in Nsanje and Kasungu districts. In this country, the EFI category mostly comprised the elderly, widowed and divorced women, and female-headed households. Gender appeared as a significant factor in explaining differences in vulnerability to food insecurity, with women more likely to be vulnerable than men. In all the countries female-headed households were often more in the FI or EFI categories (Table 2). In Lesotho, households in the FS group were approximately 86% male headed. The proportion of male-headed households was comparable to the nearly 80% in Malawi and 91% in Zambia. The EFI households were predominantly female headed in Lesotho (74%). These proportions are very different when the comparison is made between hotspot and non-hotspot districts. For example, in Zambia, 86% of FI households in the hotspot districts were male headed, compared with 91% in the non-hotspot district.

Households in the FS group were more likely to live in 'modern' houses than those of the FI and EFI groups were. For example, in Zambia 38% of FS households in hotspot districts had modern houses compared with only 7% for the FI groups. The proportion of modern homes was higher at 54% for the non-hotspot district. Household size was larger in FS households than in EFI households, and FS households tended to have more access to arable and grazing land. Similarly, ownership of equipment and appliances was higher in FS households. These differences in asset holdings implied that households in the FS group were more capable of producing sufficient food for year-round consumption. For example, according to LVAC (2004)

the better-off category of communities have significant 'normal' levels of surplus food and cash, plus significant levels of livestock holdings and other stock and capital assets. These assets provided such households with reserves that could absorb shocks to their livelihoods.

Table 2. Household gender distribution and livestock asset status by food security classification in Lesotho, Malawi and Zambia, September 2006

	Food secure (FS)	Food insecure (FI)	Extremely food insecure (EFI)
Lesotho	Proportion of households (%)		
Male headed	86	56	26
Female headed	14	34	74
Livestock ownership	Average number per household		
Cattle	10.0	5.0	2.0
Oxen	–	–	–
Sheep	40.0	15.0	5.0
Goats	30.0	10.0	5.0
Pigs	5.0	3.0	1.0
Donkeys	2.0	1.0	0.5
Poultry	20.0	10.0	5.0
Malawi	Proportion of households (%)		
Male headed	80	80	80
Female headed	20	20	20
Livestock ownership	Average number per household		
Cattle	2.0	0.3	0
Oxen	–	–	–
Sheep	1.1	0.3	0
Goats	2.0	0.3	0.1
Pigs	0.8	0.6	0
Donkeys	–	–	–
Poultry	2.0	4.3	4.1
Zambia	Proportion of households (%)		
Male headed	91	86	61
Female headed	9	14	29
Livestock ownership	Average number per household		
Cattle	7.94	4.20	1.45
Oxen	1.36	0.72	0.15
Sheep	0.64	0.77	0.00
Goats	4.30	2.46	1.73
Pigs	0.35	0.25	0.03
Donkeys	0.28	0.10	0.00
Poultry	11.48	7.77	3.23

Source: Community census conducted during community mapping (September 2006).

Average livestock ownership was significantly higher in Lesotho and Zambia than in Malawi (Table 2). Like other assets, livestock asset ownership was higher in FS households than in FI households. For example in Lesotho, FS households owned 10 cattle per household

on average, compared with 2 head in the EFI households. Similarly, FS households in hotspot districts in Zambia owned an average of 8 cattle per household, compared with approximately 2 head in FI households. In Malawi EFI households owned no cattle, irrespective of whether they were located in hotspot or non-hotspot districts.

In all of the study countries many of the households in the EFI group did not report any significant holding of cattle. A few held small stock such as goats and poultry. For example, in Malawi, households in the EFI groups owned virtually no livestock except for small numbers of poultry. The Lesotho VAC characterizations suggest that poor households lack or have limited access to surplus food or cash plus very limited ownership of livestock holdings and other capital assets (LVAC 2004). Households in the FI and EFI groups with limited endowments of land, livestock or financial assets and livelihood opportunities often resorted to engaging in low return livelihood strategies for survival within the community or local economy. These households also tend to disproportionately depend on food aid and other relief and safety net interventions. Without safety nets, these households are more likely to fall into chronic poverty when shocks occur.

In Zambia, quite unlike Lesotho and Malawi, overall comparisons across district types suggested that households in hotspot districts had considerably fewer desirable attributes and indicators of adequate food security than households in the non-hotspot districts. For example, the households in the non-hotspot district had a (19%) higher probability of being male headed, at least six times as many cattle, twice as many oxen, six times as many pigs, three times as many poultry, and more than twice as many ox-drawn implements than did households in the two hotspot districts. Within each district type (hotspot or non-hotspot), household characteristics and asset ownership were also significantly better the more food secure the household was. These differences between hotspot and non-hotspot districts were much more evident in Zambia than in Lesotho and Malawi.

The magnitude of differences within food security groups was more pronounced in the non-hotspot district than it was in the hotspot districts. This is not because the FI households in the non-hotspot district were poorer than those in the hotspot districts; rather the FS households in the non-hotspot district were significantly richer than those in the hotspot districts. In some cases, the EFI households in the non-hotspot district exhibited better attributes and higher asset ownership than did FI households in the hotspot districts. Such differences call for caution in interpreting the food security classes and clearly identify the need to appreciate the relative nature of the categories.

The study suggests marked differences in ownership of productive assets, livelihood strategies and vulnerability between men and women. These findings are consistent with results from

other studies on vulnerability in southern Africa which show that women and female-headed households were more likely to be more vulnerable than the general population¹ (Ellis 2003).

1. It is important to make a distinction between *de jure* female household heads, who are single because they are widowed, divorced or separated, and *de facto* female household heads who are single because the husband has migrated somewhere but is generating income. A *de facto* female-headed household may be receiving remittances and therefore is less likely to be in the food insecure categories than a *de jure* female-headed household is.

4 Analysis of vulnerability

Vulnerability arises from the effects of household and community shocks. Dercon et al. (2005) define shocks as adverse events that lead to a loss of household income, a reduction in consumption and/or a loss of productive assets. In order to effectively design programs and intervention strategies for risk management and coping, it is necessary to understand shocks and their effects (Hoddinott and Quisumbing 2003). The effects of shocks can have adverse consequences on livelihoods. For example, Dercon et al. (2005) showed that experiencing a drought at least once a year in the previous five years reduces per capita food consumption by about 20%, while experiencing an illness reduces per capita consumption by 9%. Some shocks are longer lasting and more harmful to household and community efforts to smooth income and consumption (Dercon 2004). Economic fluctuations, climatic risks and individual-specific shocks cause severe hardships in a large number of households (Dercon 2002).

4.1 Sources of vulnerability

Effective emergency response options need to be informed by a solid understanding of the factors that drive rising vulnerabilities to food insecurity. The situation that leads to emergencies in southern Africa is complex with causes, triggers and responses closely connected (Ellis 2003). The results from the community surveys and secondary sources are used to identify key sources of vulnerability and their consequences on livelihoods in the study area.

4.1.1 Economic shocks

Trends in key economic and social indicators (such as per capita GDP, human development index and poverty headcount) over the past two decades suggest a consistent pattern of decline in the livelihood situations of households in all of the study countries. Such observed deteriorations in the livelihood circumstances of households can be attributed largely to growth and policy failures, poverty and loss of options for migration (Ellis 2003). The impact of worsening economic conditions is felt by the population at large, but it disproportionately affects vulnerable groups and vulnerable populations that have limited or low productivity assets to fall back on. Economic shocks include adverse changes in market prices of farm inputs and outputs. Some of these shocks arise from market liberalization policies, such as structural adjustment programs which sought to eliminate input subsidies. Important elements of such structural adjustment programs included disbanding crop parastatals or opening them up to private sector competition, eliminating price controls, liberalizing agricultural

trade, devaluating currencies, and imposing market exchange rates (Ellis 2003). All the study countries implemented structural adjustment programs during the 1980s and early 1990s.

In many cases, climatic shocks are closely related with economic shocks. A drought can lead to significant food price increases in markets where food is not extensively traded. In other cases, emergency interventions can depress staple food prices if there are large injections of food aid into affected areas (Ellis 2003; Tschirley et al. 2004). For example, LVAC (2006) determined that the drought in 2004 and 2005, which reduced maize production and yields, caused up to 20% increase in maize prices.

Elsewhere in the region, market prices continued to play an important role in signalling shocks. Generally, excessive price variability is a source of income risk for livestock producers (Pica-Ciamarra 2005). Price movements may follow changes in seasonal supply, trade flows, livestock diseases and other shocks, as well as production and consumption patterns. Around 2002, the drought in southern Africa saw livestock prices tumble and maize prices soar because many households were selling livestock in order to obtain money for food purchases. This led to rapidly increasing maize–livestock price ratios and worsening trends in the real value of livestock sales. The consequences of these price changes were reflected in severely depressed real household incomes and livelihood situations for large sections of the population, particularly among the poor and food insecure households.

In Malawi, the poor harvest in 2005 caused an imbalance of supply and demand resulting in high open market prices for maize, especially in the southern region (MVAC 2005). Monthly nominal maize prices for Kasungu District in Central Malawi and Chikwawa and Nsanje districts in southern Malawi for 2005 are shown in Figure 5. Maize prices increased steadily after July 2005, not only in the hotspot southern province districts of Nsanje and Chikwawa, but also in the non-hotspot district of Kasungu in Central Malawi, underscoring the consequence of a poor harvest in the face of increasing demand for staple foods (Figure 5). Many of the vulnerable groups identified in this study are likely to fall into chronic poverty in these types of situations.

After a good crop harvest in 2006, the Ministry of Agriculture and Food Security observed that retail maize prices fell in most local markets, especially in the first two weeks of June (FEWSNET 2006a). Under these circumstances, consumer households benefited from lower priced food that improved their livelihood improvement situations.

Movements in nominal monthly prices for goat meat in 2005 are illustrated in Figure 6. The relative stability in goat prices even after low rainfall or drought conditions can be explained by a lack of consumer demand under low supply conditions. Sometimes, vulnerable

households reduce their consumption of relatively high priced food items such as meat as a risk coping strategy.

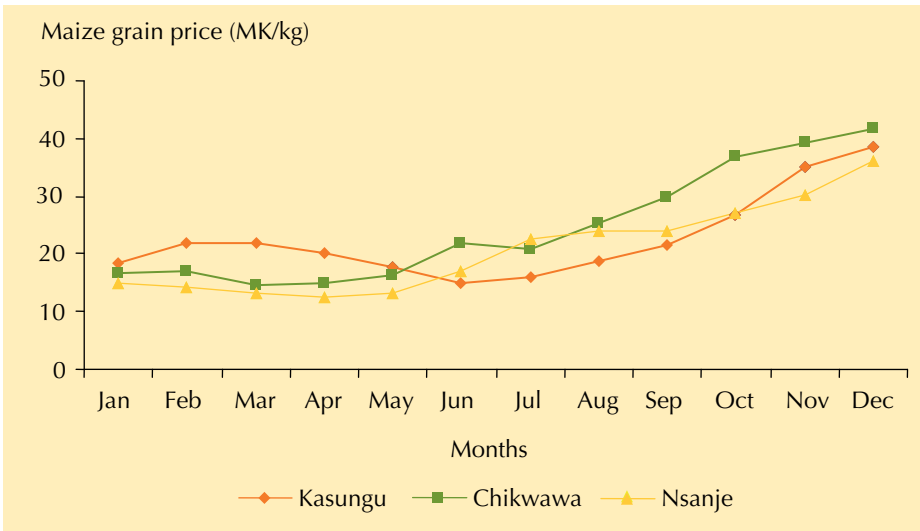


Figure 5. Nominal monthly maize prices in Malawi study districts, 2005.

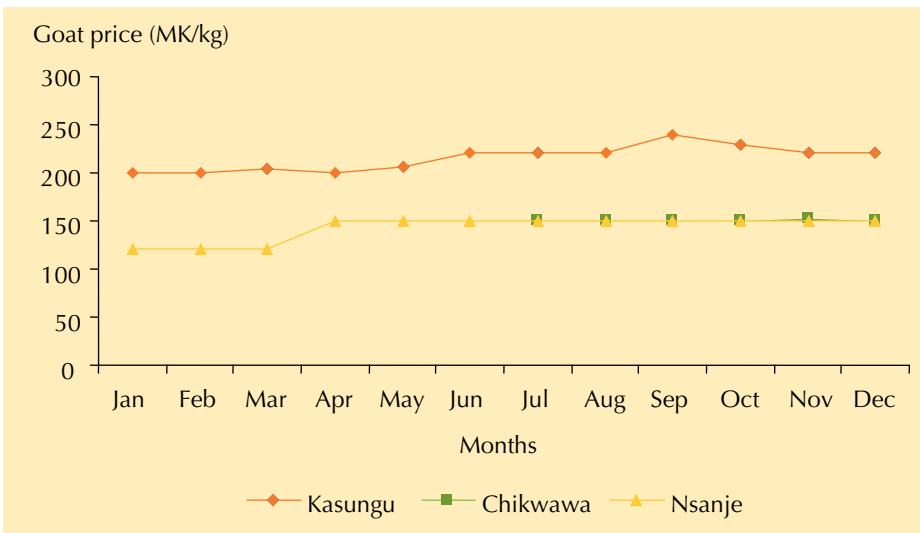


Figure 6. Nominal monthly goat meat prices in Malawi study districts, 2005.

Although the food security situation in Zambia has improved since the last drought in 2004/2005, maize prices have remained very low, affecting the ability of poor farmers to generate income and improve their livelihoods (FEWSNET 2006b).

4.1.2 Climatic shocks

In southern Africa, erratic weather or extreme climatic conditions were mentioned as the most common sources of risk in all of the case study sites. Climatic shocks included droughts, floods, snow and early frost in Lesotho, and droughts and floods in southern Malawi and southern Zambia. Droughts are quite common in Lesotho's hotspot districts of Mohale's Hoek and Thaba Tseka, occurring several times in the last five years. Monthly changes in precipitation in Lesotho in 2005 are illustrated in Figure 7. The period from June to September, which includes the planting season, showed a pronounced drought that delayed maize planting and resulted in low maize yields and production. LVAC identified this event as one of the major sources of vulnerability in 2005 (LVAC 2006).

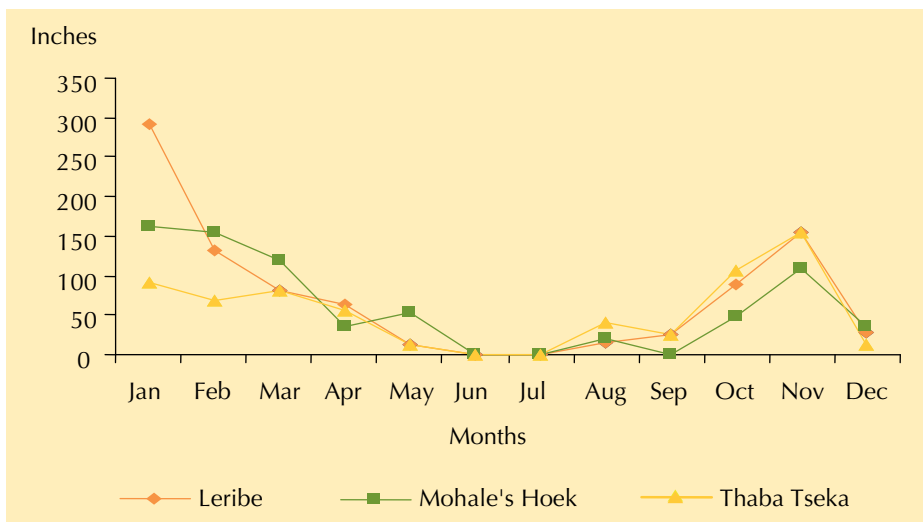


Figure 7. Monthly rainfall in Leribe, Mohale's Hoek and Thaba Tseka districts in Lesotho, 2005.

In Malawi, floods were mentioned as a regular feature of the Lower Shire River. In this area, a network of capillaries inundates large parts of the catchment area, destroying houses, disrupting livelihoods and damaging infrastructure. The frequency of floods has increased in the hotspot district of Chikwawa. For example, before 2001, Lundu Village experienced floods once in four years; this rose to a total of five times in four years between 2002 and 2006. Focus group and village headman interviews also revealed that prolonged dry spells were also quite common in Chikwawa District.

The findings on droughts in Malawi were similar to those of the other study countries. High frequencies of drought have been recorded in Zambia, especially in Sinazongwe, but also in the non-hotspot district of Namwala. In Sinazongwe, it was estimated that drought occurred

on average once every three years. Floods were frequent in Sinazongwe and Kazungula. The effects of floods were most visible and publicized in Sinazongwe District.

The effects of these extreme climatic conditions were multi-dimensional and similar across the region. Droughts resulted in reduced livestock watering and grazing opportunities, as well as in reduced crop production and low yields. Households that depend on livestock keepers and crop incomes for wage employment, trade and service provision, also face declining incomes when a drought occurs due to falling demand for labour and other goods and services. Floods in Malawi resulted in reduced agricultural production because the most fertile land is proximate to the rivers. During the floods in Zambia, crops were washed away, leaving households with declining and inadequate food stocks.

4.1.3 Loss of livestock

Livestock diseases were identified as important sources of vulnerability in several locations. For example, in Lesotho sheep scab was reported as a common livestock disease that reduced the quality of wool produced, lowered prices and caused economic losses to sheep producers. Other diseases such as blue-tongue in small ruminants led to widespread losses of livestock assets. As in Lesotho, animal diseases ranked among the most important shocks to community and household livelihoods in Malawi. The increasing incidence of livestock diseases was an important cause of livestock losses and declining household asset status. In Malawi, where chickens were cited as the most important livestock held in the study areas, many farmers have lost some stock to Newcastle disease. Households reported that livestock populations also declined because of forced livestock sales to buy food, to pay for health care expenses, and to meet other household needs when shocks occurred. In many communities, households reported increasing incidents of stock theft.

In Zambia, livestock diseases ranked alongside droughts and floods as among the most important sources of risk. Disease was also singled out as the most important constraint to livestock production because a number of outbreaks in the last 10 years had drastically reduced the number of livestock in most of the study communities, especially in the hotspot districts. The diseases most widely mentioned were the tick-borne Corridor disease in cattle (assumed to be *Theileria parva* infection), mange (a skin disease in goats) and an epilepsy-like disease that affected chickens. As a result, many livestock died in both reference periods (one year ago and five years ago). In Sinazongwe, households continue to lose goats to mange. Households reported limited disease surveillance or assistance with disease outbreaks.

4.2 Livestock service delivery

The surveys revealed a broad decline in livestock service delivery in all of the case study countries. The decline in institutional support services for livestock was, however, most acute in Malawi and Zambia. Livestock services mentioned in the surveys included advice on health and production matters, and access to rangelands, pastures, dip tanks and markets. Veterinary advice to farmers involved implementation of disease control measures such as vaccinations, veterinary clinic work and surveillance of major zoonotic diseases. Animal production officers conducted farmer training on livestock management practices and procured improved livestock breeds. These findings were especially true for Lesotho, and less so for Malawi and Zambia. Both animal production and veterinary officers claimed to cover about 70% of farmers in the districts in Lesotho. In Malawi, less than 5% of farmers were served in the study locations, with inadequate staffing and lack of drugs being mentioned as the major problems in livestock service delivery.

In Lesotho, constant delays in the provision of livestock services were reported due to protocol requirements involving chiefs and local government officials. In all countries, the unavailability of drugs to treat animal diseases, the lack of money to purchase drugs and staff shortages in veterinary departments were all major constraints to livestock service delivery. Dipping facilities were available in Lesotho and Zambia, even though many households reported problems with accessing dip tanks. For example in Lesotho, the dipping facilities serviced small ruminants but not cattle. In Zambia, the poor state of the veterinary infrastructure made it difficult to upgrade and use dipping services. The study found little or no use of dipping services in Malawi.

Livestock farmers in Lesotho generally had good access to rangelands which are controlled by the chiefs. However, the carrying capacity and quality of rangelands have declined over the last 10 years due to overgrazing. Supplementary feeding was not reported as a common practice, but watering facilities were adequate in the mountains of Lesotho. In Malawi, access to pasture, pasture quality and watering facilities were rated as poor by farmers.

In Lesotho, there were government-organized markets for livestock products such as wool and mohair, but not for meat and other livestock bi-products. Related services included shearing woolsheds at every agricultural centre, assistance with wool and mohair quality grading, packaging and transportation. Such services were not available in Malawi and Zambia, as wool and mohair markets do not exist. Farmers in Malawi rated access to markets for livestock products as poor. Most transactions were conducted with local butchers who reportedly paid low prices. The availability of transport made it possible to access market locations for meat and meat products in urban centres. Households reported that credit

facilities to livestock farmers were severely limited in Lesotho and virtually non-existent in Malawi and Zambia.

In the Chikwawa District in Malawi, a novel approach to the provision of livestock services involved the establishment of the Chikwawa Livestock Association to combat theft by offering ownership certificates and movement permits. This practice was not found in Lesotho and Zambia, where livestock theft was also reported a problem.

The poor state of veterinary infrastructure and the limited availability of drugs in Lesotho had led to a move by government to privatize veterinary services. However, funding was a major bottleneck for this initiative. Farmers wanted improved breeding stock to guarantee quality products for meat and wool. As a means of job creation, communities requested assistance with commercial poultry production and pig fattening. Priority areas in which Malawi farmers require government and non-governmental organization (NGO) assistance include restocking, water rehabilitation, livestock management advice, veterinary medicine packs and dip tank rehabilitation.

5 Response to shocks

In Africa, recurrent drought, human and animal health risks, pests, commodity shocks, political strife, conflict and many other sources of risk require households and policy makers to make managing and responding to risks a high priority (Dercon 2005). The strategies used may depend on the nature of the risk. It is useful to distinguish between household-level and community-wide risks and shocks when designing interventions to deal with the consequences of a shock. In the surveys several households reported that they had faced a mixture of household-level and community-wide shocks within the past five years. As noted earlier, individuals, households, and communities can manage risk by responding before the shock or risky event occurs (*ex ante* risk management) or after the risky event is realized (*ex post* risk coping).

5.1 *Ex ante* risk management strategies

Early warning systems played an important role in managing risks in Lesotho, but they were not widely used elsewhere in the region. The Lesotho Meteorological Services (LMS) and the Disaster Management Authority (DMA) usually provide early warnings in times of impending climatic shocks. The LMS provides seasonal weather forecasts while the DMA advises communities on what strategies should be put in place. For example, if the LMS forecasts drought, DMA may advise farmers to grow drought-resistant crops like sorghum and sunflower. If the LMS forecasts snow, DMA advises farmers to restrict livestock movement to lower elevations and to stockpile fodder and fuel. These are a combination of direct and indirect strategies designed to help household manage risk by providing a buffer to their income and consumption and ensuring that livestock assets are not depleted when a shock occurs. The ability of communities and households to benefit from this type of advice depends on their asset status and level of education. FS households were more likely to be able to comply with advice from early warning systems because they have resources and access to the appropriate media through which this information is disseminated. The FI and EFI groups had a lesser ability and were less likely to benefit from early warning information because of their limited asset status, such as not being able to afford a radio.

FS households also cited livestock dipping or vaccination, diversifying crops grown and accumulating livestock assets as important risk management strategies. Conversely, most of the vulnerable households reported managing risks mainly through remittance income, wage labour on other farms, and other off-farm employment activities. The *ex ante* risk management strategies identified in the surveys are presented in Table 3 under five general categories: use of early warning systems; accumulation of livestock assets; crop diversification; dipping/vaccinating animals; and diversifying sources of income through activities like working for a wage on other farms and off-farm employment.

Table 3. Ex ante household risk management strategies by vulnerability status

Risk management strategies	Vulnerability/food security status					
	Food secure (FS)		Food insecure (FI)		Extremely food insecure (EFI)	
	Ratings of risk management strategy					
	Used by household?	Relative importance	Used by household?	Relative importance	Used by household?	Relative importance
Lesotho						
Early warning systems	Yes	1	Yes	2	No	
Accumulate livestock assets	Yes	1	No		No	
Diversify crops in field	Yes	1	Yes	1	Yes	2
Dipping/vaccinating livestock	Yes	1	Yes	1	Yes	2
Diversify income sources:						
• Wage labour on other farms	No		Yes	1	Yes	1
• Off-farm employment; salaried employment	Yes	1	Yes	1	Yes	1
• Non-farm business; migration to other places	No		Yes	2	Yes	2
• Remittance income	Yes	2	Yes	1	Yes	1
Malawi						
Early warning systems	No		No		No	
Accumulate livestock assets	No		No		No	
Diversify crops in field	No		No		Yes	3
Dipping/vaccinating livestock	No		No		No	
Diversify income sources						
• Wage labour on other farms	Yes	2	Yes	1	Yes	1
• Off-farm employment; salaried employment	No		Yes	3	No	
• Non-farm business; migration to other places	No		Yes	2	No	
• Remittance income	Yes	3	Yes	3	Yes	3
Zambia						
Early warning systems	Yes	3	No		No	
Accumulate livestock assets	Yes	2	Yes	2	No	
Diversity crops in the field	Yes	1	Yes	1	No	
Dipping/vaccinating livestock	Yes	1	Yes	3	Yes	3
Diversify income sources						
• Wage labour on other farms	No		Yes	1	Yes	1
• Off-farm employment; salaried employment	Yes	1	Yes	1	Yes	1
• Non-farm business; migration to other places	Yes	2	Yes	2	Yes	2
• Remittance income	Yes	2	Yes	1	Yes	1

Source: Community census conducted during community mapping (September 2006).

Note on ranking/relative importance: 1 = very important; 2 = somewhat important; 3 = not important.

In Malawi, the most important *ex ante* risk management strategy in response to impending climatic shocks was performing piece work on other farms for cash to buy food, particularly among FI and EFI households. Many households reported declining income from agricultural wage work over the past five years because the increased frequency of community wide shocks, such as droughts, affect entire communities, causing widespread crop failure and a drastic reduction in the demand for agricultural labour. Limited demand for agricultural labour is translated into sharp declines in wage employment and household income with adverse livelihood effects among the most vulnerable groups in society. Crop diversification was also mentioned as a risk management strategy by EFI households and migration to other less affected areas by FS households. Remittance income was mentioned by all food security categories, but it was not cited as an important risk management strategy.

Several communities in Zambia felt that they could not anticipate the occurrence of the most frequent shocks—drought, livestock diseases and floods—because early warning systems were non-existent or rarely used to manage risks. The most important risk management strategy cited for livestock diseases was dipping/vaccinating animals. In all the three districts, the EFI category scored this as less important than those in the more secure categories. This could be because the EFI households owned fewer animals (or none at all) that needed dipping or vaccination. Households reported that the ability of communities to effectively take action against animal disease outbreaks was significantly impeded by poor veterinary infrastructures (including dilapidated or non-functioning dip tanks), inadequate veterinary support services and expensive or unavailable veterinary drugs. Other important strategies were crop diversification among the less vulnerable and off-farm employment by all groups.

Community suggestions for managing risk included dipping/vaccinating animals, constructing dams/irrigation facilities, taking animals to the plains for grazing, planting early maturing maize, using conservation farming and dividing the animal herd to graze in different locations so that in the event of a disease outbreak in one herd, animals in other herds would be unaffected.

The survey findings suggest that different communities in southern Africa rely on different *ex ante* risk management strategies. Understanding the nature of the different types of shocks that households are vulnerable to and their abilities to manage risks is extremely valuable in designing effective risk response strategies in emergency situations.

5.2 Risk coping strategies

Farmers cited several strategies they use to cope when risky events or shocks occur. Risk coping strategies are presented under two major categories: strategies that are designed to protect consumption and strategies that merely modify consumption (after Devereux 1993, 2006). Devereux's framework is modified slightly by adding livestock-specific strategies to the range of coping strategies. The strategies reported by households in Lesotho, Malawi and Zambia are presented in Tables 4, 5 and 6, respectively.

Table 4. Household risk coping strategies by vulnerability status in Lesotho

Risk coping strategies	Vulnerability/food security status					
	Food secure (FS)		Food insecure (FI)		Extremely food insecure (EFI)	
	Used by household?	Relative importance	Used by household?	Relative importance	Used by household?	Relative importance
Purchase food						
Sell assets to buy food	Yes	2	Yes	1	Yes	1
Use cash income to buy food	Yes	3	Yes	3	Yes	3
Borrow food	Yes	1	Yes	1	Yes	1
Receive food						
Remittance	Yes	2	Yes	1	Yes	1
Charity/Food aid	No		Yes	1	Yes	1
Reduce consumption						
Eat smaller portions	Yes	3	Yes	2	Yes	1
Eat fewer meals/day	No		Yes	2	Yes	2
Diversify consumption						
Eat wild foods	Yes	3	Yes	1	Yes	1
No meat or fish/reduce	No		Yes	2	Yes	2
Reduce consumers						
Children go to relatives	No		No		Yes	1
Adults migrate	No		No		No	
Livestock strategies						
Grow fodder	Yes	1	Yes	1	Yes	1
Sell livestock to buy food	Yes	1	Yes	1	Yes	1
Acquiring vet services	Yes	2	Yes	2	Yes	2
Moving animals to better climatic conditions	Yes	2	Yes	2	Yes	2

Source: Community census conducted during community mapping (September 2006).

Note on ranking/relative importance: 1 = very important; 2 = somewhat important; 3 = not important.

Table 5. Household risk coping strategies by vulnerability status in Malawi

Risk coping strategies	Vulnerability/food security status					
	Food secure (FS)		Food insecure (FI)		Extremely food insecure (EFI)	
	Ratings of risk coping strategy					
	Used by household?	Relative importance	Used by household?	Relative importance	Used by household?	Relative importance
Purchase food						
Sell assets to buy food	Yes	2	Yes	1	Yes	1
Use cash income to buy food	Yes	3	Yes	3	Yes	3
Borrow food	No		Yes	2	Yes	2
Receive food						
Remittance	Yes	3	Yes	3	Yes	3
Charity/Food aid	No		Yes	2	Yes	1
Reduce consumption						
Eat smaller portions	Yes	2	Yes	2	Yes	3
Eat fewer meals/day	Yes	1	Yes	2	Yes	3
Diversify consumption						
Eat wild foods	Yes	2	Yes	3	No	
No meat or fish/reduce	No		Yes	3	Yes	3
Reduce consumers						
Children go to relatives	No		Yes	2	Yes	2
Adults migrate	No		Yes	2	Yes	2
Livestock strategies						
Grow fodder	No		No		No	
Sell livestock to buy food	Yes	3	Yes	3	Yes	3
Acquiring vet services	No		No		No	
Moving animals to better climatic conditions	No		No		No	

Source: Community census conducted during community mapping (September 2006).

Note on ranking/relative importance: 1 = very important; 2 = somewhat important; 3 = not important.

In Lesotho, the most important risk coping strategies used by FS households included borrowing food or cash from relatives and neighbours, selling livestock assets and growing fodder. These households had access to loans, hence they could afford to build small dams in the homesteads to water vegetables, build covered shelters for livestock or move livestock to lower elevations and river valleys during snowfalls. The more vulnerable households reported that they usually required assistance such as cash and food aid from relatives, neighbours, government and NGOs. Selling assets such as livestock and other physical commodities was reported as an important coping strategy during climatic shocks. This strategy, however, depletes livestock holdings and overall assets status and hence reduces potential household income. Several households reported that building livestock herds after a shock can

potentially be a very important intervention strategy to both manage and cope with risky events.

Table 6. Household risk coping strategies by vulnerability status in Zambia

Risk coping strategies	Vulnerability/food security status					
	Food secure (FS)		Food insecure (FI)		Extremely food insecure (EFI)	
	Ratings of risk coping strategy					
	Used by household?	Relative importance	Used by household?	Relative importance	Used by household?	Relative importance
Purchase food						
Sell assets to buy food	No		No		Yes	2
Use cash income to buy food	Yes	3	Yes	3	Yes	3
Borrow food	Yes	3	Yes	3	Yes	3
Receive food						
Remittance	Yes	3	No		No	
Piece work for food	Yes	2	Yes	1	Yes	1
Relief/Food aid	Yes	1	Yes	1	Yes	1
Reduce consumption						
Eat smaller portions	Yes	2	Yes	2	Yes	2
Eat fewer meals/day	Yes	2	Yes	2	Yes	2
Diversify consumption						
Eat wild foods	Yes	3	Yes	2	Yes	3
No meat or fish/reduce consumers	Yes	3	Yes	3	Yes	3
Reduce consumers						
Children go to relatives	No		No		Yes	3
Adults migrate	No		No		No	
Livestock strategies						
Grow fodder	No		No		No	
Sell livestock to buy food	Yes	3	Yes	1	Yes	2
Acquiring vet services	Yes	1	Yes	2	No	
Moving animals to better climatic conditions	Yes	2	Yes	2	Yes	3

Source: Community census conducted during community mapping (September 2006).

Note on ranking/relative importance: 1 = very important; 2 = somewhat important; 3 = not important.

In Malawi, the most important risk coping strategies used by FS households included eating fewer meals and selling firewood. These households also used strategies such as collecting wild fruits for food, reducing spending on non-food items and eating smaller portions of meals. FI households reduced spending on food items, sold other assets to buy food, and sent their children out to work. The EFI households used a wide range of coping strategies, mainly

'out of desperation'. These included, but were not limited to, those used by the other food security groups as well as seeking work in urban areas, borrowing food or cash to buy food, sending children to live with better-off relatives, hunting and fishing.

In Zambia, the two major livestock-related coping strategies were shifting animals to better grazing grounds (in the case of a drought) and purchasing veterinary drugs. In general, the more food secure a community was, the greater the proportion of households that bought veterinary drugs in both the hot spot and non-hot spot districts. Acquiring veterinary services and buying feed for animals were not cited as important coping strategies. Households reported using their income for immediate food needs rather than for restocking.

Important risk coping strategies included selling livestock to raise money for food, engaging in small business activities and carrying out other income-generating activities. Households in different food typologies reported using different coping strategies. All the food security groups in the non-hotspot district (who are relatively better off than those in the hotspot districts) reported relief food and piece work as important coping strategies more frequently than the hotspot districts did. This surprising finding could be because these households expected some form of assistance to come from this research and wanted to appear more vulnerable than they really were.

5.3 Informal transfer strategies

The absence of formal risk management institutions or strategies in low income high risk environments has encouraged households to rely on a combination of self-insurance and informal risk sharing arrangements (McPeak 2006). For example, the Forum for Food Security in Southern Africa (FFSSA no date) suggests that informal jobs are not merely a substitute for formal jobs, but they also serve as supplements for formal employment because formal employment rarely ensures adequate means of livelihoods.

Informal transfers are very common among vulnerable groups, households and communities in southern Africa. FS households in Lesotho cited informal transfers, such as obtaining cash loans from relatives, neighbours and money lending organizations. These households tend to rely more on such informal transfers than the FI and EFI households. Vulnerable households in the FI and EFI categories reported that they depended less on informal transfers because they had limited networks of well-to-do relatives and neighbours. These households, however, cited gifts from relatives and neighbours, and providing labour as in-kind payment as important informal transfers. In recent times HIV/AIDS support groups have been established in villages to assist in caring for chronically ill people. These support groups provide care, food and medicines to the sick.

In Malawi, informal transfers are very important and all food security groups used one form or the other in the past year. The FS households had accepted food or grain gifts at least three times in the study year and four times the previous year. Food and grain gifts were also very important in FI households, but less so among EFI households. FI households received seed gifts and wage employment on other farms as informal transfers. In addition to these, the EFI households reported taking grain loans.

In Zambia, commonly cited informal transfers included grain loan, food or grain gift, cash loan, free labour, seed loan, free use of oxen or plough and seed gift. FS households cited grain loan, food or grain gift, livestock gifts to newlyweds, free labour and cash loans as important informal transfer strategies. In FI households, the most frequently cited informal transfer was free labour and free use of oxen or plough. Other important informal transfer strategies are seed loan, help from family members and the church community. In EFI households, seed gift was cited as the most important informal transfer followed by help from family, meat distribution and working on other peoples' farms for a wage. In almost all of these cases, this assistance was received in the study year and the previous year.

5.4 Formal transfer strategies

Formal transfers in the form of food aid, restocking programs and the delivery of seed and fertilizer (from governments, NGOs, and relief and development agencies) provide important safety nets for poor people. While vulnerable households and communities tend to rely on formal transfers or social protection programs, it is not clear whether, and in what cases, informal risk management and coping strategies and formal transfers are complementary and mutually reinforcing (Ellis 2003).

Households in the FS group reported that they were mostly excluded from formal transfers from governments, NGOs and relief and development agencies because they could not meet the eligibility criteria set by these institutions. Many aid agencies use asset or wealth status as a yardstick for distribution of food aid and other transfers. In Lesotho, potential recipients are required to register with the chief/headman before they can qualify for receiving formal transfers. Even though the wealth status of many FS households disqualifies them from receiving formal transfers, they still get access to free or subsidized commodities or agricultural inputs (such as seeds and fertilizers) when FI and EFI households sell them in the open markets. FS households may also get access to livestock drugs during major disease outbreaks.

Food aid was reported as the most important formal transfer instrument in responding to risky events that affect vulnerable households and communities. Most of the food aid is from the United States of America and the European Union and its distribution is coordinated by

WFP. The WFP uses the services of NGOs such as World Vision and the International Red Cross/Red Crescent to distribute food aid to needy communities. The WFP sets the criteria for food aid recipients, with most food aid going to vulnerable households. Food aid comes in different forms. In some instances, communities are given free food while in others the aid is delivered through food-for-work initiatives in development projects. There are also instances where communities participated in cash-for-work projects such as the Lesotho Fund for Community Development. In some cases governments and development agencies distribute subsidized seeds and fertilizer, while NGOs provide free agricultural inputs to vulnerable groups. There are social protection programs that are usually targeted at those for whom traditional coping mechanisms are not likely to work very well (e.g. the most vulnerable households). In some cases such formal transfers have induced multiplier effects in communities (Francis 2002).

In Malawi, especially in Nsanje and Chikwawa districts, formal transfers have included food-for-work and cash-for-work projects. Households in all food security categories reported that they received these types of formal transfers in the year before this study and that they were very important in saving lives and livelihoods during emergency situations. Other very important formal transfers included food aid for vulnerable households. FI and EFI households reported receiving food aid, in some cases, for about nine months in 2005.

In Zambia, formal transfer instruments included food aid, food-for-work, cash-for-work, free cash, free fertilizer, free seeds, free livestock drugs, seeds and tools, credit from NGOs, livestock restocking, credit from banks and veterinary services. Among FS households, the most important formal transfers included livestock restocking, food-for-work, food aid, free livestock drugs and cash-for-work. Among FI households, the most important formal transfers were free livestock drugs, food-for-work, food aid and credit from banks, in decreasing order of importance. Food aid, food-for-work, free livestock drugs and help to restock livestock were cited as important formal transfers among EFI households.

6 Synthesis of key findings on livelihoods, vulnerability and livestock

The study showed that households in southern Africa are exposed to a variety of shocks or risky events with cumulative impacts that can trigger an emergency. Households have different capabilities to respond to these shocks, which in many cases involve using their own assets, strategies and social networks. The outcomes differ among food security groups and between hotspot and non-hotspot areas. Effective emergency response options to address vulnerability to food insecurity need to be based on a clear understanding of the complexity and diversity of household capabilities, activities and circumstances that lead to specific outcomes.

6.1 Identifying the vulnerable

The study provides evidence that FS and FI households exhibit different abilities to insure against risky events, primarily because of differences in ownership of critical assets and capacity to manage risk. Some groups were more vulnerable than others. Gender was an important factor that explained differences in vulnerability across different social groups. In general, women were often more vulnerable to food insecurity than men were across all the study sites. Women, particularly the elderly, widowed and divorced women, and female-headed households, were disproportionately represented among vulnerable groups due to lack of key assets such as land and livestock, labour constraints to cultivate their fields, and non-existent or loss of supplementary income from a partner. Such marked gendered differences in asset ownership, asset productivity, and livelihood strategies often increase the vulnerability of women to a range of shocks that forces them into chronic poverty. Targeted interventions that provide safety nets and productive fall back options for such vulnerable groups would enhance the robustness of their livelihoods.

6.2 Main sources of risk and vulnerability

Community-wide shocks such as drought, floods, widespread crop failure and animal diseases were ranked highly by households across all locations and in all food security groups.

6.2.1 Drought

The main source of shock facing the sample households is drought. It can be characterized as a 'slow onset shock' with cumulative impacts on household assets and activities that are manifested over time. Community-wide shocks such as crop failure induced by drought

can reduce the quantity of assets and productivity of both FS and FI households. However, the outcome from exposure to such shocks, in terms of welfare loss, are multiple and tend to disproportionately affect FI households with limited holdings of all type of assets. For example, in addition to the loss of productive assets such as livestock, FI households are also more likely to lose wage income opportunities when there is widespread crop failure. Several countries in southern Africa have set up early warning systems and are now coordinated as a regional system (FEWSNET) under SADC to mitigate the impact of drought. However, taking action or following up on data and information coming out of early warning systems in a timely manner and with the urgency it deserves still remains a challenge in preventing widespread disaster when droughts occur in the region.

6.2.2 Animal diseases

The increasing incidence of animal diseases is an important cause of livestock losses and declining productivity from livestock assets. In each of the three countries studied, animal diseases constrain livestock enterprises, but they often do it in different ways. There are firstly those diseases that affect the fundamental livestock assets of the poor, and some of these can be the cause of shocks while others may exacerbate vulnerability to non-disease shocks. Of particular importance in this category are those diseases that cause high levels of mortality in species of critical importance to livelihoods. This includes, for example, Newcastle disease in poultry and epidemic waves of the disease that can wipe out household stocks of poultry. Furthermore, the risk of Newcastle disease outbreaks can also act as a deterrent to the use of eggs for consumption, as smallholders try and conserve them for increasing the chick population. Secondly, there are those that affect market access for livestock products and these fall into two categories: those diseases in which human disease can be caused by consumption of meat or milk products (such as cysticercosis of pigs) and those spread by movement of animals or livestock products, such as foot-and-mouth disease (FMD) of ruminants and pigs. Thirdly, there are the diseases that constrain improvements in productivity and these include those that are more pathogenic in non-indigenous breeds of livestock increasingly used to improve performance (such as the tick-borne disease East Coast fever (ECF) of cattle in Zambia and Malawi).

6.2.3 Institutional support for service delivery

Institutional weaknesses in service delivery are a third source of increasing vulnerabilities in southern Africa. In all the case study countries there was declining public support for livestock advisory and veterinary services and production support for animal husbandry. Where they existed these services faced serious funding and human resource constraints which reduced their efficacy and accelerated their decline. Limited market opportunity and

high transaction costs also meant that private veterinary services were concentrated in areas where risks were low and the returns to investments were relatively high and stable. This uneven delivery of animal health services and production support contributes to the rising vulnerability of large groups of people when there are serious livestock disease outbreaks. Such policy gaps suggest an urgent need to design and implement innovative service delivery instruments that will reduce the cost of access to basic services such as veterinary and animal production services for vulnerable groups. Institutional innovations involving the public and private sector and civil society can provide alternative cost-effective mechanisms for delivering services to vulnerable people. These initiatives, however, should not undermine private sector response but rather aim at promoting development of private enterprise.

6.3 Shocks and their effect on livelihoods and vulnerability

The analysis above shows that individuals and households faced a mixture of shocks that can trigger emergency response. Using the livelihood frameworks, shocks can affect household asset positions, the activities they engage in to make a living and the context that defines the opportunities for income generation. Shocks that affect household assets include drought; this leads to a loss in livestock assets, reduced grazing areas for livestock and reduced availability and productivity of labour, a situation compounded where there is a high prevalence of HIV/AIDS. In cases where shocks cause children to be taken out of school the livelihood impact is long term, because such action can erode their human capital and reduce their future earning capability. Reduced wage income opportunities following a climate-induced disaster and loss of remittance income from declining options for migration (as was reported in Lesotho and Malawi from the decline in migration to South African mines) are both examples of the impact of shocks that affect livelihood activities. Shocks that affect the livelihood context include those that destroy physical infrastructures such as roads, disrupt the functioning of markets, increase market risks and weaken the delivery of agricultural advisory, extension and veterinary services. The effects of shocks can influence some or all of the components of the livelihoods framework and in some cases can be felt over different time periods. In many cases, the cumulative effects of these shocks on household assets, activities and livelihood contexts is manifest by chronic poverty and food insecurity for large sections of the population in the case study countries.

The analysis of household risk management and coping strategies shows that the majority of households recover from shocks by building up and selling the assets they own and through their social networks. Household risk management strategies are often supplemented with food aid, particularly among FI households. FS households use a wider range of options to manage risks before shocks occur. These risk management strategies largely involve building up assets and diversifying activities on- and off-farm. Households frequently resort to coping

strategies that deplete household assets, such as livestock, with severe consequences on their existing and future livelihood. Such negative coping strategies include the distress sale of livestock when a drought hits and the associated loss of access to meat and milk. Distress livestock sales often cause a steep decline in livestock prices and a collapse in household incomes. Food prices also soar because of widespread livestock sales to purchase food. Several households are unable to recover from shocks through replenishing their herds in the aftermath of a drought because livestock prices increase sharply. FI households, particularly women and women-headed households with limited asset holdings are more likely to suffer from the consequences of negative coping strategies. These households tend to be amongst the most vulnerable and are often characterized as being in a state of chronic food insecurity.

6.4 Response options to help reduce risk and improve management of vulnerability

The findings from this analysis suggest that effective responses in emergency situations should help households preserve their livestock assets and avoid coping strategies that deplete critical assets such as livestock. The livelihood impacts arising from a shock may or may not lead to a food security crisis that is life-threatening. The likelihood that a shock will lead to an emergency situation depends on:

- The characteristics of the shock. This includes its magnitude, severity of impact on assets and livelihood activities, duration, geographic scope, type of crisis context (slow or rapid onset), effect on markets and input and output prices;
- The status and trends in household food security before the shock;
- The severity and history of threats to human life;
- The likelihood of permanent negative impacts that sharply reduce the ability of households to respond to recovery and development interventions in the short to medium term (Hoddinott 2006; Tschirley et al. 2006).

These factors should be key considerations when designing relevant and effective emergency response options.

7 Recommendations for design and implementation of emergency response

The following recommendations follow from the study findings, literature review and best practice in designing and implementing responses to save lives and livelihood in emergency situations.

7.1 Key design issues

7.1.1 Livelihood analysis and vulnerability assessment

A sound analysis of livelihoods and vulnerability is an important first step in designing livestock interventions in emergency programs and projects. This analysis should provide insights into household assets and livelihood strategies (taking into account different categories of poor people and vulnerable groups and gender differences—male- and female-headed households as well as gender differences within households). The analysis should examine the policy, institutional and vulnerability contexts, how they are affected by different types of emergencies and the impact on current and future risk responses, livelihood strategies and well-being. The livelihood analysis should explore the role of livestock in livelihoods, what households and which members of the household—male versus female—own what type of livestock species, the income from different types of livestock, how decisions about livestock production and marketing are made within households and how different shocks affect livestock assets.

It is important to consider livestock interventions from a broader livelihoods framework when designing emergency interventions because households and household members own different types of assets, pursue multiple and diverse livelihood strategies and differentially use specific livestock species for risk management and coping strategies. For example, chickens tend to be used mainly as a coping strategy, particularly among poorer households while diversification involving small ruminants and cattle is mostly used to manage risks before shocks occur. The multi-dimensionality of livelihoods also implies that each livelihood activity generates opportunities and constraints on others. For example, households that depend on migration for their livelihoods may not be able to invest time and money in intensive livestock keeping. Emergency interventions that exploit complementarities in livelihood activities and minimize competition within livelihood objectives of households are likely to be more attractive. The design of livestock-based interventions in emergency situations therefore needs to pay more attention to the opportunities and constraints implied by household behaviour.

A detailed analysis of these issues based on methods that systematically combine spatial, quantitative and qualitative approaches in repeated cross-sectional surveys or multiple

observations over time (panel data) would provide a solid analytical basis for designing and implementing livestock-based interventions to support livelihoods in emergency situations.

7.1.2 Linking livelihood analysis to program design

It is necessary to have clear links between livelihood and vulnerability analysis and program design and implementation to ensure that the objectives set are clear and realistic, and that targeting is effective and helps identify key areas and indicators for monitoring and evaluation. Strengthening the links between livelihood analysis and the design and implementation of emergency interventions involves (a) clarifying the objectives for emergency interventions and (b) generating a broad range of options that can be used to design an emergency response.

Clarifying objectives for emergency responses

An important consideration for agencies working in emergency situations is to match goals for saving lives and protecting current and future livelihoods with appropriate emergency response in specific crisis contexts. Three general goals that can guide interventions during an emergency have been identified (Tschirley et al. 2006). Livestock specific objectives in emergency situations may include:

- Directly minimize the risk of selling livestock assets when a slow onset shock, such as drought, occurs.
- Reduce the cost of access to livestock support services, such as veterinary services, for households, particularly among vulnerable groups and populations.
- Ensure strong and adequate response by the private sector, such as commercial de-stocking, to maintain the real value of livestock and relatively stable livestock/food prices.

In a slow onset shock, such as drought, appropriate emergency responses will need to vary depending on the phase of the crisis. During the early drought phase markets are still functioning but households are experiencing declining incomes and returns to assets. A primary goal in this phase is to ensure that markets continue functioning effectively with appropriate incentive to the private sector to drive commercial de-stocking activities at relatively stable prices. During the acute phase of a drought emergency response goals should focus on minimizing the risk of distress livestock sales, loss of livestock assets, and avoiding irreversible depletion of household assets. In a rapid onset emergency the primary goal is timely response to minimize the risk of distress livestock sales and loss of livestock assets.

Generating emergency response options

Program designers need to have a 'tool kit' of emergency response options which they can use to design interventions that save lives and protect livelihoods in emergency situations.

Conceptual frameworks such as the livelihoods framework used in this study can guide appropriate emergency responses, particularly when response options are mapped to key livelihood components such as asset, livelihood activities, policy, institutional and vulnerability contexts and outcomes. An example of such mapping of livestock interventions is shown in Table 7. This more nuanced specification of how response options are linked to livelihoods provides useful guidance on the appropriateness of different kinds of intervention options, strategy for targeting and likely impacts of interventions on other dimensions of livelihoods.

A useful approach used to identify appropriate emergency response options follows a risk management framework with three broad strategies to deal with risk:

- Prevention strategies are implemented before a shock occurs and reduce the probability of an adverse risk occurring.
- Mitigation strategies are implemented before a shock occurs and help individuals and households to reduce the impact of a risky event once it occurs.
- Coping strategies are designed to relieve the impact on individuals and households when a shock has occurred.

The availability of this type of tool kit should reduce the likelihood of designing and implementing rigid and narrowly preconceived livestock interventions in emergency situations.

7.1.3 Targeting

Targeting ensures that there is a high likelihood that vulnerable groups and people living in vulnerable areas will benefit from emergency interventions. It can be used to identify food insecure communities and households that are likely to have a high probability of suffering adverse effects when a shock occurs. When done properly, it ensures that emergency interventions are effective and achieve impact.

There are two main types of targeting that can be used to design emergency interventions—geographic targeting and household level targeting. Geographic targeting can help identify specific administrative areas or livelihood zones with varying degrees of food insecurity as well as the linkages between livestock, poverty and vulnerability. Tools such as VAM and poverty maps provide objective and visual instruments that can be used to map vulnerability and poverty. GIS can also be used to overlay livestock production systems with other important dimensions of poverty and food security such as access to markets and population density. In designing and implementing livestock interventions, these tools provide visual representation of livestock, poverty, and vulnerability linkages that can be used to target areas where livestock is important in the livelihoods of poor and vulnerable populations. In some emergency situations, geographic targeting is the only practical mechanism for targeting vulnerable groups.

Table 7. Potential emergency response options on livelihood components

		Risk management strategies	
		Mitigating	Coping
Livelihood dimensions			
Asset and activities			
	Preventive		
	Mass vaccination livestock campaigns to protect animals against diseases	Livestock off-takes to prevent distress sales and stabilize prices (purchase livestock for slaughter)	Establish local supplementary feeding capacity Establish drought resistant pastures
	Feed production: identification of grazing areas to reduce variability in feed supplies during emergencies	Identify options that help households diversify their livelihood strategies into productive livestock enterprises Destocking programs triggered by early warning systems data	Emergency water supplies (develop water points) Restocking of livestock Programs for tillage support Design and pilot test improved animal husbandry interventions such as use of antibiotics and simple shelter materials to reduce livestock mortality during emergencies Facilitate access to credit for restocking
	Livelihood context (policy, institutional, and vulnerability)		
	Assess contingency planning	Strengthen contingency planning to plan and set priorities on alternative emergency responses	Support community animal health workers to undertake mass vaccination campaigns against vulnerability diseases
	Improve livestock service delivery—community animal health workers to deworm or vaccinate livestock	Strengthen early warning systems to enhance the effectiveness and enable faster response time in emergencies	Design and pilot test alternative models of voucher scheme for delivery of livestock animal health and production services
	Rehabilitation of livestock watering points or critical boreholes	Train local communities on appropriate response to warning about drought	Design and pilot test fee waivers for access to animal health and production services
	Improve marketing infrastructure	Improve livestock disease surveillance	
	Improve livestock breeds that are tolerant to drought conditions or resistant to disease	Strengthen informal insurance mechanisms to share information and enforce contract	
		Support research to examine the feasibility of index based livestock insurance scheme	
		Pilot test innovative livestock insurance schemes and draw lessons for scaling up to achieve broader development impact	

Risk management strategies		
	Preventive	Mitigating
Outcomes	Livestock better able to withstand effect of drought	<p>Coping</p> <p>Cash-for-work programs to rehabilitate livestock infrastructure</p> <p>Include dairy and other livestock based foods in food aid and school feeding programs</p> <p>Targeted distribution of small stock to vulnerable groups</p>

Household level targeting can help distinguish different categories of vulnerable groups but its deployment can be quite challenging in emergencies. A sound understanding of the vulnerability profile of different social groups, the gender differences in access and use of assets, the types of risks they face, how they might be vulnerable to these risky events, and how livestock assets might be affected by different types of emergencies is critical in designing targeted interventions that are appropriate for particular categories of vulnerable groups.

The main approaches for targeting are self-targeting, direct targeting and administrative targeting. Self-targeting mechanisms are designed to provide livestock species or support services that are more important to vulnerable groups or in vulnerable areas. Self-targeting is more applicable in situations where the emergency response focuses on chronic food insecurity or on long-term recovery. Direct targeting focuses on specific individuals or households using some eligibility criteria. Determining eligibility include community-based options, where criteria are identified and implemented by the beneficiary community, and survey-based options, where testing is done using some welfare indicator such as income or livestock ownership. Good practice is to include beneficiaries in defining targeting criteria, particularly in slow onset emergencies and chronic food security situations. In administrative targeting, households or individuals are identified by external agencies or people using standard criteria that are observable such as nutrition status, gender or livestock ownership.

7.1.4 Response options must be specific to the context

There are a wide range of intervention options that agencies can use to save lives and protect livelihoods in emergency situations. However, appropriate emergency responses need to be tailored to specific contexts. For example, it is helpful to target animal disease interventions to specific disease contexts. There are three categories of animal diseases that affect the vulnerability of poor people and livestock enterprises (Perry et al. 2002): (i) those that influence the livestock assets, (ii) those that restrict access to markets for livestock products and (iii) those that constrain improvements in productivity. Effective animal disease interventions need to take these differences into consideration and tailor animal disease interventions to specific disease contexts. National veterinary services of the region generally do not rank diseases on the basis of their importance to these development and poverty reduction processes. In addition, the services are influenced by regional responsibilities with regard to infectious disease control or by their participation in regional or international programs of disease control. Thus the diseases that appear on national priority listings may differ substantially from those that are daily contributors to the vulnerability of poor livestock keepers.

7.1.5 Improving knowledge of the emergency context

Good project and program design needs to be informed by a good understanding of the context in which emergency interventions will be implemented. Key questions that should be asked when choosing between intervention options include (drawn from Hoddinot 2006; Tshirley et al. 2006):

What are the characteristics of the shock?

- What triggered the emergency?
- Is there an early warning system that provides advance warning of an imminent problem?
- Is it a slow onset or rapid onset emergency?
- What is the geographic scope of the shock?
- What was the impact of the shock on household income and the return to assets?
- Which households are affected? How? What was their food security situation before the shock? How severely were households affected?
- How much time do agencies have to respond?

How did the shock affect the policy, institutional and vulnerability context?

- Will the shock affect the functioning of markets?
- Did the shock destroy physical infrastructure?
- How is the policy, institutional and vulnerability changing in response to the shock?
- How will these responses affect existing and future household asset positions, livelihood opportunities and well-being?

What is the appropriate arrangement to deal with vulnerability?

- Is the arrangement to deal with vulnerability informal, markets based or publicly mandated? What are the advantages and disadvantages of alternative arrangements?

7.1.6 Monitoring and evaluation (M&E)

A well designed monitoring and evaluation (M&E) system that defines what needs to be accomplished and how it will be measured is very important in designing and implementing emergency interventions. M&E can provide a practical tool for results-oriented management, planning and decision making particularly when indicators track outcomes and processes that lead to specific outcomes. Good M&E must provide a knowledge system that assesses what works and what does not work and the reasons why. These lessons are critical for scaling up and achieving broader livelihood impact. Good practice in M&E suggests the need to i) put a well thought out M&E system in place from the beginning; ii) carefully select a few indicators that track outcomes, processes and impact; iii) establish a basis for making comparisons from a reference point or benchmark; and (iv) assess the information needs of

key clients and stakeholders and use beneficiaries to obtain feedback and assess progress towards the achievement of objectives of the intervention.

7.2 Implications for development agency emergency programs

Development agencies, such as FAO, can build on this study as the basis for a more comprehensive analysis of livelihoods, vulnerability and livestock to guide all stages of emergency program design and implementation. In the short term it should use the insights obtained in this study to engage in effective dialogue with other partners who are involved in emergency interventions to support lives and livelihoods in southern Africa. The following recommendations would be relevant to FAO and its partners, and would help the organization strengthen its efforts in emergency response.

- This analysis provides an enhanced understanding of livelihoods, the role of livestock in livelihoods, risk management and coping strategies. This understanding of how assets can be preserved and livelihoods supported provides empirical evidence to advocate on behalf of poor people and communities who depend on livestock for their livelihoods. In addition, it can be used to facilitate dialogue on emergency interventions that preserve livestock assets during emergencies and to promote livestock in targeted safety net programs and poverty reduction strategies.
- To enhance and realize effective emergency responses, emergency programs should encourage and promote institutionalization of the use of early warning systems to inform preventive strategies for managing risks with mitigation and coping strategies in the region. This would significantly improve the timing and effectiveness of the interventions. Given the increasing frequency of occurrence of droughts in the region and associated distress livestock sales as (negative) coping strategy, there is an urgent need to investigate the feasibility of a weather-based livestock insurance scheme for the region.
- Emergency programs can integrate the findings from this analysis into needs assessments, and in this respect, indicators based on distress livestock sales and relative staple food and livestock prices may provide an informative view on when certain populations are slipping into chronic vulnerability.
- Emergency interventions involving livestock need a clear definition of the relationship between livelihoods analysis, program design and implementation. The first step for the stakeholders would be mapping emergency interventions to key livelihoods components.
- Emergency programs need to pay attention to the details of emergency responses, because a key factor in choosing intervention options is the attention to detail. Emergency interventions can provide households with a number of intervention options. However, the key to whether intervention options succeed or fail to address food security concerns depends on the details of how interventions are designed, programmed and implemented.

7.3 Potential pilot livestock interventions

The results from this study identified drought, animal diseases and declining access to livestock service delivery as key factors contributing to increasing vulnerability to food insecurity in the case study area. Given that the sampling procedure used in this study was based on sound statistical principles, it is plausible to infer that these findings apply to larger elements of the population in southern Africa. This section therefore provides some ideas on potential pilot interventions that would help households mitigate or cope with the main sources of vulnerability that were identified in the study. These interventions should enable development agencies and their partners improve livestock interventions to save lives and livelihoods in crisis and emergency situations.

1. Index-based livestock insurance to mitigate the impact of drought

The study showed that high livestock mortality resulting from drought is a major driver of vulnerability to food insecurity. The traditional mechanisms to insure against climatic shocks have collapsed in the face of increasingly frequent and intense climatic shocks. It is expected that climate change will exacerbate these shocks, with severe negative consequences on poorer countries and poor people. There is therefore an urgent need to complement traditional livestock insurance mechanisms with more robust mechanisms that effectively insure the poor against drought. The creation of insurance markets for events, such as drought, whose likelihood of occurrence can be precisely calculated and associated to a well defined index, is increasingly being promoted as a way by which the benefits of insurance can be offered to the poor. Though index insurance is not a novel idea, increasing interest has resulted in several practical attempts to design and offer such products, with varying levels of success, in developing countries. While most of these initiatives are still in their pilot stages, the experience gained and lessons learned provide an excellent foundation upon which more comprehensive programs can be built. There are experiences with index-based livestock insurance programs in Mongolia and WFP is testing its feasibility in Ethiopia. The lessons from the Ethiopian pilot study are particularly instructive for gauging the feasibility of index insurance as a means to protect vulnerable populations in poor resource-strapped African countries. FAO can pilot index-based livestock insurance in any of the case study countries. A first step is to determine the feasibility of index-based livestock insurance in southern Africa. The results from this analysis can be used to design interventions that can be implemented in one or more countries.

2. Animal health

For all the three countries, the development of a more functional classification and prioritization of animal diseases is essential. This classification should be on the basis of the three major impacts of animal diseases on the livestock systems of the very poor (see Perry et al. 2002; Perry and Sones 2007), which are:

- a. Diseases that affect the fundamental assets and vulnerability of poor households (usually diseases that have high mortality in species of particular importance to the very poor and vulnerable and those causing illness in their owners and keepers).
- b. Diseases that constrain improvements in livestock productivity or performance.
- c. Diseases that constrain market access for livestock products; these include those in which human disease can be caused through the consumption of marketed meat or milk products and those which can be spread by the movement of animals or livestock products.

The need for this was particularly recognized for Zambia, which has developed a listing of national priority diseases. However, this existing listing did not appear to represent those diseases that had the greatest direct impact on poor producers, but appeared to take into account broader national and regional economic development criteria. It is in no way suggested that this listing should be abandoned, but rather that Zambia (and indeed potentially the other countries) develop an additional prioritization based on the more direct impacts on the very poor and vulnerable.

This can build on earlier studies of direct animal health impacts on smallholder producers in Zambia (see for example Perry et al. 1984), be undertaken using a variety of participatory methods (see for example Mariner and Roeder 2003), possibly supplemented by a more quantitative poverty demography overlay, and should be targeted at vulnerability hotspots in the country.

3. Improving livestock delivery services

With a particular emphasis on Zambia and Lesotho, it is necessary to explore alternative animal health service delivery mechanism options targeted at vulnerable householders. It appears that the traditional veterinary service infrastructure does not facilitate targeted and rapid response to vulnerable households. We propose the development and pilot testing of alternative service delivery based on a voucher system. This would entail prior identification of vulnerable households, both on a generic classification basis and on an individual household basis. Vulnerable households would be eligible for free service delivery of certain categories. Service delivery would be undertaken by units of the Department of Veterinary Services (so supporting sustainability), but funded through specific emergency response funding.

Services would include provision of vaccination to prevent diseases in category a) above (such as Newcastle disease), the provision of advisory services on management and nutrition, and provision of therapeutics for ecto- and endoparasites as required. Such a pilot project would also gather further background data on the needs for different emergency services in a participatory mode.

7.4 Conclusion

This study has assessed the role of livestock in risk management and coping strategies to identify livelihood interventions that can be used to guide livestock-related interventions in emergency situations in southern Africa. The study used a livelihoods approach that conceptually linked asset, livelihood activities, contexts and outcomes. A conceptual link is established between livelihoods and vulnerability through risk management and coping strategies which both involve assets and livelihood activities and result in welfare outcomes. The operational definition of vulnerability revolves around vulnerability to food insecurity.

The study found that livestock plays a key role in household livelihood strategies in the study areas. Livestock was also important in *ex ante* risk management strategies and in *ex post* coping strategies. However, the role of livestock in these strategies varied across different social groups. Food secure households with higher levels of livestock assets were better able to use livestock to manage risks. In many other cases, livestock was used in negative coping strategies, particularly among food insecure households with fewer assets. These differences in risk response suggest that emergency interventions that help households preserve their livestock assets would have significant payoffs in addressing chronic poverty and vulnerability in southern Africa.

The livelihood framework was used to guide the identification of emergency responses. By mapping intervention options that can be used in emergency situations to key livelihood dimensions; the study provided some useful insights that can be used to link appropriate interventions for saving lives and livelihoods in emergencies. The findings from the livelihood analysis together with finding from literature and best practices were used to provide recommendations which development agencies and their partners can use to design and implement relevant and more effective interventions in emergency situations.

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