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**Federal Democratic Republic of Ethiopia
Ministry of Agriculture and Rural Development**



National Guidelines for Livestock Relief Interventions in Pastoralist Areas of Ethiopia



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Abbreviations

ATF	Agriculture Task Force
CAHW	Community-based Animal Health Worker
CCPP	Contagious caprine pleuropneumonia
CP	crude protein
DCM	Drought Cycle Management
DM	dry matter
DPPA	Disaster Prevention and Preparedness Agency
Eth birr	Ethiopian birr
FAO	Food and Agriculture Organisation
g	gram
HIV/AIDS	Human immunodeficiency virus/Autoimmune deficiency syndrome
IDP	Internally displaced person
kg	kilogram
LEGS	Livestock Emergency Guidelines and Standards
M&E	monitoring and evaluation
ME	metabolisable energy
MJ	megajoule
MoARD	Ministry of Agriculture and Rural Development
MRC	Meat Relief Committee
NGO	Non governmental organisation
OIE	Office international des epizooties (World Organisation for Animal Health)
OPDC	Oromiya Pastoralist Development Commission
PRA	Participatory Rural Appraisal
RRA	Rapid Rural Appraisal
RDA	Recommended Daily Allowance
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States dollar

Preface

The huge areas of Ethiopia occupied by pastoralist communities represent one of the most important economic, cultural and natural resources of the country. However, for many years Ethiopian pastoralists have faced repeated droughts and experienced emergency interventions which have often undermined development programmes. Most recently the severity and frequency of drought in some areas has increased, creating an urgent need to improve drought risk management and support development policies in which drought is anticipated and properly managed.

Since 2005 and in partnership with USAID and various non governmental and academic institutions, the Ministry of Agriculture and Rural Development has implemented the Pastoralist Livelihoods Initiative programme. Under this programme the Ministry has led the production of this first edition of the *National Guidelines for Livestock Relief Interventions in Pastoralist Areas of Ethiopia*. The guidelines represent a synthesis of evidence and best practice as is currently known in Ethiopia, and draw heavily on the field experience of practitioners and researchers. Crucially, the guidelines use both livelihoods-based analysis and the drought cycle management model to bridge the gap between emergency response and development. The guidelines highlight the value of pastoralists' indigenous livestock knowledge and skills, and the need to combine this local resource with technical assessments for designing drought responses. The guidelines also show the benefits of working with the private sector, particularly for interventions such as commercial destocking.

The guidelines will now act as the point of reference for the design of livestock relief interventions in pastoralist areas of Ethiopia, and should be used to guide government agencies, donors and non governmental organisations. I encourage all stakeholders involved in pastoralist and livestock development and emergency response to use these guidelines, but also, to contribute to the on-going process of rigorous impact assessment of interventions leading to future revision of the guidelines.

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1. Introduction

1.1 Pastoralism in Ethiopia

In Ethiopia pastoralism and agropastoralism are an important means of livelihood for more than four million people, with most pastoralists living in the Somali, Afar, Oromiya and Southern Nations regions. Ethiopia's arid or semi-arid pastoral lands comprise approximately 63% of the total land area. The Ministry of Agriculture and Rural Development (MoARD) estimates that nationally, pastoralists own 73% of the goats (equivalent to 7.05 million head), 25% of the sheep (equivalent to 4.25 million head), 20% of the cattle (equivalent to 7.70 million head) and a substantial proportion of the camels (approximately 1 million head).

From a livelihoods perspective, pastoralists in Ethiopia possess relatively high financial assets in the form of livestock. It is also increasingly recognized that extensive, mobile pastoralist livestock production systems are a rational and efficient use of natural resources in non-equilibrium rainfall environments, and can outperform more modern ranching systems. Increasingly, pastoralist areas are contributing to domestic and export markets in livestock and livestock products, and becoming more integrated into Ethiopia's national economy. However, pastoralist areas are still characterized by constraints such as low levels of infrastructure development, and weak social services such as health and education. Pastoralist areas also face human population growth and recurrent drought, with some indications that the frequency and severity of drought is increasing. These features of pastoralist areas mean that despite their wealth in livestock assets, pastoralist communities remain highly vulnerable and subject to repeated episodes of short-term humanitarian assistance. It is part of the overall strategy of the MoARD to promote livestock development in pastoralist areas, and to encourage long-term thinking which views natural events such as droughts and floods as predictable rather than unexpected shocks.

Humanitarian assistance in pastoral areas has been dominated by food aid since emergency interventions began in the 1970s, and food aid provision has been based on the objective of saving human lives. However, it is increasingly recognized that emergency assistance during drought or flood should also aim to protect people's livelihoods. In pastoral areas, livelihoods-based emergency programming means protection of pastoral livestock in appropriate numbers, and support to the services and markets which are needed to assist rapid recovery. Therefore, livelihoods-based programming aims to avoid undue disruption to local service providers and markets, and where possible, work with local actors to design and deliver drought or flood assistance. In 1993 the National Policy for Disaster Prevention, Preparedness and Management proposed that each district should prepare a drought action plan which would describe interventions to save livestock,

including supply of feed and water, veterinary inputs, livestock purchase centres and mobile abattoirs. However, these types of emergency livestock-related intervention were not widely applied. When agencies did provide livestock support during drought, experiences were not well-documented and therefore details of how best to design and implement different types of intervention were not widely available.

1.2 About the guidelines

These guidelines are designed to promote best practice in the design, implementation and assessment of emergency livestock interventions in response to natural disasters in pastoral areas of Ethiopia.

The guidelines represent a synthesis of experience from practitioners working in government agencies, non governmental organisations (NGOs) and research institutes in Ethiopia, plus lessons learned from other countries with substantial pastoral populations. All information was collated by Working Groups under the National Livestock Policy Forum, who conducted literature reviews, consulted pastoralists and professionals, and commissioned research and assessments to determine best practice. The guidelines present best practice as it is currently known in Ethiopia, and will be subject to review and refinement over time.

1.3 Intended users of the guidelines

The guidelines should be used by:

- Managers and technical staff working for government agencies at federal, regional, zonal and woreda levels who are involved in the design, implementation or assessment of emergency interventions in pastoral areas, including staff deployed to the Agricultural Task Forces at federal or regional levels.
- Government staff at all levels who are involved in the coordination of emergency response, including assessment and approval of NGO emergency projects.
- Donor personnel and staff of coordination and technical agencies such as the United Nations Office for the Coordination of Humanitarian Affairs, and Food and Agriculture Organisation, plus any other donor or UN staff involved in emergency assistance in pastoral areas.
- Managers, coordinators and technical staff working for NGOs in pastoral areas of Ethiopia.
- Universities teaching subjects related to pastoral development, rural development, humanitarian assistance, disaster risk reduction or related topics.
- Research institutes and universities conducting research in pastoral areas.

1.4 How to use the guidelines

The guidelines are organised into two main sections:

- The first section covers principles and issues which are common to all types of livestock-related interventions during natural disasters in pastoral areas of Ethiopia.

This section includes guidance on:

- Coordination of emergency response
- Early warning, early response and contingency planning
- Community participation
- Gender issues
- Monitoring and evaluation
- Outstanding learning and research issues

As these issues are generic for all types of livestock response, this section is relevant to all readers.

- The second section provides detailed guidance on different types of emergency livestock interventions viz.
 - Destocking, including both commercial destocking and slaughter destocking with meat distribution
 - Livestock feed supplementation
 - Emergency water supply for livestock
 - Emergency veterinary care
 - Restocking

Each section includes short case studies which illustrate specific technical points, plus a Further Reading section.

2. Common Principles for all Livestock Interventions

This section of the guidelines presents information on cross-cutting issues and principles which are common to all livestock interventions which are delivered during natural disasters in pastoral areas.

2.1 Coordination

Coordination is the systematic use of policy instruments to deliver humanitarian assistance in a cohesive and effective manner. The coordination of livestock interventions is similar to coordination in other technical sectors, and relevant policy instruments include:

- Strategic planning
- Continuous data gathering, managing information and contextual analysis
- Mobilising resources and ensuring accountability
- Orchestrating a functional division of labour in the field
- Providing leadership

A range of actors can be involved in emergency livestock responses in pastoral areas. Strong coordination is required to ensure overall technical direction and harmonisation of interventions, and to ensure that interventions follow these best-practice guidelines. Coordination not only involves linking governmental and non-governmental agencies, but for some interventions, requires liaison and support to various private sector actors and their respective bodies. Ideally, the coordination effort should also involve linkages with government and UN agencies responsible for the provision of food aid and/or productive safety nets in pastoral areas, thereby also ensuring integrated, harmonised programming between food, cash and livestock interventions.

During drought, different types and combinations of livestock interventions are required at different times of the drought cycle. Coordination helps to ensure that different interventions complement each other under an overall coherent strategy, with appropriate sequencing of interventions. The combinations and types of interventions are described more fully under the guidelines on drought cycle management (see section 2.2).

At federal level, the MoARD Agriculture Task Force (ATF) is the main government coordinating body with respect to livestock interventions. The ATF is replicated at regional levels. The ATF brings together all relevant UN, NGO and private sector actors.

In addition to formal coordination entities convened by federal and regional government, various *ad hoc* coordination groups can be formed to lead specific types of intervention.

2.2 Analytical approaches and models

2.2.1 Livelihoods analysis

During the last 25 years or so, pastoralist areas of Ethiopia have experienced repeated cycles of livestock relief and development programmes. Nearly always, these programmes have been disconnected and often, they have been contradictory. While development seeks to build local capacity for decision making and management, relief agencies often override local organisations claiming that decisions have to be made quickly and impartially by technical experts. Development supports privatisation and the creation of services which are financially sustainable within an enabling regulatory framework. Relief repeatedly undermines this process by delivering free or subsidised inputs in isolation of local, private service providers. One of the main outcomes of this relief-development incoherence is confusion and resignation at community level, and suboptimal investment in private services and livestock marketing.

When the dichotomy between relief and development is viewed from a livelihoods perspective, it is evident that badly designed relief programmes may save lives in the short-term but in the long-term, make people more vulnerable. In relation to these guidelines, livelihoods analysis increasingly points to the need to harmonise livestock relief and development programmes in pastoralist areas, and use relief to complement development processes. In practice, this means that access to livestock markets and the utilisation of local livestock resources in relief interventions can help to stabilise livelihoods, and enhance the sustainability of other productive interventions (such as community-based animal health care) by increasing purchasing power.

The need for more livelihoods-based thinking and practice also arises from important trends in pastoralist areas of Ethiopia and beyond. These trends include growing interest and investment in livestock export markets, gradual acceptance of privatised veterinary services at a policy level, climate change and environmental trends such as bush encroachment.

Box 2.1

Livelihoods analysis and pastoralism

Livelihoods analysis aims to understand how people source, develop and use assets within a complex set of trends, shocks, and formal and informal policies and institutional arrangements. Such analysis is commonly based on a livelihoods framework which categorises assets in terms of five main types of capital:

Human capital represents the skills, knowledge, ability to labour and good health that together, enable people to pursue different ways of making a living. In pastoralist areas, formal education and health services are often poorly developed and levels of literacy and health are low. However, pastoralists possess rich indigenous knowledge on livestock health and production, and some communities have traditional healers and traditional schools.

Social capital is the social resources which people use to pursue different ways of making a living. Social capital includes networks, group membership, relationships of trust, and access to the wider institutions of society, including political institutions. The concept of reciprocity is important, as are the exchanges which facilitate co-operation, reduce transaction costs and safeguard the poor. Pastoralists often have strong social capital at community level, with complex systems of indigenous social support based on the exchange of livestock.

Financial capital is the financial resources which people use to achieve livelihood objectives. It relates to both production and consumption, and the availability of cash (or equivalent) which enables conversion to other types of capital. In pastoralist communities, financial capital is based on the ownership of livestock or access to livestock resources. People consume directly from livestock (e.g. milk) and sell livestock and livestock products – markets are a crucial factor in the attainment of financial capital.

Natural capital is the natural environmental resources which people use to make a living. It includes soil, water, vegetation and wildlife resources, and encompasses access rights and land ownership. In general, pastoralist areas are characterised by low rainfall with high spatial variability. It is this rainfall pattern which largely determines the seasonal movement of pastoral herds, and the seasonal variations in production and markets.

Physical capital is the basic infrastructure and producer goods needed to support livelihoods. In pastoralist areas, the physical capital required to support livestock production is often poorly developed. This includes roads, communication infrastructure and livestock markets.

Access to and use of these different types of capital is determined by various factors:

Seasonality, particularly seasonal variations in rainfall, livestock production and the terms of trade for livestock and cereals.

Trends such as global climatic trends, the increasing occurrence and severity of drought, the growth of export markets for livestock, environmental change associated with bush encroachment, private enclosure of rangeland, and human population growth.

Shocks such as livestock disease epidemics and conflict; as drought becomes more regular and predictable it might be categorised as a seasonal factor rather than a shock.

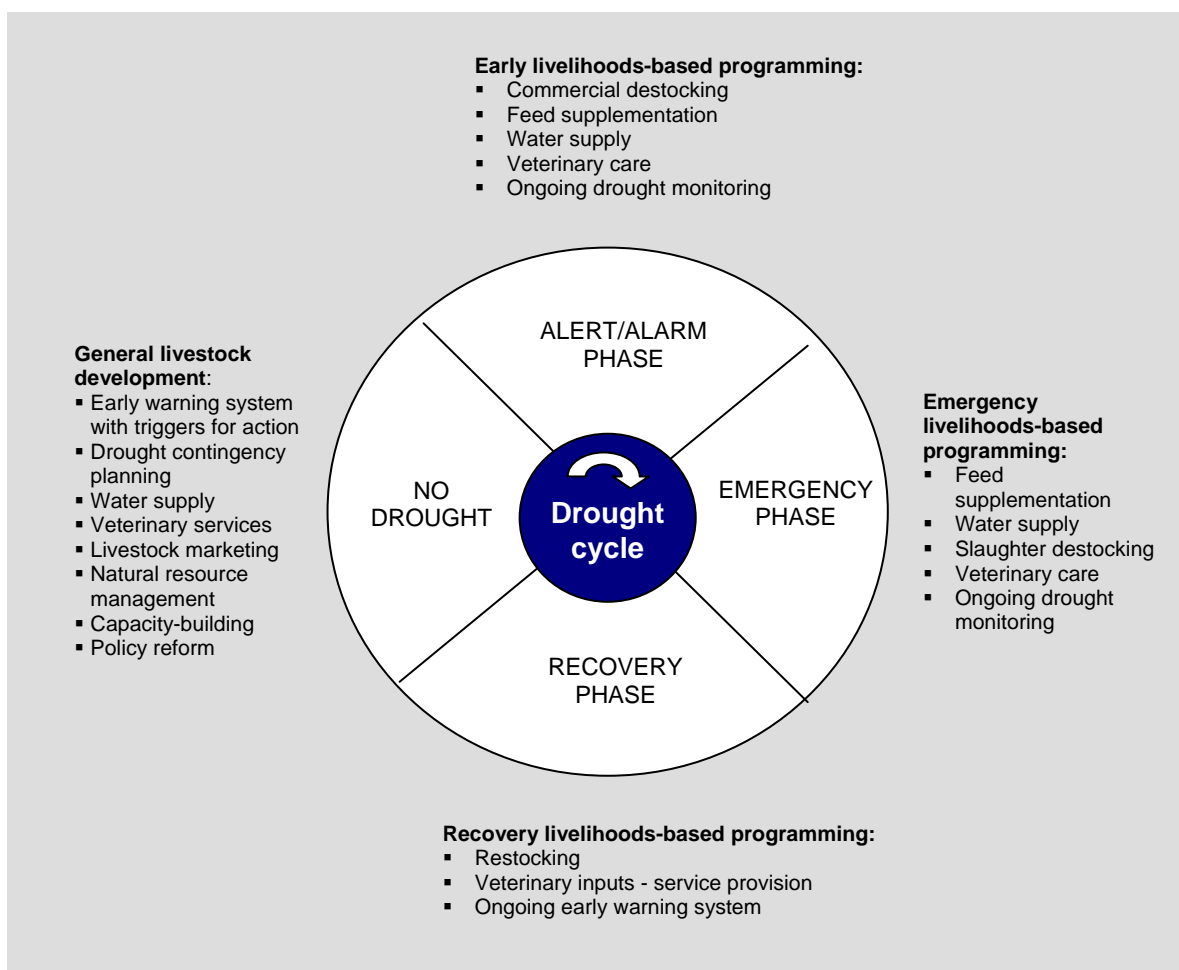
In addition, pastoralist livelihoods are affected by various formal and informal norms, policies and institutions.

2.2.2 Drought cycle management

In the case of slow onset emergencies such as drought, livelihoods analysis highlights the need to protect assets and support the services and systems which in the long-term, are required for recovery and development. Increasingly, it is becoming questionable whether drought really is a shock, but more a regular and predictable event which occurs seasonally.

In terms of the practicalities of designing livestock interventions, these can be categorised according to their relevance at a particular stage of a typical drought cycle. Some interventions such as water supply and veterinary care are always needed, whereas other interventions are appropriate only at certain times. For example, support to commercial destocking should occur during the alarm/alert phases whereas restocking should take place during the recovery phase.

Livelihoods-based livestock interventions in the drought cycle



These guidelines refer to livestock interventions during the alert/alarm phase, the emergency phase and the recovery phase. A prerequisite for an effective and timely response is a strong early warning system based on livelihoods indicators. In pastoralist areas, such systems include indicators of livestock status and market conditions.

Assigning different interventions to different stages in the drought cycle indicates that combined interventions are often needed. For example, in the alert/alarm phase commercial destocking to remove some animals from the rangeland should be accompanied by efforts to protect the remaining livestock, such as veterinary care, feed supplementation and water provision. The need to combine different interventions simultaneously is a challenge, particularly if different interventions are assigned to different agencies - hence the need for strong coordination.

Not only are different interventions appropriate at different stages of drought, the intensity and scale of the intervention often needs to change during the drought cycle. An example of activities at different stages of a drought is provided below.

*Table 2.1
Example of the type and intensity of activities required at different stages of a drought cycle*

Stage of drought cycle	Activities
Alert	<ul style="list-style-type: none"> • Organise meetings with government livestock departments and relief bureaux • Facilitate visits to areas of concern • Assist commercial destocking • Conduct water point surveys and check state of repair of water facilities; check status of water management committees (if any) • If not already in place, start weekly tracking of cereal and livestock prices • Check status of veterinary services, including availability of drugs in public and private sectors, and status of CAHWs
Alarm	Scale up and intensify all the above activities, plus: <ul style="list-style-type: none"> • Intensify commercial destocking • Expand livestock/cereal exchange • Define strategies for livestock feed supplementation • Support veterinary care as needed • Rapid rehabilitation of water points; co-ordinate with human water supply agencies as necessary
Emergency	Scale up all of the above activities, plus: <ul style="list-style-type: none"> • Destocking for slaughter and local meat distribution • Supplementary feeding of core breeding animals
Recovery	Maintain veterinary interventions, plus: <ul style="list-style-type: none"> • Restocking of viable pastoralist households
No drought	<ul style="list-style-type: none"> • Drought contingency planning

2.3 Preparedness and contingency planning

A common experience during emergency response in pastoral areas of Ethiopia has been that livestock-related interventions have been delivered late, thereby reducing their relevance and effectiveness. This problem occurs even among agencies with long-term development programmes and experiences in a given area, and relates to at least two constraints affecting early warning and early response. First, existing early warning systems are not yet well linked to drought response or drought cycle management, and so early warning reports do not fully assist agencies to design responses. Second, the absence of agreed triggers for response tends to delay response because different actors conduct their own assessments, often independently of others. In addition, once a decision has been made to act many agencies have to prepare funding proposals because contingency funds are not available. Even when contingency funds are accessible, administrative and procurement processes delay response.

All of these issues relate to broader institutional and organisational capacities to prepare for, and respond to emergencies in the country, and are not specific to livestock interventions in pastoralist areas. However, current evidence points to the cost-effectiveness of early response to drought in pastoral areas using approaches such as commercial destocking (Box 2.2).

Box 2.2 *Cost-effectiveness of commercial destocking*

During commercial destocking in parts of Moyale woreda during drought in 2006, households received Eth birr 1,620 (US\$ 186) on average from the sale of cattle to traders, approximately 5,405 households were reached and the total inflow of cash into communities from private traders was approximately Eth birr 8.8 million (US\$ 1.01 million).

Those households which sold cattle used the income as follows:

- 28% on food for people
- 19% on livestock feed
- 12% on transporting livestock to better grazing areas
- 9% on human health
- 7% was saved
- 6% on veterinary care
- 5% on school expenses
- 15% on other items

Overall, 79% of the income derived from destocking was used to buy local commodities or services, and of this proportion, 37% of income was used to support remaining livestock.

Even though the intervention took place relatively late in the drought, the benefit-cost ratio of the commercial destocking in terms of aid investment was estimated at 41:1.

Source: Abebe et al. (2008)

Emergency preparedness and contingency planning activities which can support early response to emergencies in pastoralist areas include the following:

Contingency plans and triggers – all agencies should develop contingency disaster plans with clearly-defined triggers for action and the subsequent release of funds and other resources. Many of the most effective emergency livestock responses have been implemented by agencies with long-term development experience in a particular area, and which have incorporated disaster response plans into development programmes. Such plans are informed by knowledge of past crises, and the types of response which can be implemented within a given operational and funding context. It is important that contingency plans are developed with local partners and include specific, clearly defined and pre-agreed triggers for prompting action and the release of contingency funds.

Procurement and administrative arrangements – using these guidelines and by reference to their own operational experience, agencies should pre-empt the types of livestock intervention which are most likely to be applied in different types of emergency and in the case of drought, different phases of the drought cycle management model. They should ensure that supportive and rapid procurement, and other administrative procedures, are put in place before emergencies occur. Despite the development of contingency plans, during implementation some agencies are faced with unexpected financial or administrative barriers within their own organisations. Innovative livelihoods-based programming around livestock can require the rapid procurement of novel items, such as large quantities of animal feed. Alternatively, it may need contracts with private sector operators such as transport companies, feed suppliers or veterinary workers. Agencies need to review their administrative procedures in light of the need for flexibility and rapid decision making during emergency response.

Drought cycle management - contingency plans should be based on the principles of drought cycle management and early response, with appropriate sequencing of interventions. Although drought is usually described as an emergency, livelihoods-based approaches suggests that drought should be viewed as an expected and normal event in many dryland areas. Systematic impact assessment and benefit-cost analyses of early livelihoods-based drought interventions such as commercial de-stocking clearly show the rationale for this approach. During drought in pastoralist areas, different combinations of interventions are appropriate at different stages of a drought, and drought cycle management uses specific indicators to trigger these different responses.

2.4 Community participation

Pastoralist and agropastoralist communities in Ethiopia possess very rich indigenous knowledge on livestock husbandry and health, and natural resources such as vegetation and water. Increasingly, this indigenous knowledge is becoming documented by research institutes, universities and other actors, and is central to the process of community participation in the identification, design, implementation and assessment of livestock relief interventions. Guidelines for ensuring community participation are detailed below.

Involvement of vulnerable groups - all specific sub-sets and vulnerable groups in a population are identified, informed that an assessment and possible intervention(s) will take place, and encouraged to participate in the assessment process. The actual or potential uses or ownership of livestock often varies in pastoralist communities according to wealth, gender or other factors. If community views are represented only by more wealthy or powerful individuals, it is possible that livestock interventions will be biased towards these people. While wealthier people might own larger animals such as cattle or camels, and request assistance for these animals, it is possible that poorer female-headed households would prefer assistance with sheep and goats, poultry or donkeys. Agencies need to be sensitive to these differences and ensure appropriate representation of different groups. In relief settings there is no standard definition of participation. For some agency staff, participation can mean the delivery of inputs to affected communities who have not been involved in setting priorities or identifying needs. In this case, people participate in the programme often because they have no choice. Other types of participation are based on a process of joint assessment, implementation, monitoring and evaluation. This type of participation assumes that affected communities have a right to be involved in the programme and can make intellectual contributions which improve effectiveness and efficiency. The common principle of participation recognises that local knowledge and skills are a valuable resource for relief agencies and should be actively sourced.

When specifically seeking the involvement of women in relief programming, knowledge of local social and cultural norms is required. It is usually better to hold separate meetings with women, where men cannot dominate or influence the discussion. Similarly, such meetings are best facilitated by women.

Indigenous knowledge and sustainability - key indigenous livestock production and health knowledge and practices, and pre-existing livestock services should be documented and used. Sustained services or inputs are most likely to emerge from disaster responses when these responses promote participation, recognise local knowledge and skills, and use and strengthen pre-existing services and systems. In the case of livestock interventions, agencies need to be especially aware that when relief operations are implemented in isolation of

local private service providers, these local systems suffer. In some cases, early interventions which allow livestock keepers to convert some of their livestock into cash also enables people to buy the commodities and services they wish. A similar result can be achieved through voucher schemes.

Social and cultural norms - interventions are based on an understanding of social and cultural norms. Social, cultural and religious beliefs and practices influence livestock ownership, and the use and consumption of livestock products. Uses of certain types of animals or animal-derived feeds may seem appropriate and practical to outsiders, but may be resisted due to local customs. Although people are not always averse to adopting new practices, such adoption often takes time and the use of agency staff with long experience in the communities concerned. When rapid intervention is required, an understanding of social and cultural norms helps to ensure that interventions are appropriate.

2.5 Rapid assessment at community level

The reliable and timely assessment of needs, capabilities and intervention options is a crucial stage in any livestock-based emergency response. The assessment should provide an understanding of the role of livestock in the livelihoods of different socio-economic groups within a population, and an analysis of appropriate livestock interventions in relation to operational context and existing service providers and systems.

Participatory analysis - the assessment should use systematic, participatory inquiry conducted by trained workers, and it should also triangulate findings with pre-existing technical data when available. Rapid and systematic participatory inquiry is an appropriate and valid approach to collecting and analysing information with local people. The approach requires clearly defined objectives/questions and a methodology which focuses on meeting these objectives. Validity of findings increases with the level of training and experience of agency staff who conduct the inquiry; when data is cross-checked with pre-existing technical reports, government data or published data; and when results are discussed and verified with local livestock workers, when available. When conducted well, participatory inquiry inherently seeks to understand the perceptions of vulnerable and marginalised groups and therefore, automatically disaggregates data by subgroup.

Security and safety - the assessment should include a rapid review of the operational environment and the security and safety implications of different livestock interventions. Essentially, livestock assets are valuable, and the ownership or management of livestock may place people at greater risk of violence, abduction or abuse. Analysis of the local security environment in relation to livestock ownership patterns, recent history of livestock looting or raiding, husbandry practices and the need to access livestock services or markets

should indicate high-risk practices and activities. These practices and activities include moving livestock to insecure grazing areas or water points, using grazing areas which are mined or which have unexploded ordinance, or containing livestock at night in unprotected areas. The assessment should analyse the trade-offs between the potential livelihoods benefits of greater livestock ownership or access to livestock products, with the security risks. In some cases, traditional livestock management might be modified to enhance protection. In addition, agencies need to understand the risks to their own staff or the staff of partner organisations.

Assessing local services and markets – the assessment should clearly describe existing local service providers, explain if and how the interventions will work with these actors, and define an exit strategy intended to maximise the sustained use of local services and markets. Livestock interventions which support local services and markets are an important aspect of livelihoods-based programming. Local service providers include livestock feed suppliers, water suppliers, veterinary and para-veterinary workers, livestock traders and livestock transporters. The assessment should describe these actors, their current capacity and their potential capacity.

Policies and regulations - the assessment should include a rapid analysis of national policies and regulations which may enable or prevent certain interventions, and review the capacity of local regulatory bodies to enforce official rules and regulations as needed.

2.6 Targeting of interventions

Emergency livestock interventions should aim to protect the assets of the most vulnerable groups within a population. This principle together with the realities of the funds available in disasters means that some form of targeting is needed in most if not all programmes. In some cases, a particularly vulnerable group is relatively easy to identify and target because they are already congregated around a food aid distribution point, or living in an IDP camp. In other situations, vulnerable people are still living within communities and a special effort is needed to identify them and target them. Note that if the principle of community participation has been followed (section 2.4) and the initial participatory analysis has been done well (section 2.5), the needs and capacities of specific vulnerable groups will already be known. Some additional guidelines for targeting are as follows:

Targeting criteria - should be based on an understanding of the actual or potential uses of livestock by vulnerable groups, and they should be clearly defined and widely disseminated. The targeting criteria should be developed with community representatives or better, in wider community meetings, and should be informed by prior knowledge of vulnerable groups by agency staff, as obtained during the initial participatory assessment. In

communities who are highly reliant on livestock, analysis of indigenous social support systems will often reveal different types of vulnerable people by wealth, gender or social relationship. Working with local community groups can lead to a targeting system based on this traditional knowledge.

Targeting mechanisms - to ensure transparency and impartiality during the selection of beneficiaries, a targeting mechanism should be agreed with representatives of the wider community and/or specific vulnerable groups. Mechanisms will vary from place to place, but may include public meetings in which the targeting criteria are explained and the actual selection takes place. In other communities, such public selection may be inappropriate for social or cultural reasons.

2.7 Monitoring, evaluation and impact assessment

Monitoring, evaluation and impact assessment are one of the weakest aspects of livestock relief programmes. In the absence of good evaluation and with limited understanding of livelihoods impact, agencies can easily fall into a pattern of simply repeating the same interventions over many years.

Monitoring systems - should be systematic and established as soon as possible during implementation. Monitoring should be conducted with sufficient frequency to enable rapid detection and correction of problems, while also ensuring accurate recording of activities and expenditure. Monitoring indicators need to be carefully selected to have meaning beyond a simplistic measurement of inputs (for example, see Box 2.4).

Box 2.3 *Meaningful indicators*

Many monitoring and evaluation reports present data on activities, without relating the data to target communities, livestock populations or other baseline information.

Example: animal health

A report which states that '1,500 sheep and goats were dewormed' might look impressive in terms of activity. But, assume that the sheep and goat population in the target areas was 100,000 and the estimated incidence of worm disease during the project period was 10%. In this example, 1,500 treated animals actually represents only 15% of the population at risk and therefore, low coverage of the intervention. A more meaningful indicator would be to report the number of treatments against the number of animals at risk of disease.

Example: water provision

A report states that '10 wells were improved', again showing a level of activity. But, more useful indicators would be the five standard indicators for service provision viz. changes in accessibility, availability, affordability, quality and acceptance. These indicators are relatively easy to measure and can be presented against a baseline.

Local monitoring and evaluation indicators - following the common principle of community participation (section 2.4), the monitoring and evaluation of livestock interventions should be participatory in nature. Not only can livestock users make intellectual contributions to the assessment and design of interventions, they are also well-placed to observe the impact of these interventions over time. Participatory approaches to monitoring and evaluation can use local people's own indicators of benefits derived from livestock. When combined with monitoring data on project activities, an accurate picture of project impact can then be developed.

Evaluate against objectives - the project evaluation should aim to assess achievements against the original stated objectives of the project. It can combine measurement of technical indicators and community-defined indicators.

Assess livelihoods impact - impact assessment goes beyond project objectives to examine the changes in people's livelihoods which have resulted from a project. For emergency livestock interventions such impacts can include consumption of livestock-derived foods by vulnerable groups, uses of income derived from the sale of livestock or livestock products, benefits derived from access to pack animals, or social benefits such as livestock gifts or loans. Impact assessment should aim to understand these benefits and the relative importance or role of projects in increasing or decreasing these benefits.

Coordinated approaches - for programmes involving multiple agencies, standardised and coordinated approaches to monitoring and evaluation allows programme-wide lessons to be generated. Standardised approaches can be based on a set of core objectives, issues or questions common to all agencies, while also allowing for the flexible use of community-defined indicators in different locations.

Annex 2.1 Further reading

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- Pastoralist Livelihoods Initiative (2007). *Impact Assessments of Livelihoods-based Drought Interventions in Moyale and Dire Woredas, Ethiopia*. Feinstein International Center, Tufts University. <http://fic.tufts.edu/downloads/ImpactAssessmentsofLivelihoods-basedDroughtInterventionsinMoyaleandDireWoredas.pdf>
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3. Destocking and Market Support

3.1 Overview

During drought in pastoral areas a substantial number of livestock will perish, and communities will therefore lose some or all of their animals. Recovery of herds after drought can take many years, during which time households remain dependent on local support mechanisms or external aid. Alternatively, after drought restocking programmes may assist some households but are far more expensive than preserving key livestock assets during a drought. At a time when market prices for livestock can be falling, destocking aims to convert non-essential livestock into resources - mainly cash or meat - which people can use during the drought.

Destocking has been carried out in Ethiopia since the 1980s when the Relief and Rehabilitation Commission (now the DPPA) and UNICEF initiated destocking operations to provide relief meat to feeding camps in the north and south of the country. Since then, a number of agencies, mainly NGOs, have carried out destocking in pastoral areas for slaughter and meat distribution. Such operations have usually been small-scale, localised, and often implemented in an *ad hoc* fashion. More importantly, these interventions have nearly always started late in the drought cycle when substantial livestock mortality has already occurred, or when livestock had lost considerable body weight resulting in a sharp decline in prices. The value of animals salvaged in this way has generally been minimal although some useful lessons have been learnt that now have the potential to support the design of more effective destocking programmes.

More recently, 'commercial destocking' (sometimes called 'accelerated livestock off-take') has been used in pastoral areas of southern Ethiopia, with government and NGOs facilitating linkages between livestock traders and drought-affected communities.

Therefore, there are two main approaches to destocking currently being used in Ethiopia:

- **Commercial destocking** involves the engagement of livestock traders to boost livestock off-take from a drought-affected area so that they can be fattened and sold through terminal markets. This type of destocking provides pastoralists with cash, which they can then use to buy the commodities and services they need, including items to protect their remaining livestock. This type of destocking should take place as soon as possible, at the onset of drought.
- **Slaughter destocking** programmes are based on the purchase of livestock by an aid agency, followed by immediate, local slaughter and the distribution of meat in either a wet or dry form. This type of destocking takes place later in a drought, at a time when livestock traders are no longer purchasing livestock.

One way to view destocking is as a cash-transfer mechanism. As such, commercial destocking is preferred because it results in pastoralists selling animals earlier in a drought and receiving a higher price per animal. Even when livestock prices are falling and grain prices are rising during drought, the sale of only a few animals can provide a pastoral household with sufficient grain to sustain it for weeks or even months.

Box 3.1

The value of livestock sales during drought for sustaining pastoralist households

Commercial destocking

Drawing on experiences from commercial destocking in Moyale woreda, southern Ethiopia in 2006, it was known that livestock traders were paying on average Eth birr 438 per head of cattle purchased. If a pastoralist sold only one animal and used the money to buy grain to feed the household, then approximately 292kg of maize could be acquired (assuming a maize price of Eth birr 150/100kg). This amount of grain could cover the energy requirements of a seven-person pastoral household (two adults and five children) for 83 days. Although in this example it is unlikely that the maize would be the only type of food eaten by the household the calculation shows the value of commercial destocking. Not only were the cattle purchased using funds from the private sector, a potential saving in terms of food aid was also evident.

Slaughter destocking

Using the sale price of livestock during a slaughter destocking intervention in Dire woreda in 2006, similar calculations can be made as follows:

Livestock species	Sale price (Eth birr)	Amount of maize which can be purchased (kg) from the sale of one animal	Number of days for which purchased maize could cover a seven-person household energy needs
Camel	580	387	110
Cattle	290	193	55
Sheep and goats	70	47	13

Although these calculations will vary from place to place, they indicate that even during drought when livestock prices are low and grain prices are high, the sale of livestock to buy food for people is efficient in terms of acquiring food to sustain families during drought.

While the calculations in Box 3.1 show the logic of converting livestock into grain for people, both types of destocking outlined assume that to some degree, pastoralists will use some of the cash derived from destocking to protect their remaining livestock assets. Therefore, destocking relates to the concept of maintaining a 'core herd' which is needed for post-drought recovery. It follows that various other types of livestock service or intervention are complementary to destocking because they may assist pastoralists to maintain a core group of adult breeding animals. Depending on the timing of destocking and private sector actors in a given area, these additional services may be available from private suppliers or service providers, or, will need to be provided by government or an NGO. The services include:

Supplementary feeding - the adequacy of feed resources for the animals that are retained after destocking needs to be considered and provision made for supplementary feeding as necessary. Ideally, if destocking is conducted early enough private suppliers can provide at least some of the required feed.

Veterinary support - destocking can reduce the risk of disease transmission by reducing animal density and the removal of sick animals. However, adequate veterinary care still needs to be provided for remaining animals. Again, if conducted early in a drought, veterinary care can be provided by private veterinary workers.

Water supply - adequate water for the needs of remaining animals needs to be provided as well as the water that is required to ensure hygienic practices during slaughter destocking operations.

In addition to these services, agencies need to be aware of food aid distribution and safety net provisions in a given area and where possible, integrate livestock interventions with these other types of assistance.

Although destocking is sometimes justified in terms of limiting pressure on grazing resources, to date in Ethiopia there is limited evidence to show the environmental impact of these interventions. It is possible that large-scale commercial destocking could have positive environmental impacts, and this is an area which requires evaluation in future.

3.2 Coordination issues

Many agencies in Ethiopia have had substantial involvement in planning and implementing destocking programmes. Ensuring that this experience contributes to future responses is more likely to result in a timely response and effective implementation. In particular, commercial destocking requires linkages between actors such as traders who are not based in pastoral areas, and actors on the ground in pastoral areas. This type of destocking requires a strong, central coordination body for ensuring support and harmonisation of local and international organisations (both governmental and non-governmental) and livestock traders. In previous commercial destocking approaches, the Livestock Marketing Authority has taken an overall lead in facilitating the process and has worked closely with NGOs and livestock traders.

Table 3.1

Advantages and disadvantages of destocking

Advantages	Disadvantages
Allows purchase of livestock which otherwise would have died, thereby provides cash to households (commercial destocking), or, cash and meat to households (slaughter destocking); meat is a useful dietary supplement particularly for children and pregnant or nursing women.	Livestock prices can be rapidly eroded in emergency situations. As a result, commercial destocking initiatives have a narrow window of opportunity during which implementation is financially viable.
The cash derived from destocking - especially commercial destocking - is often used to support local markets and services, and to protect remaining livestock. This reduces the need for other interventions and helps to maintain the local markets and services needed for recovery.	The interest of commercial traders will partly depend on factors such as the final demand for meat or live animals in terminal domestic or export markets, and the capacity of holding grounds or feedlots. Commercial destocking is therefore highly dependent on the state of livestock markets during normal periods.
Commercial destocking can be very cost-effective as a large part of the financial burden is borne by participating traders.	Some traders may have insufficient capital to buy large numbers of animals. The provision of rapid loans during drought is currently problematic.
Slaughter destocking can augment other sources of food aid by redistributing meat within affected communities.	Some pastoral communities are reluctant to consume meat from drought-stricken animals for cultural reasons. Careful dialogue with communities is needed to change attitudes.
If a substantial proportion of the livestock population in a given area is destocked, pressure on natural resources may be reduced.	Commercial destocking by private traders partly depends on good infrastructure, especially roads, to access more remote communities.
As part of an integrated emergency response, judicious destocking can be used to enhance the viability of other interventions aimed at preserving herds (e.g. supplementary feeding).	Removal of livestock from a community is a drastic measure. Other interventions (e.g. relocation or supplementary feeding) will allow more rapid herd reconstitution during the recovery phase.
If a longer term view is taken, destocking offers the opportunity to cull poorer quality or chronically diseased stock. These may be replaced with better animals during the recovery phase.	Many NGOs are not used to working with traders during emergencies, or donors may not allow NGO support to traders.

In slaughter destocking, operations tend to be more localised and these interventions are far less reliant on actors who are not normally present in pastoral areas. Therefore, the coordination effort needs to be particularly strong at the regional and woreda levels. The coordination needs, for example, to ensure consistency in livestock sale prices offered to pastoralists in neighbouring areas. Specific functions of coordination bodies during destocking include:

Needs and capacity assessment - coordinating the collection and collation of information required to identify priority areas for intervention and to assess needs to be addressed by the response.

Identification of lead and support agencies - conducting an assessment of the capacity of agencies operating in affected areas e.g. extent of presence in the field, length of experience, knowledge of local norms and customs. This will help to ensure that the resources devoted to the response are used effectively.

Support for policy measures - for example gathering market price data to assist with the setting of prices paid under a slaughter destocking programme.

Engagement with traders - in commercial destocking, ensuring that traders are identified to participate in a commercial destocking initiative and that their needs and any contractual obligations are properly addressed.

Facilitation of livestock transport by easing taxation - in commercial destocking, the coordination body can liaise with different tax authorities along routes where livestock are being transported by traders.

Provision of uniform services - ensuring that the support services required by the programme such as animal feeds, water, slaughter equipment and personnel are provided at all locations in which it will operate.

Establishment and management of contingency funds - coordinating the different sources of funds required to support the operational costs of the destocking programme is a way of ensuring that they are used effectively.

Ensuring linkages with food aid and safety nets – *liaison with food aid and safety programmes can assist targeting and other aspects of destocking.*

Documentation of experiences and practices - effective recording of lessons learned (e.g. in respect of intervention timing and management, efficiency, efficacy, cost-benefits and

levels of community participation) is likely to be of considerable value in enhancing the value of future operations.

Box 3.2

National coordination arrangements during commercial destocking in Ethiopia

During the 2006 drought in the Borana area of Ethiopia, a national coordination strategy was devised through the State Ministry of Agricultural Inputs and Marketing, comprising Ethiopian Live Animals Exporters Association, Meat Exporters Association, Oromiya Pastoral Development Commission (OPDC), NGOs, UN agencies and academic partners. Initially, meetings were held on a weekly basis and bi-weekly thereafter as the drought situation improved.

All national and export livestock traders were invited to participate in commercial destocking (through mass media) and field visits were arranged for the traders in three drought-affected areas. NGOs on the ground arranged purchase sites and secured temporary assembling grounds close to purchase points for the traders. Similarly, the Ministry in collaboration with the OPDC arranged access for the traders to acquire temporary holding grounds close to fattening centres.

USAID also arranged a meeting between commercial banks and the livestock traders to explore if fast track loans could be made available. However, the banks were not in a position to provide loans to the traders due to time constraints.

The strong coordination enabled the purchase of some 25,000 head of drought-stricken cattle by traders, by far the largest amount of livestock purchased in the history of destocking interventions in Ethiopia.

3.3 Commercial destocking

Although experiences with commercial destocking in Ethiopia during drought are limited, assessments conducted so far indicate that this intervention should be prioritised above other types of livestock intervention during the early stages of drought. The cash which is transferred to pastoralists during commercial destocking is derived from the private sector, and the key role of government and NGO actors is to link livestock traders with communities who need to sell some of their livestock. Furthermore, the cash acquired by pastoralists is used for local purchases of commodities and services and therefore helps to maintain local economies. Expenditure on livestock feed, veterinary care or the transport of livestock to distant grazing areas also helps to reduce the need for government or NGOs to intervene with these types of support.

3.3.1 Guidance on the timing of commercial destocking

In Ethiopia various sources of early warning information are available to indicate that commercial destocking is required. In areas where early warning systems are not operational, field-level assessments by experienced practitioners can be as useful as early

warning reports. In the case of early warning systems based on remote sensing, field-level verification of information is required.

Using the drought cycle management model, commercial destocking should take place in the alert and alarm stages of a drought, and the indicators which can inform a decision to support commercial destocking include:

Deviations in water availability and pasture production - rainfall failure or reductions in precipitation in the short and long seasons in any given year will generally lead to reduced pasture and standing water. In some cases, this could be a localised problem that can be resolved by indigenous responses. Periodically however, drought may affect the entire ecosystem and extend to populations in neighbouring countries. The severity and extent of disruption in biomass availability is monitored by the online Livestock Early Warning System.

Non-seasonal changes in market activities - increases in livestock availability at markets (without a corresponding increase in demand) can indicate that livestock keepers are resorting to distress disposal. In this situation, prices will fall but individuals may hope to salvage some value from their animals through normal market channels. Under these conditions, a 25 per cent drop in livestock prices is generally regarded as a trigger point for initiating destocking.

Increases in cereal prices - early in the alert stage of a developing drought, cereal prices can show a tendency to rise with no associated increase in the value of livestock. In this situation, a 25 per cent increase in cereal prices can be regarded as the threshold for considering a destocking operation.

Unseasonal migrations - early migrations in search of pasture and water are often initiated before the drought situation worsens and mass migrations commence. These generally involve the removal of only the most valuable animals and, when occurring widely, may provide strong evidence of indigenous concern that a drought may be approaching. Indeed, indigenous approaches to predicting drought are often accurate and should be recognised.

Unusual migration routes - vertical migrations along unusual routes and taking place either at normal times or out-of-season may indicate local perceptions of a worsening situation. Examples of unusual vertical migrations include the migration of Afar to Cheffa and Issas to West Hararghe, Dakata, the Erer Valley and Fafem.

3.3.2 Determining the feasibility of commercial destocking

Commercial destocking is highly reliant on private livestock traders and therefore, the domestic and export demand for livestock and meat at a particular time, plus the capacity of holding grounds and feedlots, should be assessed. Livestock traders will not buy substantial numbers of livestock from drought-affected areas unless there is a demand for live animals or meat at terminal markets in Ethiopia or outside the country. It follows that rapid analysis of the overall livestock marketing situation is central to assessing the feasibility of commercial destocking, and the scale of the livestock purchases which might take place. Such analysis should involve experts and government technical staff with a detailed and up-to-date knowledge of the local and national livestock marketing systems, trends in the export of livestock and meat, and the facilities and services that are in place at all levels. This rapid analysis should then inform dialogue and discussion with livestock traders in order to reach a joint decision on whether or not commercial destocking should take place.

Some specific issues which need to be considered during the rapid analysis and subsequent dialogue with traders include:

- The location and size of the drought-affected area(s), and therefore, an approximate estimation of types and numbers of livestock which might be available for sale.
- The general body condition of different species and types of livestock, and their market value; while some traders may prefer to buy only animals in relatively good body condition, other traders may buy thin animals with a view to fattening them.
- The demand for specific types of livestock and meat in various domestic and international markets.
- The capacity of abattoirs, feedlots and holding grounds, and government commitment to making land available as temporary holding grounds if necessary.
- The location of the drought-affected area(s) with respect to main roads, accessibility to communities who may sell livestock, and an understanding of the additional transaction costs required to reach more remote areas.
- The capacity of local government and NGO actors to work with communities to create temporary markets, and to explain the commercial destocking approach to communities.
- The commitment of government to relax certain taxation issues or other bureaucratic procedures, thereby enabling rapid purchase and transport of livestock by traders.
- Options for combining off-take of livestock with the provision of livestock feed to remaining animals, using the same vehicles.

During the analysis and discussion with livestock traders it is important to note that traders cannot be forced to purchase livestock in situations where demand at terminal markets

does not support substantial purchases and inflow of animals into the supply chain. The status of markets will largely determine the economic rationale and ultimate success of commercial destocking. Government and NGO actors also need to be aware that livestock traders may request loans to assist rapid procurement, but that ideally, traders should use their own capital to buy livestock. Systems for the approval and administration of rapid loans to livestock traders are not well developed, and are not easily supported by many NGOs or private banks. When loans are to be used, a control mechanism should be put in place to ensure that loan funds are used specifically for the purchase and transport of animals.

3.3.3 Guidance on the design and implementation of commercial destocking

Most types of livestock interventions in pastoral areas during drought are very much under the control of government agencies and NGOs, and these actors can work with communities to design specific aspects of the intervention in question. In contrast, commercial destocking is largely shaped by market factors and the need for private traders to make a reasonable profit from their activities and minimise risks to their investment.

Design and implementation issues which can be influenced and facilitated by government and NGOs include:

Communication and liaison with communities - to explain the commercial destocking approach and to introduce livestock traders to communities e.g. through field visits arranged for the traders.

Identification of sellers - discussion with communities to agree which households should sell animals. As shown in Box 3.1 the sale of only a small number of animals can enable a household to acquire sufficient grain to meet its nutritional energy needs for many weeks, or even months. In terms of relief assistance, it is therefore preferable to support an approach whereby many households have the opportunity to sell small numbers of livestock, rather than a few households selling many livestock.

Support measures - through a strong, central coordination body government and NGO actors can help to ensure that various support measures are in place to facilitate commercial destocking. These measures include:

- *Health inspection of purchased livestock* - by government veterinary public health officers.
- *Temporary holding grounds* - the coordination body should support implementing agencies by liaising with regional, zonal and woreda authorities to secure temporary holding grounds where traders can assemble purchased animals until

they are fit for transportation. Traders may also require additional land close to feedlot centres in order to accommodate increasing numbers of animals.

- *Provision of water and feed* - the national coordinating body should coordinate the provision of feed to livestock purchased by traders on a full cost recovery basis. These animals should also be given access to existing water points in the operational area.
- *Veterinary services* - liaison with the Department of Veterinary Services will ensure that recommended vaccines and drugs can be supplied for livestock assembled by traders by veterinary professionals.
- *Fuel availability* - the national coordinating body should take measures to ensure the availability of fuel along major destocking routes.
- *Security* - coordination with local authorities will be needed to make sure that accessible sites are safe and secure enough for commercial destocking.
- *Taxation* - the national coordinating body should negotiate with federal and regional customs offices to exempt livestock traders from paying transit taxes when moving livestock across regions in times of emergency.
- *Transport* - the use of options, such as government owned vehicles, should be explored to alleviate transport shortages for moving livestock. Support should also be provided by the Road Transport Authority in order to minimise unnecessary delays.

Control measures - a number of control measures need to be implemented to minimise the likelihood of unscrupulous individuals capitalising on the situation for personal gains. These measures are particularly important in the case of transport subsidies and as such subsidies are not a preferred option for destocking, they will not be commonly applied. In the event that transport subsidies are used, purchased livestock need to be marked (tagged or tattooed) and local officials need to ensure that their departures (date, time, vehicle particulars and operators etc.) are properly documented. Inspection officers receiving animals at fattening centres can then verify that the livestock have been properly transported by checking against the original documents. In general, payments should only be made after ensuring that purchased stocks have arrived at the fattening centre.

Selling arrangements - working with communities and traders to agree on issues such as the location and timing of purchase areas and temporary markets. Agencies need to identify target locations for destocking programmes based on both need and feasibility. Access problems can be a major issue limiting the geographical coverage of commercial destocking. Households wishing to sell livestock may be scattered within villages, and villages may be some distance from each other. Therefore, commercial destocking may tend to benefit people in villages that are relatively close to major roads at the expense of people living in more remote areas. To some extent, this problem may be addressed by adopting a rotational operation in which isolated communities are reached by specifying

fixed, temporary market days for different locations. Purchase sites and timing of markets should be determined in consultation with local communities. They should generally be existing villages or temporary settlements to avoid the need for lengthy trekking of weakened animals.

Box 3.3

Expanding coverage through temporary markets

During the drought in 2006 in parts of southern Ethiopia, commercial destocking took place in which private livestock traders were introduced to pastoralist communities with livestock to sell. Between 5th to 25th February 2006 the traders purchased 6,292 male cattle by expanding coverage through temporary markets. Purchased cattle were either transported directly to holding grounds in Nazreth, Awash and Metehara, or held in the Moyale area where they were provided with fodder until they were healthy enough to travel.

The traders used temporary market places to expand their coverage and utilise the time efficiently so that they could destock as many animals as possible. Malab, Tilo Medo, Tuqa, Argen, Medo, Goofaa, and Dembi are among some of the sites established as temporary market places in Moyale woreda of Ethiopia.

Some temporary market places around Moyale during the 2006 drought

Location of temporary market	Number of cattle sold	Average price (Eth birr)	Total price (Eth birr)	Date of sales
Tuqaa	708	512	362,240	February 5 th - 8 th , 2006
Oatella	826	428	353,505	February 5 th - 8 th , 2006
Malab	51	453	23,100	February 5 th , 2006
Total	1,585	466	738,845	February 5 th - 8 th , 2006

Monitoring arrangements - so that livestock purchases by type and price can be recorded and assigned to specific households. This is a key role for NGO or government actors, and can greatly assist evaluation and assessment of the destocking at a later stage.

Aspects of commercial destocking which are heavily influenced, if not determined by the traders include:

Types of livestock for purchase - the species, age and sex of livestock to be purchased, and the preferred body condition. Traders know the best end-markets for purchased livestock and will select animals accordingly. As a general rule, young adult or adult male animals in good body condition will be bought, although in some situations traders will also buy very thin livestock knowing these animals can be fattened and sold at a later date. To some extent, trader preferences will match pastoralist's preferences, because pastoralists will tend to retain adult breeding females to assist herd recovery after drought.

The prices of livestock - the prime motivation for traders is profit. Traders realise this profit as a result of low prevailing purchase prices for drought-affected animals. When animals are thin, a rapid weight gain is possible when they are returned to an adequate plane of nutrition.

A significant element of profit maximisation for traders is the minimising of costs including road access, provision of water, feed and security. As a result, traders will opt to purchase animals that are in better condition (for the price) and closer to roads.

3.4 Slaughter destocking

Slaughter destocking is a less preferred option compared with commercial destocking, because it usually takes place when livestock traders are no longer willing or able to buy livestock from drought-affected areas. Therefore, slaughter destocking occurs during the emergency phase of a drought when livestock condition is very poor and unless purchased and slaughtered, large numbers of animals are likely to die without any benefit (or only very minor benefit) to their owners. Slaughter destocking usually requires the use of funds from aid agencies and therefore is limited in terms of the numbers of animals which can be purchased.

Compared to commercial destocking, there is much more experience in Ethiopia with slaughter destocking and in part, this is because slaughter destocking usually takes place later in a drought.

3.4.1 Guidance on the timing of slaughter destocking

Although slaughter destocking is less preferred to commercial destocking, it is still an intervention which can offer a rapid way of reducing the burden of livestock upon peoples' livelihoods under the extreme conditions of an emergency situation. At the same time, it can deliver tangible benefits to affected households by providing meat or cash, and can also provide short-term employment for a limited number of community members.

The decision to conduct slaughter destocking or not should be informed largely by information on the stage of a drought and the behaviour of livestock traders. Therefore slaughter destocking should take place when:

- A drought has entered the emergency stage in terms of drought cycle management
- Traders are no longer willing to buy livestock due to factors such as the poor body condition of animals (and therefore, high mortality during transportation) or the inaccessibility of communities due to poor roads or other reasons. At this time, sharp drops in livestock prices resulting from loss of condition are evident.

It can be noted that some areas may be viewed by traders as inaccessible during the alert or alarm stages of a drought and in these situations, slaughter destocking could be considered before the emergency stage.

3.4.2 Determining the feasibility of slaughter destocking

A number of key questions can assist agencies to assess the feasibility of slaughter destocking.

What is the stage of the drought and state of livestock markets? As indicated in section 3.4.1, the need for slaughter destocking partly depends on the stage of the drought and a rapid decline in livestock value in local markets.

Are there particular households which could be assisted? Within a community there may be specific disadvantaged sub-groups at particular risk of severe food or income deficits. Slaughter destocking can be a way to target these groups with assistance in the form of cash or meat.

How might cultural factors affect the intervention? Some target populations may have cultural preferences that will hinder slaughter destocking and meat distribution. For example, in Borana areas during drought in 2006 communities were initially reluctant to consume dried meat from thin, drought-stricken livestock. Considerable community-level dialogue and patience was required to change attitudes and when evaluated some months later, people actually appreciated the dried meat as a source of food during the drought.

What is the human food supply situation? Slaughter destocking can deliver food relief to affected households if supplies from other sources of emergency assistance are not adequate.

Are there local community groups or local leadership in place? Slaughter destocking works best when the objectives and implementation are discussed with communities and a common understanding is reached. Strong local community groups or traditional leaders can greatly facilitate this process, and help to organise various stages of the intervention.

Are there any local security concerns? If aid agency staff have to carry large sums of cash into an area which has been targeted for destocking, the prevailing security situation will need to be assessed and the safety of all staff guaranteed. In conflict situations, livestock can be attractive to criminals as they are easily mobile, disposable for cash or otherwise or used for wealth accumulation. This can present an additional source of insecurity for their owners. Furthermore, destocking operations may also present an attractive target as they

involve the handling of large amounts of cash in insecure areas making communities more vulnerable to risks. It may be possible to reduce this risk by the use of a coupon system that recipients can redeem against cash at a more secure central location.

3.4.3 Guidance on the design and implementation of slaughter destocking

In slaughter destocking, drought-affected livestock are purchased by an aid organisation. Purchased livestock are then slaughtered locally and either fresh or dried meat is distributed to targeted households. Within communities there are various distinct groups of actors and beneficiaries who need to be recognised and involved in the intervention. These community-level actors and beneficiaries are:

- Local or traditional leaders or decision-making groups
- Livestock sellers
- Meat handlers
- Meat recipients

It can be useful to work with local or traditional leaders to establish a 'meat relief committee' (MRC) or similar local body. An MRC can be of considerable value for helping to identify beneficiaries, overseeing the operation and ensuring that distributions reach the intended recipients. The formation of MRCs can also help to distribute power that might otherwise be monopolised by other 'Food Relief Committees' and share some of the general responsibilities of the implementing agency. Other specific roles for an MRC include:

- Assigning responsibilities to different community groups
- Assisting with the identification of beneficiaries
- Organisation of groups for slaughtering and meat distribution
- Distributing live animals for slaughter
- Supervising slaughter, meat distribution and the collection of hides and skins from the beneficiary groups for the intended purpose, if needed.

Slaughter destocking: Key design issues

Ideally, a participatory approach should be used during all stages of design and implementation with frequent use of open meetings in communities in which people can hear and contribute to discussion.

Selection of livestock sellers - this should be based on clear, commonly understood criteria for identifying the most vulnerable households. Wealth ranking or similar techniques can assist this process, and the actual selection method should be sensitive to local culture and avoid compromising the dignity of the families involved. As the extent of livestock purchases is likely to be finite and defined by budgetary considerations, it is likely that not all drought-

affected animals available for purchase can actually be purchased within a given community. Therefore, decisions will need to be made on who is eligible to sell animals and receive cash payments. Ideally, livestock sellers in a slaughter destocking intervention should comprise as many of the most vulnerable households as possible, with due emphasis on female-headed households.

Types, number and prices of livestock to be sold - depending on the available budget, an agency will need to work with communities to carefully define the number and type of livestock which can be purchased from each household. The greater the number of animals purchased from each household and the higher the price per animal, the fewer the number of households which can be targeted. Again, discussion and decisions on these issues can take place in open meetings so that it becomes commonly known how decisions were reached. The amount of cash to be received by a household from livestock sales during slaughter destocking, needs to be sufficient to make a substantial contribution to household income during the anticipated drought period. If too little cash is received, households will continue to rely heavily on other forms of assistance, whereas if too much cash is received, fewer households will be reached.

As a general rule young, reproductive female animals should be excluded from slaughter destocking programmes as they will form the foundation stock for herd re-establishment during the recovery phase. Old male animals, surplus young males, non-reproductive females and ailing stock (excluding any that may pose a disease risk to the people who eventually consume them) may be used for slaughter destocking. Often it will be sound practice for less drought tolerant species (cattle and sheep) to make up the bulk of the animals to be destocked.

Excessive differences in the purchase price of animals for slaughter destocking within and between neighbouring geographical areas can lead to resentment and harassment of staff working for lower paying agencies. Strong coordination within and between areas can help to overcome these problems. The coordinating body should assess the prevailing livestock market prices in various localities to determine a uniform purchase price for each type of species, which should be adhered to by all implementing agencies in the same geographical area.

Types of meat for distribution - dried meat processing can be a complex and costly process that involves skinning, cutting, slicing, salting, cooking, drying, storing and guarding the meat. It is important that proper hygiene procedures are implemented and that plenty of water is available for processing and cleaning. Local rituals, beliefs and taboos relating to animal slaughter may need to be taken into account with guidance from local NGOs or other agencies with long-term development experience in the particular area. Fresh meat distribution is a far less complex process once purchasing and distribution systems have

been put in place, but has the disadvantage that fresh meat is more perishable than dried meat. Overall, fresh meat distribution is relatively simple and cheaper than dried meat distribution.

Amount of meat to be distributed - in order to represent a useful dietary supplement to vulnerable individuals, the amount of meat distributed should be sufficient to make a good contribution to daily protein requirements, for a sufficient number of days. Annex 3.1 provides the recommended daily allowance of protein for people of different types and ages, and can be used to estimate for how many days a specific weight of fresh or dried meat can cover a person or households protein requirements.

Box 3.4

Amount of meat derived from different livestock species if slaughtered during drought

Livestock species and type	Approximate bodyweight if drought-stricken (kg)	Approximate weight of fresh meat in carcass (kg)	Approximate weight of dried meat from 1 animal (kg)
Camels:			
Afar/Issa adult male	200-250	70-88	18-22
Somali adult male	250-300	88-105	22-26
Cattle, adult male	120-150	45-60	9-12
Sheep, adult male	10	5-6	1
Goat, adult male	10	5-6	1

Selection of meat recipients - the people selected to receive meat should include the most vulnerable families in the community and particularly those with many children, pregnant or nursing mothers, widows and the aged. For cultural reasons, it is likely that targeted households will share the meat with non-targeted households in pastoral and agro-pastoral settings. If this is the case and sufficient quantities of meat are available, distributing meat more widely in the community will help to avoid resentment. Distribution may also include community-level facilities such as schools, hospitals or prisons that would otherwise go without direct supplies of food.

Hygienic slaughter and meat distribution - the capacity for the programme to implement hygienic slaughter and meat preparation practices needs to be considered at the design stage. Slaughter destocking should include *pre* and *post mortem* inspection by livestock or public health officers. Environmental contamination can be reduced by slaughtering on concrete slabs with effective drainage systems or if such facilities are not available, by changing the slaughter sites as frequently as possible. Allowing beneficiary families to do their own slaughtering and distribution of fresh meat can reduce risks of disease. Proper disposal of inedible offal, blood and other wastes and hygienic meat preparation practices can be encouraged by providing rapid, basic training to community members. Locally-

acceptable practices relating to the slaughter and skinning of animals and the preparation of dried meat must be understood and observed. These may be based on religious or cultural grounds, or in some cases may simply be associated with taste preferences. For example, in some areas meat may be boiled first before drying while in other areas meat may be salted and dried, or, not only salted but also sprinkled with pepper before drying.

Slaughter destocking: Key steps in implementation

Procurement - the programme may purchase animals directly from owners or contract-out the procurement process to community-based groups such as women's groups or cooperatives (see Box 3.6). As well as reducing the burden on the implementing agency, this approach can provide financial benefits for the groups involved. It may also help to increase the geographical coverage of the initiative as contractors can be engaged at each of the locations where the programme will operate. Transparency in pricing is important and community members should be made aware of the fixed prices that they will receive for their livestock and the prices at which the animals will be sold on to the implementing agency.

Slaughtering - slaughter and distribution operations need to be scheduled in order to minimise wastage. In the case of fresh meat distributions the meat produced at each slaughtering should not exceed the quantity that beneficiaries can consume within a few days. Depending on the type of meat distribution and the species being killed, slaughtering may take place on a bi-weekly, weekly or fortnightly basis in order to ensure continuity of supply to beneficiaries for the duration of the operation. Salt may be distributed along with fresh meat.

- *Fresh meat distribution* - needs to be frequent and regular, preferably once each week. The consent of communities should be sought in advance to ensure that they will be able to slaughter and distribute fresh meat amongst themselves, on this basis, with minimal external supervision.
- *Dried meat processing and distribution* - dried meat operations need more equipment and other materials compared with fresh meat handling; see Box 3.5 for a list of basic materials required, and requirements should be assessed at the planning stage. Some equipment may be available locally but other materials may need to be brought in from commercial centres close to the operational area. Water availability should also be considered as it is crucial for dried meat processing. Dried meat may be distributed as a component of a relief food ration (assuming that food aid is being provided in the area) or on its own. Integration with existing food aid requires weighing and packing of meat so that it contributes to the delivery of recommended dietary allowances for protein (see Annex 3.1). Otherwise, distribution may take place on an *ad hoc* basis as deemed necessary by

local MRCs and other community representatives; MRCs should be involved in deciding the most appropriate approach at each location.

Box 3.5

Minimum equipment required for processing dried meat

- Various types of knives
- Axes, shovels and hoes
- Ropes
- Plastic buckets
- Water - good supply
- Salt
- Firewood or preferably, kerosene or other fuel sources
- Detergents
- Plastic bags
- Black linen clothes (for covering)
- Hides and skins trimming frame

Selection of meat handlers and incentives - ideally, families that will receive meat from the programme should be organised into groups that will carry out slaughter and distribution amongst themselves in order to minimise costs to the implementing agency and maximise the number of households which can be destocked. In some situations, agencies may also choose to employ some local people temporarily. For example, youths might be employed for slaughtering, flaying and guarding the meat. Vulnerable female-headed households may be prioritised for employment in preparation of dried meat as they usually possess the necessary skills already.

Coordination of meat distribution and distribution of other types of food - where possible, meat distribution should be synchronised with relief food distribution for maximum impact.

Pre and post mortem inspection arrangements - *ante* and *post mortem* inspection should be conducted to minimise the risk of disease transmission to humans through meat consumption or contact with animals. The programme should seek the services of animal or public health specialists working in close proximity to the operational area.

Disposal of hides and skins - all fresh hides and skins should be dried properly after slaughter under the supervision of the MRC. Ideally, this should be carried out on wooden frames, indoors at designated locations. Income generated from the sale of hides and skins can be used to pay the wages of community members involved in the operation or to support more disadvantaged people. Community members involved in slaughtering should be properly trained in techniques for flaying and drying hides and skins.

Box 3.6
Slaughter destocking

In a slaughter destocking intervention by CARE International in Dire woreda in 2006, a total of 2,411 animals of different species were slaughtered in four centres, and a total of 2,814kg of dried meat was packed and distributed along with supplementary food. The weight of each pack of dried meat varied from 0.5 to 0.75kg and on average, each household received 2.2kg of dried meat.

Working through local cooperatives, a fixed value was set for each species of livestock – cattle Eth birr 300, camels Eth birr 600, and sheep and goats Eth birr 75. Purchasing was organised through the Dillo Kayo Multi-Purpose Cooperative with a minimum profit margin of Eth birr 10 for cattle, Eth birr 20 for camels and Eth birr 5 for shoats. Therefore, pastoralists received Eth birr 290, Eth birr 580 and Eth birr 70 for cattle, camels, and sheep and goats respectively. In addition to receiving a small profit from the purchase of livestock, the cooperative received the hides and skins from the slaughtered animals.

In total 1,121 households sold livestock for destocking and these households received a total of Eth birr 227,475. Therefore, the average income per household from livestock sales was Eth birr 203 (US\$ 23).

Source: Demeke (2007)

3.4.4 Monitoring, evaluation and impact assessment

Key issues relating to monitoring, evaluation and impact assessment in relation to destocking programmes are summarised in the checklist at Annex 3.2.

3.5 Policy implications and outstanding issues

Destocking operations are basically short-term interventions to relieve a crisis situation. As such, they are less vulnerable to policy decisions that impinge on the longer-term viability of pastoralist and agro-pastoralist populations (cf. restocking programmes). The major policy options that may affect destocking programmes are largely related to their financial viability and include:

Taxation – the involvement of livestock traders in commercial destocking operations can be encouraged by temporarily waiving of transit and other levies. Transit taxes are applied at various road barriers and are widely perceived as being ineffective in providing reciprocal services. Effective application of such a policy would require effective liaison between national government and the regional and sub-regional authorities that apply these levies.

Short-term loans - to date most of the commercial destocking which has taken place during a drought has used traders' own capital, partly because NGOs and banks are not well positioned to offer rapid loans at the onset of drought. If commercial destocking is to be more widely used in future, it is possible that appropriate mechanisms for providing short-

term (generally not more than 9 months) loans is likely to be critical for livestock traders with limited working capital. This issue may be addressed by establishing a contingency fund to fast-track short-term loans. Disbursement of funds may be managed by financial institutions according to appropriate usage guidelines formulated by a national coordination forum.

Subsidies – traders incur substantial costs when trucking animals and during commercial destocking, such costs are likely to be higher because during emergencies competition for vehicles, fuel and drivers is high. As a result, transport costs may represent up to 50% of the total cost of purchasing and bringing animals to market. Traders also incur substantial costs due to mortality which can be expected to increase during a drought. Furthermore, the significance of all these costs is greater during emergencies when market prices for livestock are normally depressed. In this situation, there may be a case for providing subsidies to restore acceptable profit margins for traders. The use of subsidies requires further testing bearing in mind experiences from other countries where the close monitoring of subsidies proved to be difficult. The introduction of subsidies can result in a rapid escalation in costs of the operation and require a much higher investment in control measures to ensure that they are not abused. In all cases, the perceived benefits of subsidies and the costs involved should be assessed against non-subsidised commercial destocking.

Annex 3.1

Contribution of dried meat to recommended daily protein allowances for different age groups and categories of people

The Table below assumes a protein content for dried meat of 55.4g /100g edible portion¹. The protein content of dried meat greatly exceeds that for fresh meat - the protein content of fresh meat from a thin Zebu cow is around 20.6 g/100g edible portion¹.

Age and category of person	RDA protein (g/day) ²	Daily requirement of dried meat (g)	Number of days for which 2.2 kg dried meat will provide RDA protein
Infant 7-12 months	11	20.1	108
Children 1-3 years	13	23.5	92
4-8 years	19	34.3	63
Males			
9-13 years	34	61.5	35
14-18 years	52	94.1	23
19-30 years	56	94.1	23
31-50 years	56	94.1	23
51-70 years	56	94.1	23
>70 years	56	94.1	23
Females			
9-13 years	34	61.5	35
14-18 years	46	83.3	26
19-30 years	46	83.3	26
31-50 years	46	83.3	26
51-70 years	46	83.3	26
>70 years	46	83.3	26
Pregnancy			
14-18 years	71	128.5	17
19-30 years	71	128.5	17
31-50 years	71	128.5	17
Lactation			
14-18 years	71	128.5	17
19-30 years	71	128.5	17
31-50 years	71	128.5	17

For a family comprising one adult female (aged 28), one adult male (aged 30), two girls (aged 1 and 5) and two boys (aged 3 and 8), 2.16kg of dried meat would cover the family protein RDA for approximately 7 days.

¹ <http://www.fao.org/docrep/003/X6877E/X6877E02.htm>: National Academy of Sciences, 2002.

Annex 3.2

Monitoring and evaluation indicators for destocking projects

Commercial destocking

Monitoring indicators	Post-operation Output Indicators
<ul style="list-style-type: none"> • Phase of the drought cycle (alert, alarm, emergency) • Market mapping, opportunities and risks • National, export demand projections • Number of participating livestock traders • Number and location of operational areas (existing and temporary market sites) • Provisions (watering points, holding grounds, vet services etc) for livestock traders (quality and quantity) • Transport provisions • Loan disbursement procedure (length of time required) • Amount of loan provided (total and per trader) • Loan period • Number and species of animals purchased • Total value of salvaged animals • Average price per species • Actual number of beneficiaries vs. predicted number • Types of beneficiaries 	<ul style="list-style-type: none"> • Mortality per species after purchase (on site, during transport and after arrival) • Total mortality costs • Mortality cost / trader • Estimated profit level per trader • Traders perceived strengths / weaknesses of the project • Loan recovery rate (total, per trader) • Amount of defaults • Number of defaulters • Proportion of off-take (with own sources and from loans) • Average value salvaged per beneficiary • Proportion of income used for: <ul style="list-style-type: none"> ○ <i>Food</i> ○ <i>School fee</i> ○ <i>Medicine</i> ○ <i>Animal feeds</i> ○ <i>Veterinary services</i> ○ <i>Cloth</i> ○ <i>Transporting animals to other sites</i> ○ <i>Investing in business or small stock</i> • Beneficiaries' ranking of benefits • Community perceptions on benefits/drawbacks of the project as regards: <ul style="list-style-type: none"> ○ <i>Timing of the operation</i> ○ <i>Price</i> ○ <i>Timely payments and other payment modalities</i>

Slaughter destocking

Monitoring indicators	Post-operation Output Indicators
<ul style="list-style-type: none"> • Phase of the drought cycle (alert, alarm, emergency) • Available operational budget • Estimated purchase price by species • Projected volume of purchases for slaughter (by species) • Targeting criteria and projected number and types of beneficiaries (sellers, meat recipients, contractors, employment, etc) • Operational modality (direct or through 'Meat Relief Committees) • Coverage (fixed or rotational centres) • Slaughter frequency (once in every centre or on regular basis for the duration of the project) • Purchase arrangements (direct, contract) 	<ul style="list-style-type: none"> • Recipients fitting to targeting criteria • Actual beneficiary numbers (sellers, meat recipients, contractors, employees etc) • Total number of animals purchased and slaughtered by species • Total tonnage of meat produced (estimated as wet or dry) and distributed • Amount of meat (wet or dry) received per beneficiary (household) • Actual purchase price by species • Total cost of livestock purchased • Number of livestock sellers and average income received per family • Number of contractors and average amount of income earned by contractors (if any) • Number of employees and average amount received by each temporary employee • Role of Meat Relief Committees in attaining project objectives (quantitative) • Perceived benefits of the project by communities (ranking) • Perceived drawbacks of the project by communities (timing, targeting, purchase price etc) • Proportional pile of income used on (for all cash beneficiaries): <ul style="list-style-type: none"> ○ <i>Food</i> ○ <i>School fee</i> ○ <i>Medicine</i> ○ <i>Animal feeds</i> ○ <i>Veterinary services</i> ○ <i>Cloth</i> ○ <i>Transporting animals to other sites</i> ○ <i>Investing in business/ small stock</i>

Annex 3.3 Further reading

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http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/resources/pdf/livestock_guidances_11-19-02.pdf
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4. Livestock Feed Supplementation

4.1 Overview

Feed supplementation in times of emergency – through indigenous initiatives or the provision of external support – aims to protect the core assets of affected households until the natural resource base can recover and normal management practices can be resumed. The material in this chapter aims to support the implementation of timely support for feed supplementation activities according to best practices. It is aimed at a range of stakeholders including planners, policy makers and local organisations of the pastoral community and is intended to:

- create awareness of the principles and practices of livestock feed supplementation during emergencies in a way that is relevant to the Ethiopian pastoral sector
- provide technically-sound, practical guidance on the implementation of livestock feed supplementation that may be followed by these target organisations.

Feed supplementation has not been widely used during emergencies in pastoral areas of Ethiopia, due largely to a lack of knowledge regarding the implementation of this intervention. However, the current situation in the country means that this intervention is now worth serious consideration due to the erosion of traditional coping mechanisms and other changes. Drought fallback areas in the rangelands have been reduced substantially due to encroachment of cropping into the traditional grazing reserves and human population growth, accompanied by unplanned settlement patterns. Even in areas where forage reserves are relatively abundant, mobility is often restricted due to local conflicts. The confinement of grazing animals in conflict-free zones, has led to serious degradation of the rangelands. As a result, even a single seasonal rainfall failure can lead to serious loss of livestock.

The cumulative effects of drought in the arid and semi-arid parts of the country has driven many pastoralists into destitution and forced them to enter into ecologically unsuitable livelihood activities, such as crop farming and charcoal making. If these trends continue, similar livestock feed crises will force many more pastoralists to abandon their lifestyle. It seems likely that well-planned, strategic livestock development and emergency feeding interventions will offer a means of responding to these changes and reducing the impacts of drought in the pastoral areas in the future (Box 4.1). Experiences from other countries indicate that emergency responses that have successfully tackled the impacts of drought-induced loss of livestock have often included some form of survival feeding strategies.

Box 4.1

Supplementary feeding in the 2006 drought

During the 2006 drought high livestock mortality occurred in Moyale woreda, particularly around El-lay. In order to assist some pastoral families to maintain their breeding stock and reduce recovery times, Save the Children US (SC US) proposed to support Somali herders to establish 'nucleus breeding herds'. As a support measure SC US met transport costs related to concentrate feeds (wheat bran, noug cake or maize) and hired stockmen who would, among other tasks, ensure that selected livestock gathered at the feeding centre. Participation in the initiative was determined at community meetings resulting in the involvement of 320 goats at El-lay, and 250 sheep and goats at Chilanqo. The body condition and conception rates of animals improved considerably in response to supplementary feeding, and mortality was reduced.

Beneficiary perceptions of the relative importance of feed and animal health interventions revealed that on average, 74% of the reduced mortality, 89% of the improvement in weight and 41% of the improvement in conception rate was attributed to supplementary feeding.

It is possible that feed supplementation programmes have not been widely used in Ethiopia due to a perception that these programmes are complex due to the need for various supporting inputs. With improved inter-agency coordination and better communications, provision of these complementary services should not pose major problems in future.

Table 4.1

Advantages and disadvantages of feed supplementation

Advantages	Disadvantages
Effective asset protection promotes rapid return to self-sufficiency during recovery phase.	Impact may be compromised in the absence of adequate water or veterinary care.
If well designed can complement and strengthen indigenous responses.	Logistical complexity, particularly in relation to transport and delivery can prevent benefits being realised.
Easily accommodated within traditional practices reducing the likelihood of a subsequent exit from pastoralism.	Relatively complex technical knowledge required (e.g. of nutritional constraints and responses) to make the best use of resources.
Feed interventions can be integrated with longer-term development initiatives to promote rapid response capacity and support avoidance strategies.	Without proper control measures disease incidence may increase due to contamination of feeds or increased mixing of animals.
In less serious emergencies, can support income generation through the sale of livestock products.	Can be costly and, due to significance of transport costs, more isolated (potentially more vulnerable) beneficiaries will cost more to reach.

Important complementary services for livestock feed supplementation include:

- **Provision of animal health services** - investments in the delivery of feed and water to affected livestock need to be protected as much as possible against losses due to disease outbreaks; see Chapter 6.
- **Provision of clean water** - lack of water will kill animals much more quickly than lack of food. There is little point in implementing feed supplementation if water supplies cannot be guaranteed; see Chapter 5.
- **Destocking** - complementary destocking may not always be necessary for successful implementation of feed supplementation. However, it can help to reduce local demand for feed and to ensure better targeting of the most valuable and vulnerable animals; see Chapter 3.

4.2 Needs assessment and planning issues

4.2.1 Cost and logistical issues

Pastoralists have their own adaptive mechanisms and strategies which they use in times of drought risk. These responses are based on perceptions of resource availability and rely upon local traditions and skills. Generally, pastoralists rear mixed herds comprising camels, cattle, sheep and goats. The mix of livestock species maximises use of available grazing and browse during normal times, and helps to increase herd size as a safety net for droughts. During the alert stage of drought grazing practices may be modified by, for example, grazing in the early morning or late evening when the grass is fresher and there may be some dew for the animals. Herds may also be moved to more distant dry season grazing reserves, often in areas nearer to the highlands or around permanent water resources. Sending livestock to relatives or friends who have access to water and grazing is also a practice at this stage. Pastoralists may also try to acquire and store extra fodder for sick and lactating animals that are kept at home.

Supplementary feeding is likely to become a serious option when there is evidence that these traditional practices are breaking down. The extent to which this is happening needs to be carefully assessed by seeking the expert opinion of field staff in areas that appear to be at risk. In addition, some of the early warning data (see below) may provide indications of unusual livestock movements and of reductions in pasture availability in traditional reserves. The decision needs to be taken as to whether feeding or destocking is the most appropriate response at each affected location, or, whether a combination of responses is needed. For example, the overall strategy may be to try to maintain a core group of breeding animals through feed supplementation, but destock excess animals. The decision on which approach to use will depend on the following considerations:

Cost – livestock feeding programmes are often perceived as expensive but the cost needs to be compared with the cost of restocking after drought. As a general rule, it is more cost-effective to maintain a core herd of livestock than to restock.

Box 4.2

Livestock feed supplementation – costs and benefits

Northern Kenya

An analysis of supplementary livestock feeding programmes in northern Kenya in 2001 assumed that feed was provided for 8,000 sheep and goats for three months during drought¹. Each animal was fed 250g concentrate/day. The cost was compared with the cost of replacing these animals by restocking after the drought. Whereas the feed programme cost approximately US\$ 82,353, the restocking would have cost about US\$ 258,065 – it was around three times more expensive to restock than to keep sheep and goats alive during the drought through feed supplementation.

Afar region, Ethiopia

A hypothetical analysis of feed, transport, operational and administration costs for delivering 2,000 quintals of concentrate feed to Afar region indicates a cost of US\$19/quintal or total cost of US\$37,694.

- *Sheep and goats* - assuming a ration of 250g concentrate/day, 2,000 quintals would support 8,890 sheep and goats for three months. The cost of replacing these animals through a restocking project would be US\$246,397 or 6.5 times more expensive than supplementary feeding.
- *Cattle* – assuming a ration of 1kg concentrate/day, 2,000 quintals would support 2,223 adult cattle for three months. The cost of replacing these animals through restocking would be US\$ 530,000 or 14 times the cost of feeding.

A realistic, comparative cost-benefit analysis should be undertaken so that factors such as the relatively high costs of subsequent herd re-establishment can be compared with feeding a core herd of livestock, and destocking.

Logistics - the relatively complex logistics of feeding programmes are a major contributor to their costs. They may also contribute directly to the decision on viability due to lack of suitable transport, passable road networks or availability of suitable feeds for purchase.

Local preferences – the participation of local communities in emergency response planning may reveal strong preferences for one type of intervention over another. These local views should be respected by implementing agencies wherever possible.

4.2.2 Guidance on timing of livestock feed supplementation

Important factors for successful supplementary feeding include the timing of the onset of feeding and withdrawal of feeding. The onset of livestock feeding needs to be part of an overall drought management strategy which combines feeding with other interventions, and which uses feeding to help maintain core livestock assets. In pastoralist herds, the core

assets are usually productive breeding female animals and traditionally, pastoralists will manage their herds during drought to protect these animals over other types of livestock. Information from different sources can assist agencies to work with pastoralists to agree the most appropriate time to start feeding. The different types of information include data from early warning systems (e.g. rainfall patterns) combined with direct observation of livestock body condition and grazing resources, and participatory analysis with pastoralists to assess factors such as declining milk production. A further consideration is that in general, supplementary feeding of pastoral livestock during drought does not aim to maintain livestock production (e.g. milk production) but instead, aims to keep a core herd of animals alive during the drought – so-called ‘survival feeding’. It follows that feeding needs to begin at a point when local graze and browse has deteriorated to such an extent that excess mortality in core stock is likely to occur unless these animals receive feed from other sources. Experience in Ethiopia also shows that even when livestock feed is delivered late and animals are very weak, the provision of feed can lead to substantial reductions in mortality and rapid recovery of stock.

During the onset of drought it is impossible to predict when the drought will end. For planning purposes, agencies should initially assume a three-month feeding period. However, this period may either be reduced if the rains occur before three months and vegetation starts to recover, or, extended if the drought is prolonged beyond three months.

4.2.3 Assessing existing feed resources

In order to select appropriate types and levels of supplementary feeds the quality and quantity of feed that is already available needs to be assessed. Supplementation needs to be based – as far as possible – on the identification of nutrient deficiencies arising from the sole use of existing local feeds, and then providing supplements that will counteract these deficits. The dry feeds (standing hays, crop residues) that normally constitute the basal diet during drought are normally particularly deficient in protein, vitamin A and sulphur. Different approaches to addressing these deficiencies can be adopted at different stages of drought cycle management. During the emergency phase of a drought, survival feeding is the approach most commonly used in Ethiopia. However, in future it may be possible to modify this approach with more strategic feed supplementation to encourage production.

Some key principles for the efficient use of supplements include:

- Identify the most limiting nutrients, usually protein, sulphur and/or metabolizable energy (ME)
- Select supplements containing high levels of the identified limiting nutrients
- Balance the supplements to ensure efficient rumen fermentation
- If basal roughages are adequate, protein will be the principal concern. In this situation the use of concentrated high protein supplements such as oilseed cakes

may be most effective

- Feed animals in groups with similar nutrient requirements
- Use a feeding method that minimises disruption to the animal's digestive system; e.g. if feed is in short supply, feed little and often
- Advance planning can help programme resources to be spread more widely e.g. purchase feedstuffs early in the alert phase of drought when they are likely to be much cheaper
- There will usually be different options for supplementation. Cost these options before deciding which one to use
- Monitor feed consumption and body condition changes so that progress can be monitored, and feeding strategies adjusted as necessary.

4.2.4 Assessment of existing local livestock feed suppliers

An important principle of livelihoods-based emergency interventions is to avoid disruption of local services which may be needed for post-disaster recovery. In the case of livestock feed, there may be private sector suppliers of feed in some pastoral areas. Although these suppliers may be relatively small-scale, agencies should assess these suppliers and where possible, try to complement rather than undermine their activities.

It is possible that to date, private livestock feed suppliers at the local level have been overlooked in many drought assessments and subsequent feed interventions by aid agencies. In the commercial destocking intervention in Moyale in 2006, households spent 19% of the income derived from destocking on livestock feed, purchased from the private sector (see Box 2.2). In 2007 around 43% of Afar households in a drought-affected area were already buying livestock feed before agencies intervened. Supplies of feed by aid agencies should fill gaps in supply from the private sector, rather than competing with this supply. Similarly, aid agencies might target only the most vulnerable households who for some reason, are unable to access or afford the feed from private suppliers.

4.3 Design and implementation of livestock feed supplementation

4.3.1 Selection of households

The selection of beneficiaries should be based on criteria agreed by community representatives (usually elders) together with the representatives of governmental and non-governmental organisations engaged in relief activities. The selection process should include a meeting of all community members at the proposed sites to agree the nature of the assistance required, the characteristics of target beneficiaries and general modes of implementation. Specific selection criteria should be discussed in the presence of the

implementing agencies (governmental and non-governmental). Broadly these will need to address gender and other equity concerns as well as the degree of vulnerability and livestock dependency of the households that will be targeted.

When considering the vulnerability of households, it can be noted that poorer families and female-headed pastoral households may keep different types or proportions of livestock relative to better-off households. Commonly, more vulnerable households keep mainly small ruminants and relatively few larger species such as cattle or camels. The ownership of different livestock species will therefore affect beneficiary selection.

4.3.2 Types of livestock to be fed

The types of livestock to be fed should be based on an understanding of livelihoods in the affected communities, and the importance of different livestock species to different wealth and gender groups. As noted in section 4.3.1, more vulnerable households tend to keep relatively more sheep and goats compared with wealthier households and therefore, ownership patterns need to be considered if the most vulnerable people are to be targeted.

A further consideration when selecting types of livestock for feeding is drought susceptibility and the available graze or browse for different livestock species. Similarly, if the overall strategy is survival feeding for a core breeding herd, an appropriate number of productive or young adult females plus a few adult males should be selected.

4.3.3 Number of beneficiary households and livestock

The number of beneficiaries and number of animals per household which can be supported will be directly determined by the financial resources available to the programme. As it is rarely possible, nor necessarily desirable, to feed all the livestock which actually require feed, it is important to involve communities in decisions on which households to target, and how many animals to feed. During discussions at community level, prior assessment of private sector suppliers should inform targeting as in part, wealthier livestock keepers might be able to buy their own feed.

Box 4.2 above provides an estimate of the cost of supplementary feeding for cattle and small ruminants in Afar for three months, and Box 4.3 below provides cost information from Borana areas.

Box 4.3
Cost effectiveness and sustainability

The experiences of the NGO Lay Volunteers International Association suggest that over a 40 day period of feed supplementation, the total direct cost of cattle feed was Eth birr 128.5 (US\$ 14.3) per animal or Eth birr 3.2/animal/day (US\$ 0.36/animal/day). In this programme feed costs amounted to only 44% of the total costs with transport costs making up the remaining 56%. Clearly transport costs are likely to be a major limitation on many emergency feed supplementation programmes.

In the case of an FAO survival feeding programme conducted in three woredas in Borana zone, the cost of feeding was estimated at Eth birr 3/animal/day (US\$ 0.33/animal/day) for concentrate supplement. The total cost of feed (agro-industrial by-products and roughages) to maintain mature heifers or cows (at survival or maintenance levels) was about Eth birr 7-8/animal/day (US\$ 0.78-0.88/animal/day) in situations where both roughage and supplement are brought from the highland areas. This cost can be reduced to about Eth birr 5/head/day when roughage is locally available. Feed costs for maintaining sheep and goats are approximately Eth birr 1/head/day when the supplement and roughage sources have to be brought from highland areas or Eth birr 0.75/animal/day (US\$ 0.08/animal/day) when roughage is available locally.

4.3.4 Feeding arrangements

The two main arrangements for feeding livestock are either to feed animals *in situ* in the homestead (de-centralised approach) or to collect animals together in some kind of feeding centre (centralised approach). Where significant displacement and aggregation of the human population has already taken place, a centralised strategy may be the only option. However, past experiences with centralised feeding arrangements indicate that there can be:

- problems associated with moving animals to the centralised location due to the long distances involved
- doubts about the quality of animal care offered by hired herders
- fear of disease transmission due to mixing large numbers of animals at feeding centres
- threat of predation of animals that escape from feeding centres
- shortage of labour to ensure proper care of animals e.g. access to grazing

In general, it would appear that a decentralised programme is likely to be more acceptable to participants although training may be required to ensure that supplements are fed properly to animals kept at home. If a decentralised programme is not feasible for logistical or cost reasons, care must be taken to address the potential difficulties associated with a supplementary feeding programme operating through a centralised location.

4.3.5 Transportation, storage and distribution

Ensuring that arrangements for transportation, storage and distribution of feeds are adequate is a very important set of issues to be considered when planning emergency feed interventions. This is particularly relevant for feed supplements like molasses that are relatively difficult to handle, transport and distribute to remote pastoral areas. Proper hygiene and sanitary procedures need to be put in place for trucks used for transporting feeds, and arrangements must be made to ensure the security of drivers and other staff involved in transport in potentially risky areas.

The local storage of feed should also be considered, particularly bearing in mind that at community level there may be no pre-existing structures available for feed storage. Simple coverage of feed stores with tarpaulins may be all that is required, although stores may also need to be guarded. At the onset of rain, unused feed can be easily damaged and agencies should plan to avoid losses when the rains start.

4.3.6 Feed formulation and management

The type of basal roughage and supplement to be used in a drought feeding programme will depend on an assessment of:

- the availability of feeds in the affected area
- the relative costs of bringing in other feeds from outside the immediate vicinity
- costs of transportation and running distribution and feeding centres
- nutrient content of available feeds
- the nutrient requirements needs of livestock in the programme.

The nutrient content of roughage feeds varies depending upon plant species and variety, environmental conditions during growing, stage of maturity, and harvesting and storage conditions. In a supplementary feeding programme, the relatively low cost per unit weight of roughage such as hay needs to be considered against the relatively high cost of transporting these feeds, due to their physical bulk. To date, relief feed interventions in Ethiopia have tended to use either hay alone, or a mix of concentrates and hay.

The consumption of feeds by livestock may be highly variable particularly in the case of supplements such as urea-molasses blocks, oilseed cakes or whole cottonseeds. Pastoral herds and flocks that have never been fed concentrate and urea-molasses supplements may take some time to adapt to these feeds. Initially supplements should be introduced in very small quantities and increased gradually to the required level over a period of one to two weeks. Ideally animals should be habituated to consuming supplements during the alert phase of a drought. This may be achieved enclosing them with hay and blocks during the

early stages of the drought. Confined (or tethered) animals will begin to lick blocks between one and 14 days after being introduced to them.

Some specific examples of rationing schemes for different types of animals using different types of supplementary feed are provided in Annex 2.

4.3.7 Avoiding feed toxicity during drought

Overgrazed rangelands are highly susceptible to sudden flushes of toxic plant growth. These may pose a particular risk when a drought initially breaks or when small thunderstorms occur during the height of a drought. The following general pointers are suggested to help reduce the chances of poisoning:

- Good grazing management practices based on flexible stocking rates will help to match forage demand with forage supply and prevent toxic species from gaining a competitive edge.
- Use strategic supplementary feeding to avoid releasing animals onto open pasture during high risk periods.
- Plant control methods such as mechanical, chemical and biological control can be valid options. Individual plant treatments are to be preferred over broadcast treatments for chemical control as they are likely to be more cost-effective. Using more tolerant livestock species to clean up affected range can be an alternative control measure. As well as encouraging high quality re-growth, timely burning can also reduce the incidence of toxic species.
- Local communities normally hold considerable indigenous knowledge of the incidence and management of toxic plants in their areas. This resource should be made use of as part of any management strategy for toxic species.

4.4 Monitoring, evaluation and impact assessment

The progress, results, process and impacts of a supplementary feeding programme need to be monitored and evaluated to establish whether it has represented value for money (compared to other potential interventions) and to learn lessons for future implementation. Although ideally, evaluation and impact assessment should be based on reliable baseline information, in reality, it is often not possible to collect this data in an emergency situation and more retrospective analysis is required.

At the very least, monitoring systems need to keep accurate records of the names and locations of beneficiaries, the numbers and types of livestock fed per household, and the amounts and types of feed fed by livestock type during the programme. As the primary aim is to keep animals alive during the drought, deaths in fed and unfed animals should also be

recorded. Important financial indicators such as the costs of feed purchases and transport, storage and other distribution costs also need to be included in the monitoring system.

4.5 Policy implications and future strategies

In common with other types of emergency livestock intervention, future strategies for supplementary feeding need to take account of long-term development policies, improving animal nutrition in normal periods and increasing the supply of feeds during drought. The two broad strategies are to continue to improve livestock marketing and therefore the economic value of livestock, and, improve pasture and fodder in pastoral areas. However, the overall supply of livestock feed at a national level also needs to be planned and supported, because sudden large-scale demand in pastoralist areas during drought has implications for both livestock systems in other parts of the country and the export of livestock feeds.

4.5.1 Strengthening markets

In pastoralist areas of Ethiopia the trend is towards increased marketing of livestock and livestock products, with growing domestic, regional and international market opportunities. As markets grow, some pastoralists are already using supplementary feeding and purchasing feed from local suppliers. These trends are likely to continue and possibly expand if livestock marketing policies enable continued private sector investment, and new infrastructure such as roads helps traders to access more remote areas with reasonable transaction costs. It follows that national livestock feed policies need to be developed together with livestock marketing policies.

4.5.2 Pasture and fodder development

Various technical interventions are available to improve pasture management or grow fodder in pastoral areas. For example:

- ***Establishment of silvo-pastoral resources*** in the range and common grazing lands can improve quality and availability of nutrient supply year-round but especially during drought periods when trees are able to withstand the adverse effects of water shortage for longer periods. Native or adapted tree species with good nutritional characteristics should be selected for this type of programme.
- ***Preserving traditional grazing reserves*** - traditional pastoral fall back areas or potential grazing resources are being threatened for a number of reasons. Expansion of state farms producing cash crops can lead to a substantial reduction in grazing resources. This situation increases pastoralists' vulnerability to drought and it requires appropriate, and in some cases, increasingly urgent policy interventions to optimise land use. In areas where sugar cane factories exist, these could actually

be encouraged to contribute to emergency relief as sugar cane tops could provide a more economical source of feed than hay or straw transported from the highlands.

- **Drought tolerant cacti** - the productivity of the natural pasture can also be increased substantially with judicious planting of appropriate species. Adaptable species such as spineless cactus have been shown to be effective in reducing feed deficits as well as conferring ecological benefits that help to preserve rangelands.
- **Conserving forage, hays and standing hays** - native grass hay produced in the highlands of Ethiopia has been successfully used as an appropriate basal diet during emergencies. Although pastoral communities do not traditionally practice forage conservation, some pastoral communities such as the Borana have started to set aside areas of range so that it develops into standing hay. Field experience in these areas has shown that these resources can produce conserved hay that may be supplemented with *Acacia tortilis* pods for good levels of live-weight recovery.
- **Use of crop residues** - crop residues are another important source of basal roughage during droughts. In agro-pastoral production systems, where livestock are integrated with crop production, it is relatively simple to store crop residues and by-products for drought feeding.
- **Fodder banks and irrigated fodder production** - fodder banks and improved forages can be established in strategic sites along the perennial river basins (Awash, Wabe-Shebele) using the residual moisture in the soil supplemented with irrigation. Production of improved forages should focus on species that have the potential to yield large quantities of biomass such as Napier grass (*Pennisetum purpureum*), Rhodes grass (*Chloris gayana*), Guinea grass (*Panicum* sp.) and Buffel grass (*Cenchrus ciliaris*).

Annex 4.1 **Supplementation guidelines**

During droughts the objectives of feeding livestock are almost always compromised to some extent by the reduction in feed availability. As a result feeding programmes need to be adaptable. For example, they must be prepared to switch to a feeding regime that minimises live weight loss from one that supports maintenance requirements if resources are inadequate to support target beneficiaries. The following recommendations should therefore be regarded only as guidelines. The practical situation occurring during a drought may well prevent them from being achieved.

Conventional concentrate based supplementation

Maintenance or survival feeding of heifers and mature cows

Mature cows or heifers of reproductive age (200-250kg live weight) that have access to adequate supplies of medium quality native grass hay or cereal straw (3-4% CP and ME content of 6-8 MJ/kg DM) can be fed concentrate supplement at a level of 0.5-1.0kg DM per day. Depending upon availability and price, wheat bran or middlings can provide energy and oilseed cakes such as noug or cottonseed cakes can contribute protein to a concentrate mix. The proportion of wheat bran to oilseed cake could be 1:1 or may vary within the range of 2:1 for a low energy- high protein mix to 1:2 for a high energy-low protein mix. Crushed maize may be used to replace wheat bran when maize grain is available in large quantities at a low price. Under this regime, animals may be expected to consume 3.5-4.0kg DM of roughage per day.

In areas close to ginneries, animals can be supplemented with 0.5-1.0kg DM of whole cottonseeds. This practice may be extended to other areas if cost benefits can be demonstrated. Whole cottonseeds are high in protein, fat and fiber contents and, therefore, have enormous potential as a drought feed because of the balanced nature of their nutrients. However, whole cottonseed may not be palatable to animals especially when introduced for the first time so a period of adaptation or mixing with attractants such as molasses and salt may be required. Whole cottonseed can be mixed with molasses in a 2:1 ratio and with molasses and oilseed cakes in a 2:1 ratio. For cattle, cracking the cottonseed helps to promote degradation in the rumen. Again, animals should consume about 3.5-4.0kg DM of roughage. If availability of roughages is limited, the amount of concentrate fed may be increased to 1.0-2.0kg DM per day while roughage intake is reduced to 2.0-3.0kg DM per day.

These feeding recommendations are summarised in Table A4.1.1 overleaf.

Maintenance or survival feeding of bulls

Bulls of about 250kg live weight can be fed the same as mature heifers and cows for maintenance or survival.

Table A4.1.1

Summary of survival / maintenance feed supplementation options for mature heifers, cows and bulls based on agro-industrial by-products

Option	Roughage*		Supplement		Remark
	Type	Quantity (kg)	Type	Quantity	
1	Hay or straw	3.5-4.0	Concentrate	0.5-1.0	Wheat bran plus noug cake at 1:2 or 2:1
2	Hay or straw	3.5-4.0	Concentrate	0.5-1.0	Crushed maize grain plus noug cake at 1:2 or 2:1
3	Hay or straw	3.5-4.0	Whole cottonseed	0.5-1.0	Where ginneries exist
4	Hay or straw	3.5-4.0	Concentrate	0.5-1.0	Whole cottonseed plus molasses plus cotton seed cake
5	Hay or straw	2.0-3.0	Concentrate**	1.0-2.0	Where availability of roughage is limited

* Nutrient supply of medium quality roughage is assumed

** Supplements described under options 2-4 can be used with adjustment on the quantity

Maintenance or survival feeding of pregnant cows in the last three months of gestation

These animals may be supplemented with 1.5-2.0kg of concentrate (Table A4.1.2, Option1) assuming that their body weight is around 250-300kg.

Maintenance or survival feeding of cows in the first four months of lactation

Lactating cows may be supplemented with 1.5-2.3kg of concentrate composed of wheat bran or middling and oilseed cake in addition to about 3.5-5.2kg of native grass hay or straw as a roughage source. Alternatively the animals may be supplemented with about 2.3kg of whole cottonseeds, which may be fed either alone or in combination with about 100-200g of molasses to improve palatability. Another option is to use approximately 1.1-1.5kg whole cottonseed plus 0.8-1.3kg oilseed cake (e.g. noug cake) and about 0.1-0.2kg of molasses as a supplement. These feeding recommendations are summarized in Table A.4.1.2.

Table A4.1.2

Summary of survival / maintenance feed supplementation options for pregnant and lactating cows based on agro-industrial by-products

Option	Roughage*		Supplement		Remark
	Type	Quantity (kg)	Type	Quantity (kg)	
1	Hay or straw	4.0-5.0	Concentrate	1.5-2.5	Wheat bran plus noug cake at 1:2 or 2:1
2	Hay or straw	4.0-5.0	Whole cottonseed	2.5	Where ginneries exist
3	Hay or straw	4.0-5.0	Whole cottonseed plus molasses	2.5	100 – 200 g molasses
4	Hay or straw	4.0-5.0	Concentrate	0.5-1.0	Whole cottonseed (1.0-1.5) plus molasses (0.1-0.2) plus cotton seed cake (1.0-1.5 kg)

Maintenance or survival feeding of mature sheep and goats

If sheep and goats of reproductive age (25-30kg live weight) have access to adequate supplies (400-600g/day) of native grass hay or cereal straw of reasonable quality, they can be fed a concentrate supplement of 150-200g DM/ day in order to meet maintenance requirements.

Molasses-urea based supplements

These feeding recommendations are summarised in Table A4.1.3 overleaf.

Animals with access to extremely dry pasture

For maintenance, survival or the first six months of pregnancy feed molasses containing 8-10% urea *ad libitum* with small amounts of a meal high in protein and fat such as whole cottonseed and mechanically extracted oilseed cakes. Feeding level should be around 50-100g per head per day for sheep or 250-500g/head/day for cattle. The additional supplement will ensure high feed utilisation efficiency. During the last trimester of pregnancy, feed molasses with 3% urea to appetite plus about 0.5-1.0 kg of a meal high in energy and protein. Lactating animals can be fed molasses with 3% urea to appetite plus 0.5-1.0kg/head/day of a meal high in protein and lipids depending on the animals' potential for milk production.

Animals without access to forage

In situations where animals do not have access to forage due to the complete depletion of the available forage resources, a minimum amount of roughage (0.5% of body weight) should be provided in addition to the ration described above in order to maintain an adequate rumen environment.

Table A4.1.3

Summary of feed supplementation options for mature heifers and cows based on molasses-urea supplements

Option	Roughage		Supplement		Remark
	Type	Quantity (kg)	Type	Quantity (kg)	
1	Grazing pasture	Free grazing	Liquid * molasses-urea plus oilseed cake	Molasses-urea <i>ad libitum</i> and oilseed cake 0.25-0.50kg	Molasses containing 8-10% urea targeted for survival/maintenance
2	Grazing pasture	Free grazing	Liquid molasses-urea plus oilseed cake	Molasses-urea <i>Ad libitum</i> plus oilseed cake 0.50-1.0kg	Molasses containing 3% urea targeted for early lactation /late pregnancy
3	Hay or straw	0.5% body weight	Liquid molasses-urea plus oilseed cake	As specified in options 1 or 2	Molasses containing 8-10% or 3% as specified in options 1 or 2; animals enclosed and without access to grazing

* Liquid molasses can be replaced partly with or wholly with molasses-urea multi-nutrient block composed of: molasses 36%, wheat bran 25%, noug cake 15%, termite soil 15%, urea 5%, salt 0.2% and local mineral source 2%, or molasses 34%, wheat bran 25%, noug cake 13%, cement 15%, urea 10% and salt 0.3%.

Annex 4.2 **Further reading**

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5. Emergency Provision of Water to Livestock

5.1 Overview

5.1.1 The importance of water for livestock in emergencies

The provision of water for animals in an emergency focuses on the survival of livestock assets through and beyond any disaster. In the absence of sufficient water supplies, animals (with the exception of camels) cannot survive for more than a few days. Therefore, in emergency situations where water sources have been seriously compromised, the provision of alternatives is of the highest priority. Even where water is currently available, relief programmes need to assess, and if necessary, implement appropriate responses to potential and future threats to water sources to ensure that other relief efforts are not undermined by water shortages. Whilst water for livestock must meet some basic quality requirements, the quality standard is not as high as that for human consumption, and therefore livestock can make use of water sources otherwise unfit for humans.

The practical implications of providing water to livestock should be considered carefully and in parallel with the need for animal feed and veterinary care. Proper cost-benefit analyses will be critical in deciding whether various interventions are sensible and effective in the long-term.

5.1.2 Links to development

In certain situations such as chronic disasters drawn out over time, emergency interventions may disrupt or go against the promotion of natural coping mechanisms or development planning. Dependency on emergency handouts can also be counterproductive. An understanding of drought cycles in Ethiopia and 'drought cycle management' is useful when investing time and money into emergency interventions (see Chapter 2). All interventions should therefore aim to complement long-term development goals in the area.

5.1.3 Options for water provision

Water may be available from a range of sources and deliverable by a number of means. This can at times complicate, or ease the selection of appropriate interventions capable of matching supply with demand. As a rule, the most cost-effective, sustainable and secure options need to be selected. However, the need to distribute water effectively is often so

acute that expensive and unsustainable methods such as water trucking may need to be considered in the short term at least.

In an emergency situation, access to water may be provided for livestock owners in one of three ways:

- improving the management and capacity of existing water points to provide broader access to affected populations
- rehabilitation of existing but degraded water points
- establishment of new water points.

The first of these approaches is normally implemented at the least cost but may not be feasible due to lack of adequate water or because of the complexities of meeting the needs of both existing and new users. Typical water sources in Ethiopia may include:

- ground water sources (e.g. hand dug wells, boreholes and spring protection schemes)
- surface water harvesting systems (e.g. direct extraction from rivers, lakes and ponds, check dams and sub-surface dams)
- rain water collection (e.g. roof collection, 'birkas' and 'haffir dams')

The principles underlying the establishment of differing water supplies and the issues that must be addressed in managing them effectively are broadly the same.

5.1.4 Distribution

After the identification and selection of potential water sources has been made the focus of attention switches to the various methods of distribution. Distribution may be achieved in a number of ways:

- by hand (e.g. using buckets, local pots, jerry cans etc)
- by animal traction (e.g. donkey carts/saddle bags, use of camels)
- gravity (e.g. open channels, pipelines, hydraulic ram pumps)
- Pumping (with associated pipeline networks)
- Trucking

Providing appropriate distribution points associated with various water sources will invariably offer the most viable, longer-term solution to the problem of water shortages for livestock as compared to other key options. A sustainable management plan for their operation and use is imperative and should be considered at the initial stages of an emergency.

Water trucking, as one form of distribution, deserves a special mention here since this intervention should generally be regarded as an option of last resort to be considered in the first stages of an emergency only. It is expensive, resource inefficient and labour intensive.

However, due to the critical nature of the impact of dehydration on livestock, it may be the only option that can be implemented rapidly in order to keep animals alive in the short-term. As a rule, therefore, trucking should be regarded as a temporary intervention that will be replaced, as soon as possible, by other means of distribution or eventual relocation of livestock.

5.1.5 Complementary interventions

The provision of water may be complementary to other livestock-based emergency responses, in particular supplementary feeding (see Chapter 4) and destocking (see Chapter 3), whereby some animals are taken out of the production system and efforts such as the provision of water and feed are made to ensure the survival of the remaining stock. Coordination between initiatives and between agencies is therefore paramount to avoid one activity undermining another (see Chapter 2).

5.2 Needs and feasibility assessments of water sources

The proper assessment of water sources provides for the rapid identification, assessment and categorisation of available human and physical resources, whether in the field or not, to maximise the benefits for existing and temporary populations and livestock within the disaster-affected area. In addition to technical issues, the assessment needs to consider various socio-economic and targeting issues.

Vulnerability of specific groups within communities - ensuring water reaches the most vulnerable livestock owners during an emergency presents a number of challenges. For example, wealthier owners may be able to secure private means to provide water for their animals, which are not open to poorer households. Interventions should therefore take into account the constraints facing vulnerable groups within the community to ensure that access is as equitable as possible. Gender roles in the provision of water for livestock should be taken into account, particularly for poorer women and girls who may be at risk of, for example, violent assault or exploitation if they have to travel some distance to bring water for stock.

Indigenous water management - disaster-affected communities invariably draw on their own capacities to respond to emergencies, for example in their indigenous knowledge of natural resources; in particular the location, type and quality of water sources and the relationship between those sources and their management. Local water management systems and indigenous institutions may also play a significant role in the management of water points and will remain pivotal in the avoidance of conflict. It follows that existing and indigenous local water point management systems must be taken into account in the

provision or establishment of water sources during an emergency, in order to help provide equitable access, avoid conflict and establish sustainable management for the future.

Security and protection issues - the security and protection of water users should be taken into account: for example people, and in particular women, watering their animals at communal water points may be vulnerable to livestock rustling or robbery. Water point management must be addressed prior to rehabilitation or establishment in order to avoid potential ownership conflicts. Issues of water management are particularly important to ensure the protection of water users around IDP camps - for example, when the camp residents need access to water points outside the camp for their livestock and may come into conflict with the host populations. Negotiation with all stakeholders beforehand may help to minimise potential conflicts.

Environmental considerations - are important in the provision of water for livestock in emergencies. Care must be taken to avoid excessive extraction (either through density of water sources or high extraction rates) which affects the water table; and high concentration of livestock around water points. On the other hand, water provision - when provided in accordance with well thought out natural resource management strategies - may have a positive impact on the environment by encouraging more effective natural resource utilisation.

Water for people versus water for livestock - it is important to ensure that human water supplies are not contaminated by livestock. Similarly, conflicts between the demands of human populations and their associated livestock will often be an issue. With proper planning and management it should be possible to create a network of distribution points that will protect the quality of water supplies and meet the demands of both humans and livestock.

The key steps and principles for the assessment of water sources are detailed below.

5.2.1 Collate background information

The assessment team should collect and collate relevant background information before it leaves for the field assessment. Collection of background information prior to departure to the field is useful in many ways. First, it allows the team to start to acclimatise to the situation on the ground and to gain an overview of the difficulties one may encounter in the field. Gathering of background information should include as a minimum the collection of maps (topographical, geological, hydrogeological and satellite imagery if possible), land-use and rainfall data, names of other agencies working in the field and key personnel. This process

will allow adequate time to reflect on the prevailing political and demographical situation and what difficulties may arise during the implementation of programmes.

A series of at least cursory visits to relevant government agencies, national and regional, local and international NGOs will help to form an opinion of their capabilities, activities and incumbent strengths and weaknesses.

In carrying out an assessment, the principle should be to collect enough data to implement an effective response. Time spent collecting unnecessary information is time wasted.

5.2.2 Rapid participatory assessment

Local people usually possess detailed knowledge of water sources, including locations, quality and the available quantities of water. Access to water is normally the primary reason for human concentration in any specific area during an emergency and this factor is even more pronounced where livestock are concerned. Consequently, participatory assessment with local or displaced communities and access to indigenous knowledge are paramount. One of the most effective methods for rapidly determining the location, demand, discharge, management issues and alternative sources is participatory mapping; an exercise that may take less than an hour or two even with large groups of people (see Annex 5.1). Various other participatory methods are also useful, including matrix ranking, transect and focus group discussions. The assessment team should be familiar with these participatory methods and know how to apply them to water source assessments.

In parallel with participatory methods, more formal engineering techniques can be used to confirm local knowledge and to provide specific technical solutions for the provision of water to livestock. These may include, for example, direct observations, structured interviewing, topographical surveying, geotechnical/hydrogeological surveys, laboratory-based analysis of water quality using specialised equipment either in the field or at the nearest urban centre.

5.2.3 Coordination issues

As a minimum, contact should be maintained with regional government bodies, parastatal, bilateral, UN and NGO agencies with an interest or specific remit within the livestock and pastoralist sector, and those with responsibility within the water supply sector in general.

In any emergency in Ethiopia the federal DPPA is tasked with coordinating all external interventions, assisted by regional governments. It is important to avoid duplication of effort and/or following an antagonistic approach to providing assistance since this may simply cause more harm than good.

5.3 Water source selection and intervention design

Proper determination and analysis of all known variables and parameters within the time available to the assessor should ensure the selection of the most appropriate single or multiple sources of water. Planned interventions should be negotiated with all relevant stakeholders to avoid conflicts of interest.

5.3.1 Supply and demand

The relationship between supply and demand is a simple one and the impact of this relationship will be easily recognisable within days of an acute emergency event. Should demand outstrip supply the first and most obvious indicator will be rapid depletion of livestock assets. Secondly, conflict with existing populations may exacerbate the emergency situation and cause further migration to unsuitable areas where livestock depletion may continue. Rapid assessments of available supplies and demand are therefore required at a very early stage and should the need for water trucking be approved in the short-term, arrangements should be made immediately to avoid such negative scenarios occurring.

Demand assessments should be based on best estimates derived from livestock population figures, local authority records and consultation with locally-affected populations. In addition, livestock traders and middle-men may be able to offer useful information in some areas. Ease of collection of water and its accessibility to animals need to be considered here. If livestock are to drink at the water point, then demand assessments should take into consideration reasonable walking distances to determine the area to be covered by the water point.

The 'storage' of water should not be overlooked in determining the capacity of even the most insignificant looking source. For example, if captured overnight the trickle from a leaky tap could supply enough water to satisfy 180 goats (based on a yield of 0.5litres/minute for 12 hours). The overflow and waste water collected from water points dedicated to human needs is often enough to satisfy household livestock assets provided proper drainage and delivery troughs are incorporated into water point designs.

5.3.2 Costs

In deciding whether to rehabilitate, renovate and/or improve the yield of existing water points as opposed to creating new water points the critical parameter is usually defined by the overall cost of delivering a cubic meter of water over the expected duration of the emergency. This type of cost-benefit analysis will quickly determine whether the aims and

objectives of the agency are not only realistic but viable in the medium to long term. If relocation or alternative solutions are cheaper than these should be implemented.

5.3.3 Distribution

To reduce costs, avoid conflict and prevent contamination, access to and the collection of water for livestock should be controlled, efficient and appropriate to the type and number of livestock present.

- **Distribution networks and watering** - to speed the watering of livestock it is recommended that water be transferred from the selected source by an appropriate distribution network to a well-designed and purpose-built watering facility. The physical transfer of water can be achieved through animal or human traction or preferably through an open channel or piped distribution network. The distance from source to watering facility need not be too great. The design of the watering facility will take into consideration the method of delivery from source, the optimal movement and flow of livestock through it, animal holding requirements, drainage, associated management facilities and additional security requirements. Gender and issues relating to vulnerable groups should be taken into account.
- **Watering of animals and human activity** - in the design of purpose-built watering facilities it is possible to ensure from the very beginning that human activities are effectively separated from livestock watering. In situations where existing facilities are necessarily being used for both livestock and human consumption basic improvements can be made to separate human activities from livestock watering. Collecting waste water and improving the drainage is often the easiest and fastest way to achieve minimum separation. Gravity and the construction of open channels can be used effectively and cheaply to move water away from the source and point of collection for human populations. Livestock watering facilities should be situated downstream of any further water extraction for human consumption.
- **Contamination of human water supply by livestock** - animals should be stopped from physically entering the water by careful use of troughs, bund walls, parapets and hard standing areas. Similarly, hard standing areas should be very well drained to ensure livestock are not made to wade through increasingly thick layers of wet mud.

5.3.4 Water quality and safety

It is important to ensure that water is basically free of specific water-borne diseases, parasites or vectors and is not contaminated with toxic chemicals. However, water quality for livestock is generally much less of a critical issue than for human consumption (for

example, there is no livestock equivalent to a water-borne disease such as cholera, which presents a key water quality challenge for human water supplies). This may offer opportunities for reducing conflict with human demands if high quality water sources are limited. Poorer quality water from rivers or standing lake water that cannot feasibly or economically be purified for human consumption may be reserved for use by livestock.

Storage, and in particular enclosed storage, flocculation using local products such as moringa, sedimentation and settlement are all cheap and simple forms of treatment that can be applied to water for livestock.

An understanding of turbidity and its measurement should be required of any practitioner working in the field. The ability to measure and compare samples will be useful to even an untrained person.

5.3.5 Local equity and management issues

The access of women, children and vulnerable groups to water should be protected by the careful management of water sources and distribution points. As the primary users and collectors of water, the involvement of women and vulnerable groups in the design of watering facilities and their management should be sought from the earliest stages. Their active participation in the management of facilities after completion should also be encouraged. The use of participatory methods will help to ensure the views of the poor, illiterate and otherwise vulnerable can be incorporated into the design of systems.

Boreholes as well as shallow and deep wells are usually managed by local (often customary) institutional arrangements, or by private owners or managers of the water source. The rehabilitation of existing water sources or the establishment of new sources should take into account these management systems and fit into them in order to promote sustainable and equitable water use. The management of water distribution in water trucking activities can also build on local water management systems to help ensure equitable distribution and access within communities. Where IDP camp residents need access to water for their livestock and must share resources with the host community, negotiations beforehand can help to avoid potential conflict. Establishing clear and equitable management systems for water sources is also important for the longer term - into the recovery phase and beyond; experience has shown that unless these issues are considered at the beginning of the intervention, water sources may fall into disrepair a short time after the end of the emergency.

Watering facilities should be well designed and efficiently managed to avoid unnecessary congestion, inequitable distribution of resources and operation at night or other dangerous periods. Clear guidelines should be set, outlining when and at what times of the day,

watering facilities will be operational and how much these services will cost, if indeed charges are to be applied at all.

5.3.6 Long-term management and maintenance

The planning and provision of regular maintenance should be sufficient to keep facilities operational throughout the emergency period and beyond, and the body assigned the management of water supplies whether government, agency or community body should be accountable to the users.

A key aspect of maintaining water facilities is ensuring adequate funding for capital expenditure and day to day running costs. In setting water tariffs, costs should be affordable, livestock owners must be willing to pay and there must be a system of penalties for not paying. Vulnerable groups and the poorest should be consulted prior to implementing tariffs.

5.3.7 Environmental issues

The negative impact of displaced people and their livestock on the natural environment should be minimised as follows:

Waiting times and congestion around water points should be minimised to avoid degradation and destruction of vegetation in the area around the water points. The proper design and location of water distribution facilities will mitigate against congestion and unnecessary waiting.

Water points should be kept clean and free from flies and pests, including vectors of diseases, through appropriate design and management. Minimal charges for water should provide adequate incentives for the proper management and day to day maintenance and cleaning of water points. Proposals should be discussed before beginning work on construction.

Watering facilities for livestock should be placed downstream of any extraction points for human consumption. Faecal matter from livestock should be kept from entering secondary water courses or entering into groundwater sources. Utilisation of dung for fuel, biogas and/or fertilizer should be encouraged.

Box 5.1
Impact of watering stations in Borana

The NGO Action for Development has been building watering stations at a number of locations in the Borana rangelands of southern Ethiopia. These stations have been very successful in supplying water and consequently have helped to keep many livestock alive through the droughts that have been causing problems in the area in recent years. However this has come at a price with the aggregation of livestock around the watering stations leading to sometimes severe feed shortages and environmental degradation. Future activities in the area will attempt to resolve this problem by building further watering stations where rangeland is still relatively plentiful. In the meantime, other activities of the programme include the provision of feed at the water points to ensure that participating livestock can be adequately fed as well as watered.

5.4 Water trucking

In some situations the trucking of water may be the only viable approach to ensuring water supply for pastoral livestock during drought. The approach is relatively expensive and has limited sustainability.

Any plan for water trucking should be fully costed and matched against the overall benefit expected for livestock owners including the timeframe and eventual exit strategy.

5.4.1 Management issues

Staff management and supervision - successful trucking operations require consistent and sustained staff inputs. This includes a need for competent, experienced management and supervision. However, it is also important to ensure that drivers and assistants are kept motivated through proper reimbursement and careful attention to other needs including subsistence allowances and personal security considerations.

Monitoring deliveries - with capable and reliable supervisory staff working in collaboration with community leaders it is possible to ensure the correct number and amount of deliveries. Without careful monitoring it is quick and easy for fraudulent operators to offload supplies along the route and to claim payment for non-delivery unless beneficiaries are made aware of what they are supposed to receive.

Contracts - clearly worded contracts should be written and signed between agencies and trucking contractors, specifying delivery targets and mutually acceptable methods for measuring deliveries. Checks should also be made to ensure that no detrimental effects are felt by existing populations due to the withdrawal of trucking facilities from their usual work.

5.4.2 Design issues

Selection of water sources - use of the selected source/s should be approved by all relevant authorities and user groups. Seek local advice regarding the ownership and rights to any proposed water source. Potential water sources often include urban supplies belonging to private companies, schools, churches etc. Should water be extracted from surface water sources such as rivers and lakes then additional arrangements will be necessary for the loading of trucks.

Trucking routes - should be surveyed and properly assessed to avoid problems with degradation over time and periods of inclement weather. Before entering into trucking agreements routes should be identified and surveyed including all bridges, fords and other obstacles. The type and suitability of road surfaces should be assessed noting any possible difficulties due to future inclement weather or gradual degradation of surfaces. The cost of, and methods for dealing with these problems and mitigating against future disruption should be considered as early as possible.

Selection and maintenance of fleet and equipment - use only appropriate means of transport, taking into account loading and bearing capacities of trucks and various road surfaces. Consider whether articulated or rigid trucks should be employed. Can flat bed trucks be fitted with secured rigid or flexible tanks? Are tractor trailers more appropriate? Check what each tanker has been transporting in the past and ensure that proper cleaning is undertaken. Qualified mechanics and reliable supplies of uncontaminated fuel need to be available throughout the duration of the trucking operation. This includes any material needed to operate and maintain pumps and containers/delivery equipment. Major issues to consider are:

- *Cost and availability of fuel* - ideally, it should be possible for drivers to refuel without making major detours away from the trucking route. This may require fuel to be brought in separately, adding to the logistical complications of the operation. It may also be a consideration in the original selection of water sources.
- *Spare parts* - should be readily obtainable. Simple, locally made equipment that is easily repairable is to be preferred to hi-tech or imported solutions.

These issues - particularly those relating to maintenance - may affect the decision regarding the type of transport that will be used by the trucking operation e.g. trucks or tractors and trailer with bowsers or bladder tanks.

5.4.3 Distribution issues

In addition to the water distribution issues detailed in section 5.3.3 above, the effective distribution of water from tankers will require:

- Easy access and turn-around space for vehicles

- Good drainage
- Adequate storage
- Easy offloading into communal facilities (i.e. not into individual containers)

It is important to note that initial deliveries should be extremely well managed and well thought out to ensure the safety of agency staff and beneficiaries alike. There may be a great deal of anxiety present among the beneficiaries whose livestock may already be highly stressed and dehydrating fast. These people/animals will be impatient to receive water. It is important to let people know that additional, regular supplies will be arriving after initial deliveries have been made. If possible try to build up adequate stocks of water quickly.

Relocation of livestock is often implemented as part of the response to an emergency situation (either as part of the indigenous response or coordinated by external agencies). Where this is occurring, trucking of water may be required to support the migration. This situation will add considerably to the already complex logistics of water trucking.

Box 5.2
Water trucking for drought relief in Somalia

The NGO VETAID received funding from the United Nations Office for the Coordination of Humanitarian Affairs for a water trucking project to benefit pastoralists in Gedo, Bari and Karkaar regions, Somalia. These areas had been severely affected by drought.

The project in Gedo trucked water to 2,500 breeding cattle and 1,100 sheep and goats to allow them to make more effective use of the pasture areas of Bardera and El-wak Districts. The intervention helped to preserve the livelihood base of the community and allow them to recover more rapidly from the drought by maintaining at least some of their core breeding stock. The project also supplied water to 3,600 pastoralist families. In addition, with a view to the long-term sustainability of the water resource, VETAID conducted rehabilitation of water catchment structures and removed livestock carcasses from wells and dams.

5.5 Monitoring and evaluation

Monitoring and evaluation systems should be established to ensure that the provision of water is implemented effectively and has a positive impact on livelihoods. The system should be established before implementation begins to enable the correction and adjustment of activities and the collection of data to facilitate learning and impact assessment.

In common with other services, the provision of water can be measured using five key indicators viz. accessibility, availability, affordability, acceptance and quality. These indicators apply to both relief and development interventions, and can be measured using a mix of conventional and participatory methods.

5.6 Policy implications

The need to provide emergency water supplies to livestock, particularly during drought, is indicative of the inadequate long-term development and management of water resources in pastoralist areas. Water development policy needs to take account of the need for better use of water resources while also recognising the advantages of mobile pastoral livestock production systems, and the environmental damage in Ethiopia caused by inappropriate provision of water. It is increasingly recognised that inappropriate construction of boreholes, both in terms of location and number, disrupts livestock movements and grazing management.

Experiences of water development for livestock indicate that pastoralists should be involved in the initial analysis of water issues, including predicting the positive and negative impacts of new water sources, and how new facilities will be sustained and managed in the long-term. Part of this participatory analysis relates to broader natural resource management issues such as dry season grazing practices and areas which traditionally, are preserved for dry season use.

Annex 5.1 Participatory mapping and other PRA/RRA tools

These notes are taken ostensibly from 'Toolkits, Development Manual No. 5 – A Practical Guide to Assessment, Monitoring, Review and Evaluation' by Save the Children 1995

"Participatory Assessment (PRA) is a particular form of QUALITATIVE RESEARCH used to gain an in-depth understanding of a community or a situation. It is sometimes called participatory rapid assessment because the information is collected in a few weeks. PRA is a form of assessment based on the participation of a range of different people including people from the community affected by the work. The emphasis is on *participation* rather than on being particularly rapid (hence PRA is sometimes called participatory *relaxed* assessment). The aim is for people to analyse their own situation, rather than to have it analysed by outsiders. This makes it a particularly useful tool for any kind of community development."

The features of PRA include;

- **Triangulation** - a method of cross checking qualitative information.
- **Multi-disciplinary team** - a number of skilled practitioners looking for different interpretations of received data.
- **Mixing techniques** - use of different techniques to achieve a greater depth of understanding.
- **Flexibility and informality** - research is semi-structured to allow changes in fieldwork methodologies to follow up unexpected findings.
- **In the community** - activities are performed with community members in groups or as individuals.
- **Optimal ignorance and appropriate imprecision** - PRA avoids unnecessary detail.
- **On-the-spot analysis** - research is not taken away to be analysed by outsiders over lengthy periods of time.
- **Offsetting biases and being self-critical** - avoidance of value judgements about others; obtaining view points from a cross-section of society.

The tools and techniques of PRA include (but are not limited to):

- **Secondary sources** - gathering of previous reports and documentation to avoid replication.
- **Direct observation** - observing objects, events, processes and relationships as they occur and recording the details. Direct observation is a good way to crosscheck information in the field.
- **Semi-structured interviewing** - interviewers do not use formal questionnaires and rely on open-ended questioning.
- **Oral histories** - people can be encouraged to talk about the history of a place or situation, or about their own lives to build a picture over time.
- **Listening surveys** - surveys can be carried out by simply listening to people in their own environment in their own time.
- **Ranking and scoring** - placing issues in an ordered sequence and scoring to reveal differences within a single population.
- **Focus group discussions** - structured interviewing with groups of people with a particular interest or skill base. Facilitators help everyone to express their opinion and to join in discussions.
- **Construction of maps and diagrams** - these models and diagrams can help people to think clearly about the information they are being asked to impart, and allow them to analyse this information effectively without the added barriers of language or technical know-how. They also help to convey complex information. These can include but are not limited to:
 - Maps
 - Social maps
 - Transects
 - Seasonal calendars.

Annex 5.2

Daily water requirements for livestock

To estimate the approximate needs of the livestock population in the area, the following figures for daily water requirements may serve as a rough guide:

Type of Livestock	Average water requirement (litres)	Frequency of drinking
Camels	60-80	Every 4 or 5 days or longer
Cattle	30-40	Every 1 to 3 days
Equines (donkeys, mules, horses)	15-25	1 or 2 days
Sheep	4-5	1 or 2 days
Goats	4-5	Preferably once a day
Pigs	0.5-2.5	Preferably once a day
Poultry	0.05-0.15	At least once a day

The following table gives an indication of the discharge rate from traditional and modern wells and boreholes, to show the approximate number of livestock each can serve:

Water source	Water Discharge			Number of animals	
	litres/hour	Max hours/day	Total litres/day	Cattle*	Sheep/goats+
Traditional well	1,000	7	7,000	280	1,400
Modern well	5,000	15	75,000	3,000	15,000
Borehole	>20,000	20	400,000	16,000	80,000

* Based on an average consumption of 25 litres/day

+ Based on an average consumption of 5 litres/day

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6. Veterinary Care

6.1 Overview

The provision of veterinary services during drought or other disasters is an important strategy for assisting pastoralists to protect their livestock and maintain the benefits of livestock ownership or access. In pastoral communities where livestock are highly regarded as a capital asset, veterinary care can help to prevent sudden loss of livestock due to acute diseases which cause high mortality. In situations where high livestock mortality occurs, it can take many years for communities to rebuild their livestock assets. Veterinary care can also reduce the impact of chronic diseases which may affect benefits such as milk production, fertility or the use of livestock as pack animals. In general, veterinary vaccines and medicines are inexpensive items relative to the economic value of livestock.

In pastoral areas of Ethiopia the trend in recent years has been towards the privatisation of clinical veterinary services, with increasing use of private veterinary pharmacies to supply and support primary-level workers such as community-based animal health workers (CAHWs). Guidelines for the establishment of CAHW systems are available in the MoARD publication *National Minimum Standards and Guideline for the Design and Establishment of Community-based Animal Health Workers Systems* (2004) and well-trained and properly supervised CAHWs are recognised as one type of veterinary para-professional by the World Organisation for Animal Health. The emergence of these approaches in pastoral areas demonstrates the willingness and capacity of pastoralists to pay for basic veterinary services.

As following sections of this guideline will show, an important consideration during drought is to work through the private sector where possible while also supporting public sector veterinary functions where necessary. Therefore, there are two main types of veterinary intervention during drought as follows:

- Support to the private sector for primary clinical veterinary care – the prevention and treatment of livestock diseases which cause high mortality or substantial production losses
- Support to government veterinary services, particularly for disease surveillance, veterinary public health, and other functions as needed.

6.2 Coordination issues

In common with other types of drought intervention, the coordination of veterinary support is central to its effectiveness and impact. In Ethiopia the MoARD at federal and regional levels is the main coordinating body for veterinary services during drought or other disasters, and provides coordination through the Agriculture Task Force (ATF). Veterinary inputs should be viewed as complementary to other forms of drought assistance, such as supplementary feeding, and good coordination should ensure that appropriate combinations of different interventions are used.

Some specific functions of coordination as they relate to veterinary interventions are as follows:

Initial assessment – ensuring timely and accurate assessment of veterinary needs, encouraging joint assessment with all key actors working together, and making information available to assessment teams.

Funding mechanisms – coordination and preparation of funding proposals, with assignment of operational areas and technical roles to agencies with relevant experience and technical expertise.

Design of interventions - harmonisation of primary veterinary service design and implementation strategies between agencies working in a disaster-affected population, and between affected and adjacent unaffected populations as needed; ensuring that interventions fall within government policy and that any training inputs use existing government standards and guidelines; ensuring that interventions fall within international standards and guidelines. Within this broad coordination function there are at least three key aspects:

- Developing common objectives and modes of implementation on aspects of service provision such as targeting, pricing, use of vouchers and *per diem* rates for veterinary workers and support staff.
- Harmonising the different donor and NGO policies, particularly on issues such as payment for services.
- Ensuring that interventions are technically sound and are based on existing epidemiological and economic information for each disease to be prevented or controlled.

Monitoring and evaluation – coordination should include monitoring of the overall intervention and real-time adjustment of strategies and activities as needed. The use of standardised monitoring forms assists the collation of monitoring data on a programme-wide

basis. Final evaluation of all interventions should be coordinated, and lessons learned used to inform revision of best practice guidelines and policy. This is particularly important for veterinary interventions because relatively limited information is available on the impact of veterinary inputs on livestock production and mortality, and any associated benefits to pastoralist communities.

The main coordination mechanism is coordination meetings. Well-designed coordination meetings for implementing agencies and partners are important to allow agencies to share experiences, report problems and receive immediate advice from the coordination body or other agencies. Regular meetings can assist programme monitoring whereas *ad hoc* meetings can be responsive to important issues as they arise.

6.3 Clinical veterinary care: general approaches and principles

Preventive and curative veterinary interventions during drought fall into two broad categories viz. the examination and treatment of individual animals or herds, and, mass treatment or vaccination programmes.

6.3.1 Support to basic services for the examination and treatment of individual animals or herds

Experiences and policy in Ethiopia indicates that the provision of primary clinical veterinary services during drought in Ethiopia should be based on approaches such as:

- Support to, or rapid establishment of para-veterinary systems with overall supervision by veterinarians
- Immediate attention to payment for services, with use of voucher schemes for the most vulnerable livestock keepers and rapid resumption to full payment for services for other livestock keepers
- The principle of choice, in which livestock keepers are able to select the type of preventive or curative service they require for all diseases other than those covered by official disease control policies.

In common with primary medical services, veterinary services should be accessible, available, affordable, acceptable and of sufficient quality. In drought in pastoral areas of Ethiopia two of these characteristics of service provision are particularly important.

Accessibility - in remote areas with poor infrastructure and communications, veterinary service delivery is a challenge even in normal periods. Access to communities might only be achieved on foot and in general, the more remote a community, the more vulnerable it is during a disaster. Para-veterinary workers such as CAHWs are usually the most appropriate

service provider in these situations because they are able to travel and function in these environments. Therefore, supervised and well-trained CAHWs should always be considered as potential veterinary service providers during drought.

*Table 6.1
Advantages and disadvantages of veterinary support - primary clinical services*

Advantages	Disadvantages
Examination and treatment of individual animals or herds	
<ul style="list-style-type: none"> o Allows veterinary care on a case-by-case basis. o Can support existing private sector workers e.g. through voucher schemes. o More scope for pastoralists to seek the services they want. o Wide coverage is possible, particularly when well-trained and supervised CAHWs are used. o Allows targeted or strategic prophylactic treatment or vaccination of individuals or herds at risk. 	<ul style="list-style-type: none"> o Free service provision will limit coverage and duration of service according to budget. o Free service provision risks undermining existing service providers.
Mass treatment or vaccination programmes	
<ul style="list-style-type: none"> o Relatively easy to design and implement. 	<ul style="list-style-type: none"> o Limited quantitative evidence of impact on livestock mortality or production. o Weak diagnostic facilities in many pastoral areas. o Large-scale vaccination programmes difficult to design without basic epidemiological information. o Coverage often determined by budget rather than technical design criteria. o Free treatment and vaccination can undermine the private sector. o For many vaccines, the need to establish or support cold chains. o Risk of poor immune response to vaccination in animals already weakened due to lack of feed.

Affordability and payment for services - experiences in pastoral areas of Ethiopia show that when private clinical services are based on simple community-based approaches with low transaction costs, even the poorest livestock keepers will use these services. In drought or other disasters, the issue of affordability is a particular challenge for agencies aiming to provide rapid, equitable and effective clinical veterinary care, while also trying to support local, private service providers who require an income. Approaches such as sub-contracting local private veterinary workers or the use of voucher schemes warrant wider use and assessment. These schemes can reach poorer and more vulnerable livestock users, while also helping to maintain private facilities during disasters. In contrast, there is little

evidence to show that the provision of free veterinary care on a large scale and delivered directly by aid agencies or government during disasters overcomes equity problems or provides significant livelihoods impact.

When designing the provision of primary clinical veterinary services during drought the trade-offs between the free provision of services and some form of payment by livestock keepers need to be considered.

- **Free service delivery** - if delivered free-of-charge, the coverage of a veterinary service will depend on the availability of funding by external agencies or government due to disparity between the level of funds available and the size of the population to be reached. In some cases, only a small proportion of a drought-affected population will be accessed. The decisions about which types of livestock and diseases to treat, and the method of treatment, are based on the objectives of specific agencies and the clinical judgements of veterinary workers on the ground. If clinical services are delivered by aid agency staff in isolation of local veterinary services providers, there is a risk of undermining local services. Furthermore, unless closely supervised there is a risk that free services are not actually delivered and users are charged at the point of delivery. Alternative systems of clinical veterinary service delivery aim to use existing veterinary workers where they exist, or, conduct rapid selection and training of para-veterinarians. These approaches help to strengthen local capacity and support systems which can be improved over time and as the drought wanes. Again, if services are provided free-of-charge, service accessibility and availability will depend on the level of funding available.
- **Payment for services** - if payment for services is used, accessibility and availability can improve, although the issue of affordability becomes important. A third approach involves the gradual introduction of payment for services, with free provision during the acute stage of an emergency and payment for services in later stages and as livestock markets begin to function. In Ethiopia, veterinary services are in a state of transition from government to private sector delivery of clinical veterinary care. Therefore, an important aspect of the provision of clinical veterinary services during disasters is to work with, rather than undermine, private sector veterinary facilities and workers wherever possible. Such service providers can comprise the main source of quality veterinary care after drought. During a drought they can be sub-contracted to deliver veterinary services, or can provide services through mechanisms such as voucher schemes. In general in Ethiopia, most veterinarians are located in major cities and towns. In more remote, rural or marginalised areas veterinary care is provided by para-veterinary workers. The categories of para-veterinary workers include veterinary assistants, animal health auxiliaries, animal health technicians and CAHWs as defined in national and international veterinary legislation and codes. Different strategies for emergency

veterinary care are needed according to the pre-existence or not of local veterinary workers in the disaster-affected area.

Agencies considering the provision of clinical veterinary care have to understand the trade-offs between these different approaches. In terms of the principles of livelihoods-based programming, there is very limited evidence to show that the free provision of clinical veterinary care to individual animals provides significant livelihoods benefits to disaster-affected populations, or is cost-effective or equitable. Relatively more evidence of livelihoods benefits is available for para-veterinary systems based on some level of payment for services, particularly in protracted crises, where studies show reduced livestock mortality and improvements in service accessibility, availability and acceptance at a population level. When designed through participatory approaches, these systems also provide an element of choice to livestock keepers in terms of the priority livestock health problems to be addressed.

6.3.2 Mass treatment and vaccination programmes

In Ethiopia's pastoral areas emergency veterinary care during drought has often focused on mass treatment or vaccination programmes which aimed to cover a specified number of livestock within a drought-affected area. Treatment programmes often focus on the use of anti-parasitic medicines, especially for gastrointestinal helminth infections (worms) and ectoparasite infestations (e.g. ticks), whereas vaccination programmes often cover diseases such as anthrax, blackleg and pasteurellosis. Most commonly, treatment or vaccination programmes were one-off events and were implemented at no cost to pastoralists.

Although one-off mass treatment programmes have been widely used and involved large quantities of veterinary medicines, there is little evidence to show that such programmes affect livestock production or mortality. Until further assessment of the epidemiological and economic rationale of these programmes is conducted, the impact remains open to question. Similarly, there is limited evidence to show the impact of one-off mass vaccination programmes for livestock in the context of drought assistance. Humanitarian crises may occur during periods which are not high-risk periods for some livestock diseases which are preventable by vaccination, in which case vaccination will have little impact.

In a recent qualitative study on livestock vaccination practices in pastoral areas of Ethiopia (Meketa and Yimenu, 2007; see Annex 6.2) it was suggested that the efficacy of vaccination was compromised due to weaknesses in confirming disease diagnosis, delayed implementation of vaccination following reports of disease outbreaks, inappropriate vaccination coverage, and improper storage of vaccines at field level. In addition to these problems, vaccine composition is also an issue. For some diseases, vaccine efficacy is highly dependent on the identification of local field isolates and the inclusion of these isolates in

the vaccine. Therefore, it is advisable to conduct vaccination according to official disease control policies and using recognised vaccination protocols, including the appropriate timing of vaccination, completion of a full vaccination course, and the use of vaccines containing relevant field isolates from the geographical areas of operation. See Section 6.5 for key points to consider when planning vaccination programmes.

*Table 6.2
Advantages and disadvantages of veterinary support - public sector services*

Advantages	Disadvantages
Veterinary public health	
<ul style="list-style-type: none"> o Public awareness-raising often inexpensive. o Can foster collaboration between veterinary and human health sectors. 	<ul style="list-style-type: none"> o May require specialised communication expertise to design and test educational materials in local languages. o If not carefully managed and timed, can divert resources away from more direct livelihoods-based assistance.
Livestock disease surveillance	
<ul style="list-style-type: none"> o Can complement all other veterinary interventions and assist impact assessment of these interventions. o Fosters linkages between central veterinary authority and drought-affected region. o Can help to promote international livestock trade. 	<ul style="list-style-type: none"> o Needs to be based on clearly-defined surveillance objectives. o Can easily become a data-driven rather than action-orientated process. o If not carefully managed and timed, can divert resources away from more direct livelihoods-based assistance.

When conducted as part of a well-designed disease prevention programme, vaccination can be a very cost-effective means to safeguard livestock. Although often considered as a public good, the prevention of diseases such as clostridial diseases or pasteurellosis is a private good and ideally, should be delivered by the private sector.

6.3.3 Guidance on the timing of veterinary interventions

Veterinary interventions can be appropriate at all stages of a drought, but should be combined with other forms of assistance. Support to basic clinical veterinary services will help to ensure that sick animals are treated promptly. It should be noted that livestock vaccination should be completed before drought occurs. Of the various diseases prevented by vaccination, only anthrax is particularly associated with drought as animals may move to anthrax-infested areas due to limited grazing elsewhere.

6.4 Guidance on supporting basic services for the examination and treatment of individual animals or herds

Through the services of supervised CAHWs, emergency veterinary interventions during drought can aim to provide a clinical service to pastoralists and treat sick livestock. Such services can provide immediate benefits to those users who can access the service.

6.4.1 Guidance on rapid assessment

Community-based approaches to primary animal health care recognise that local people can make important intellectual contributions to service design and assessment. Pastoralists are highly reliant on livestock and possess very detailed indigenous knowledge on animal health problems, including disease signs, modes of disease transmission, and ways of preventing or controlling diseases. This knowledge is well documented within the country. When applying the common standard of participation to veterinary service provision, rapid participatory assessment and use of local, trained workers with strong existing veterinary knowledge are highly appropriate. Such workers can also play a useful role in veterinary public health and disease surveillance (see section 6.6). It follows that the assessment process must be carried out in a participatory manner and involve primary beneficiaries and government partners at all levels.

Assessing needs of vulnerable groups

The design of equitable and effective primary veterinary service delivery requires an understanding of livestock ownership or use by different socio-economic groups within a population. In particular, the assessment should include an understanding of the following:

Livestock owned or used by women - vulnerable groups such as female-headed households may own specific types of livestock such as poultry, small ruminants or donkeys, and therefore it is important to consider the main health problems affecting these animals. Women and girls may be responsible for small and/or young stock, including the diagnosis and treatment of livestock diseases and hence may have significant ethno-veterinary knowledge which should be taken into account in planning. Women are also commonly more vulnerable in emergencies to food insecurity and other threats. Therefore, they should be involved in animal health interventions, including specific targeting of particular activities and the recruitment of women CAHWs where possible and appropriate.

People living with HIV/AIDS - for people with HIV/AIDS the prevention of zoonotic disease is particularly important. In addition, livestock products (as noted elsewhere in this volume) can provide substantial nutritional benefit to people living with HIV/AIDS. Increasing the

productivity of livestock through animal health interventions can therefore also have a positive impact on these groups in particular.

Context analysis

In addition to the particular needs of certain sub-populations within communities, the assessment should take account of security and environmental issues.

Security factors - the security implications of any animal health intervention should be considered. For example, CAHWs carrying cash and/or medicines may be at increased personal risk of robbery or attack. Insecurity can also have animal health implications: animals stolen from a neighbouring group or area can bring disease.

Policy and legal factors - the assessment should include a rapid review of government, agency and donor policies, rules or procedures which relate to implementation options. There may be restrictions on the use of certain types of veterinary products by certain levels of veterinary workers. The use of funds from some donors to buy veterinary drugs is governed by bureaucratic donor requirements which prevent rapid and appropriate procurement in emergency contexts.

Environmental factors - initiatives which help to preserve livestock assets such as the provision of veterinary services need to take account of the potential impact on the environment, particularly in emergencies which have severely affected natural resources, such as drought.

Approaches and methods for rapid participatory assessment

General approach and timing - during drought or other disasters the assessment of veterinary capacities and needs should be conducted rapidly and use participatory approaches and methods. The initial animal health assessment should be carried out during the alert phase of a drought. Best practice for rapid participatory assessment of veterinary capacities and needs include:

Stakeholders -the assessment should involve all relevant sub-groups within a drought or disaster-affected population and should be conducted in partnership with local veterinary authorities and service providers, and/or with other groups as relevant.

Skills and experience of assessment team - the assessment should be conducted by veterinarians who have been trained in participatory approaches and methods, and who are experienced users of these methods in pastoral areas of the country.

Methods for assessing veterinary services - the assessment of existing veterinary services and possible gaps in service provision should be based on the use of five key indicators viz. *accessibility, availability, affordability, acceptance* and *quality* (Table 6.3); useful participatory methods to measure these indicators are also listed in Table 6.3. Participatory mapping is particularly useful as a rapid assessment method. It can quickly show existing service providers such as veterinarians and all types of para-veterinary workers working in the public and private sectors, and for NGOs or UN agencies. Understanding the activities and coverage of these workers will assist agencies to define a strategy for service delivery, including ways to fill gaps in terms of coverage or access to vulnerable groups.

One component of the analysis should be a review of the pricing arrangements used by different service providers. Information derived from participatory methods should be cross-checked against secondary data such as government reports or published accounts of livestock diseases.

Information derived from participatory methods should be cross-checked against secondary data when available. Secondary data includes government disease surveillance reports, disease studies from local research institutes and published data. Cross-checking (triangulation) of information in this way helps to ensure that the overall analysis is as rigorous as possible within the time available. Formal livestock disease surveys involving questionnaires and laboratory diagnosis are rarely feasible in disaster contexts, and the modest added value of the disease information obtained is rarely justified in relation to the additional time and cost required, and the need for rapid action.

Distribution of assessment findings - through the coordination body, the assessment findings should be provided to the local, regional and federal veterinary services, local and international NGOs, and UN agencies with animal health programmes.

Table 6.3
Assessment checklist and methods for veterinary service provision

Key indicator and description	Useful method
<p>Accessibility The physical distance between livestock keepers and the nearest trained veterinary workers.</p>	<p>Participatory mapping - simple sketch maps can show the locations of livestock and their owners, and the nearest veterinary service providers by type of provider. Distances can be measured in km, miles or hours of travel time. A single map can show all of the veterinary service providers in a given area.</p>
<p>Availability A measure of the physical presence of a service in an area. An area may have many veterinarians but if they are all concentrated in a main town, the service is available but not accessible.</p>	<p>Participatory mapping - as above Direct observation of veterinary workers and facilities; interviews to assess existing stocks of veterinary products, and the quality of medicines and equipment.</p>
<p>Affordability The ability of people to pay for services</p>	<p>Semi-structured interviews and observation of veterinary facilities and livestock markets. Observation of veterinary facilities and price lists will determine normal service costs. Interviews will determine livestock values, thereby allowing a comparison of service costs against livestock worth. If livestock markets are still functioning, or if a de-stocking programme is taking place, it is more likely that people can pay for veterinary services.</p>
<p>Acceptance Relates to cultural and political acceptance of veterinary workers, and is affected by socio-cultural norms, gender issues, language capabilities and other issues.</p>	<p>Interviews with livestock keepers.</p>
<p>Quality The level of training of veterinary workers, their technical knowledge and skills, their communication skills, the quality and range of veterinary medicines, vaccines or equipment at their disposal.</p>	<p>Interviews with veterinary workers; direct observation of veterinary facilities; observation of education certificates, licenses to practice or equivalent.</p>
<p>All indicators</p>	<p>Matrix scoring - if different types of veterinary worker are present, a matrix scoring of the different workers against the five indicators will show the relative strengths and weaknesses of each worker.</p>

Methods for assessing livestock diseases – participatory methods for the rapid assessment of livestock diseases in pastoralist areas are listed in Table 6.4; these methods have been used extensively in Ethiopia.

Table 6.4
Participatory methods for collecting information on livestock diseases

Information required	Methods
Spatial distribution of livestock, disease events, or disease vectors or parasites; contact between herds	Participatory mapping
Historical pattern of disease events	Time-lines
Seasonal variation in disease events with reasons	Seasonal calendars
Relative livelihoods importance of different livestock diseases with reasons	Matrix scoring of diseases
Disease mortality and prevalence estimates	Proportional piling
Production losses caused by diseases	Proportional piling
Herd structure	Proportional piling

6.4.2 Guidance on the design and implementation of clinical veterinary services

Following the common principle of community participation (Chapter 2) pastoralists, including vulnerable groups, should actively participate in the design of emergency veterinary interventions during drought or other crises.

Type of intervention - the veterinary intervention during an emergency could generally be curative, preventive and supportive treatments based on the initial assessment results. Vaccination of livestock during peak emergency situations is discouraged and avoided unless and otherwise it is strongly suggested as an outcome of the initial assessment process. Livestock vaccination should be conducted in a strategic way and based on epidemiological findings during normal, alert and/or recovery stages of the drought management cycle.

Payment for services - the animal health intervention should be based on the principle of partial or full payment at all times. When the results of a rapid participatory assessment justify that livestock owners are unable to pay for the inputs and services, partial or total cost will be borne by aid agencies and/or other actors including the government. Such a subsidised operation must last only for a short duration of time and has to be decided prior to the implementation of interventions. Voucher or coupon systems could be implemented for effective service delivery and to discourage misuses. Animal health interventions during emergencies must support local private actors and could involve CAHWs, private practitioners and drug vendors. Good coordination is needed to define the roles and responsibilities of private sector actors, government and NGOs.

Focus on important diseases – the service design should aim to address the prioritised livestock health problems which are identified during the initial assessment. It is rarely feasible or appropriate for an emergency, primary-level veterinary service to address all livestock health problems and in most cases, a limited range of veterinary vaccines and medicines can be used to prevent or treat the most important diseases in a given area. The focus of the service on prioritised livestock diseases needs to be understood and agreed by all actors, including livestock keepers. Similarly the appropriate timing for interventions - particularly vaccination - should be discussed and agreed with all stakeholders.

Vulnerable groups - service design should take account of the types of livestock owned or used by vulnerable groups, and should aim to address the main health problems in these livestock. Vulnerability in terms of primary veterinary service delivery also requires special attention to accessibility and affordability issues. Accessibility to more remote areas with limited infrastructure by conventional means requires considerable cost and therefore limited coverage, or the use of para-veterinary workers who are able to travel on foot or local transport. In some cases, programmes may need to provide or support local modes of transportation for veterinary workers.

The strategy for payment for services needs to take account of the need for rapid and equitable delivery, while also supporting private sector veterinary workers where possible. For more vulnerable groups, private veterinary workers can be sub-contracted by agencies to deliver a service for a specified, short time period. Voucher schemes are a variation of this approach, in which selected livestock users are provided with a voucher which allows them to access private veterinary care up to a specified value. The private veterinary workers then exchange the vouchers for cash from the aid agency. In areas where a private veterinary sector is active or where government charges for clinical veterinary care, the continuation of normal pricing policies should be followed, other than for targeted vulnerable groups. To avoid confusion, community participation and agreement with community representatives is needed.

Procurement and storage of veterinary medicines - there is considerable variation in the quality of veterinary vaccines and medicines sourced from different suppliers, either locally or internationally. Suppliers also vary in their capacity to supply large volumes or drugs with appropriate expiry dates, and according to agreed delivery times. Procurement can be further complicated by the range of diseases in different livestock species, and the wide range of products available to prevent or treat a particular disease. When using veterinary vaccines, some vaccines require the isolation of local field strains of disease pathogens to ensure adequate protection and therefore the exact composition of these vaccines needs to be verified (see Section 6.5). Agencies with limited experience of veterinary drug procurement should seek expert advice. Local importers, mostly based in Addis Ababa, can be a source of readily available drugs in reasonable quantities. However, the quality, expiry date and prior storage of these drugs need to be checked. At field level, most veterinary vaccines and some drugs require cold storage. They should not be purchased or used unless adequate cold storage facilities are in place. Cold storage facilities of human health services can sometimes be shared.

Training inputs - in situations where some veterinary workers are already present and where rapid delivery of services is required, training should be limited to short refresher courses focusing on the clinical diagnosis of the prioritised diseases, and the correct use of veterinary vaccines or drugs; such refresher training is not always needed depending on the existing capacity of local personnel. If para-veterinary workers such as CAHWs need to be selected and trained from scratch, guidelines are available for CAHW systems in Ethiopia (see Annex 6.2) although these guidelines refer to development rather than emergency programmes. In emergency situations where rapid delivery of services is required, it may be necessary to streamline and shorten some of the best-practice principles related to CAHW selection and training. However, as emergencies become protracted or end, further training to enhance CAHW knowledge and skills is recommended.

Social and cultural norms - the design of veterinary services needs to take account of local social and cultural norms, particularly related to the roles of men and women as service providers. In some communities it is difficult for women to move freely or travel alone to more remote areas where livestock might be present. However, even in very conservative communities it is often possible to select and train female CAHWs to provide a service to women, who are often among the most vulnerable groups.

Security issues - service design should take account of the possible exposure of veterinary personnel to violence, abduction or theft. Livestock are often grazed away from more secure settlements, and sometimes have to be moved long distances to grazing areas and water points. In conflict situations, veterinary workers travelling to such areas may be at risk. In part, the use of local para-veterinary workers can be appropriate in these situations because these workers know the local area and the relevant armed groups or security

forces, and are able to negotiate access. In areas where livestock are very important to local economies and livelihoods, veterinary drugs are highly prized and as small volume and high value items, easy to loot and re-sell.

Roles and responsibilities - many of the problems which arise during emergency veterinary service provision are associated with misunderstandings about the roles and responsibilities of different actors, false expectations regarding the aims and coverage of the service, or confusion over pricing arrangements or selection of beneficiaries. Many of these problems can be avoided by a commitment to community participation and where possible, close collaboration with local authorities and private sector actors. Roles and responsibilities should be documented in Memoranda of Understanding or similar agreements. Such agreements act as a very useful point of reference in the event of disputes.

6.4.3 Monitoring of veterinary service provision

Clinical veterinary services in droughts and other crises should be monitored systematically and with sufficient frequency to enable rapid detection and correction of problems, either by the coordinating body or the agencies on the ground.

Monitoring approach and timing - following the common principle of community participation (Chapter 2), the monitoring system should include regular consultation with community representatives, community members, vulnerable groups and other relevant stakeholders including CAHWs, private practitioners, NGOs and local authorities. Each of the five main monitoring indicators for veterinary service provision can be measured using participatory methods (see below).

Monitoring should occur at least once a month. The monitoring system should include the monthly submission of monitoring reports by veterinary workers to the aid agency and/or government partners. These reports should detail the activities of workers in tabulated form, and should complement measurement of the five main indicators of service provision detailed below.

The outputs from monitoring exercises should be timely communicated to all relevant stakeholders including the local, regional and federal veterinary services authorities.

Indicators for monitoring service provision - there are no internationally-recognised standard indicators for measuring primary veterinary services. Indicators for primary human health services can be applied to veterinary services, and five useful indicators are *accessibility*, *availability*, *affordability*, *acceptance* and *quality* as defined in Table 6.3. The methods used to assess these indicators during an initial assessment (Table 6.3) can also be used to monitor progress over time. More examples of monitoring indicators are provided in Annex 6.1.

Given the need to reach vulnerable groups, each indicator should not only measure service provision in the population as a whole, but also service provision for specific vulnerable groups. Accessibility, availability and affordability can be measured quantitatively, whereas acceptance and quality can be measured quantitatively and/or qualitatively.

Indicators for measuring livestock diseases - monitoring systems for clinical veterinary services should contribute to official disease surveillance systems. Therefore, monitoring should include the collection of information on livestock disease incidents, and use indicators such as the proportion of animals affected by disease and livestock species, and mortality by disease and livestock species. For preventable diseases, this process assists the project to assess whether veterinary service provision is reducing diseases according to the prioritised list of diseases identified during the initial assessment, and whether other or new diseases should be addressed. The monitoring system should also track outbreaks of particularly important livestock diseases and inform responses as necessary.

6.5 Mass treatment and vaccination programmes

This section summarises some key technical aspects affecting the impact of vaccination and advises veterinarians and livestock programme managers to consult OIE guidelines (see Annex 6.2). Although the design of vaccination programmes varies according to the epidemiology and impact of different diseases, veterinary professionals are advised that:

Disease diagnosis - failure to diagnose disease(s) according to recognised international diagnostic standards increases the risk of inappropriate vaccination e.g. through the use of the wrong vaccine.

Vaccine composition - for some diseases, vaccine efficacy is highly dependant on the identification of local field isolates and the inclusion of these isolates in the vaccine. This is a particular issue in the case of vaccines for haemorrhagic septicaemia and the various forms of bovine and ovine pasteurellosis. Agencies conducting vaccination should check with vaccine suppliers that the composition of vaccines is relevant to the diseases and specific pathogens in their geographical areas of operation.

Vaccine efficacy - although some vaccine producers may cite results of their own laboratory-based vaccine efficacy trials, such trials require large sample sizes, relevant livestock species and a capacity to reproduce natural infection in laboratory settings. For these reasons, reference to peer-reviewed literature and/or the guidelines provided by OIE and FAO is advised.

Vaccination protocols - when using vaccines, the level and duration of immunity varies according to the vaccine, number of doses and timing of doses.

- Anthrax - the vaccine based on Sterne's spore vaccine is live and a single dose of vaccine provides immunity for up to 12 months
- Haemorrhagic septicaemia - a single dose of correctly-prepared alum-precipitated (inactivated) vaccine can result in immunity of up to three to four months
- Ovine pasteurellosis - for correctly-prepared inactivated ovine pasteurellosis vaccine, two doses of vaccine administered four weeks apart may provide protective immunity for up to 12 months. There is very limited evidence to indicate that a single dose of inactivated ovine pasteurellosis vaccine provides any duration of protective immunity.

Timing of vaccination in the face of outbreaks - in the face of outbreaks of anthrax, haemorrhagic septicaemia, pasteurellosis and blackleg, vaccination of affected herds is unlikely to reduce mortality unless it is conducted before mortality peaks in a given herd. If vaccination is conducted after peak mortality has occurred, it is unlikely to affect mortality. Furthermore, delayed vaccination using only a single dose of inactivated vaccine tends to produce immunity of short duration or no immunity (depending on the vaccine). Therefore, such vaccination may not prevent future disease outbreaks.

In many pastoral areas, outbreaks of anthrax, haemorrhagic septicaemia, pasteurellosis and blackleg are predictable because the diseases are either location-specific (e.g. anthrax) and/or seasonal (e.g. pasteurellosis). Failure to complete a full vaccination course for these diseases before periods of high risk, and/or failure to cover a high proportion of animals in a given herd, reduces the impact of vaccination.

Cold storage - many vaccines require cold storage. Failure to comply with manufacturer's recommendations for cold storage increases the risk of ineffective vaccination. In hot pastoral areas, particular care is needed to ensure correct storage of vaccines. In the event that a vaccine producer advises that vaccine efficacy is maintained even if vaccines are stored at higher temperatures than recommended in product data sheets, such advice should be treated with caution.

Disease control policy - in the case of contagious bovine pleuropneumonia, contagious caprine pleuropneumonia and Peste des petis ruminants, the design of vaccination programmes should be the subject of national disease control programmes and strategies.

6.6 Support to public sector veterinary functions during emergencies

If drought becomes very prolonged the need to support core public sector veterinary functions should be considered.

6.6.1 Guidance on disease surveillance

In pastoral areas of Ethiopia, international trade in livestock or livestock products is an important aspect of livelihoods. This trade is influenced by international animal health standards and the use of disease information to determine the risk of Ethiopia exporting livestock diseases to trading partners. The major source of disease information is the MoARD livestock disease surveillance system and therefore, disease surveillance activities need to be designed in collaboration with government authorities.

Routine monitoring - the monitoring of clinical activities of para-veterinary workers such as CAHWs can contribute to a livestock disease surveillance system. Routine monitoring can include the recording of livestock disease events, in addition to the treatment or control measures used. Such data is most useful if livestock morbidity and mortality by species and disease is recorded in relation to the population at risk - treatment or vaccination figures *per se* have limited value unless related to specific populations of different livestock species (Box 2.3). For CAHWs, pictorial monitoring forms have been used successfully in Ethiopia and are particularly useful for CAHWs with low levels of literacy. Monitoring tasks should be designed in collaboration with government veterinary services.

Veterinary investigation - veterinary programmes and agencies should have the capacity to conduct investigations of disease outbreaks. Within a multi-agency programme, this task may be designated to a team or individual with specialist training in disease investigation, including *post mortem* examination and laboratory diagnosis. In the absence of such specialist assistance on the ground, agencies should be prepared to collect relevant samples and submit these samples to a laboratory. All activities need to complement government veterinary investigation systems, with official reporting of diagnoses by the Department of Veterinary Services.

Epizootic disease surveillance - where possible, livestock disease surveillance systems in protracted crises should follow the standard procedures for selected epizootic diseases. Where operational constraints prevent the implementation of these procedures, liaison with national authorities and either OIE or FAO should lead to modifications in surveillance methods to suit the conditions on the ground.

Reporting - in protracted crises, all agencies should submit regular disease surveillance reports to the Department of Veterinary Services, which in turn, should compile and share information with relevant partners.

6.6.2 Veterinary public health

Veterinary public health covers the prevention or control of animal diseases which are transmissible to humans either through food or by contact between animals and people; it is a key public sector function. These zoonotic diseases include anthrax, salmonellosis, tuberculosis, brucellosis, mange and Rift Valley fever. Drought or other disasters can result in abnormal livestock movements or use of grazing areas, high livestock mortality followed by scavenging of carcasses by wild or domestic carnivores, crowding of livestock, or close contact between livestock and people. These conditions can increase the risk of zoonotic diseases in livestock and humans. The disease control method depends on the disease in question and in some cases, collaboration between veterinary and human health services is warranted.

Examples of veterinary public health activities during drought or other crises include public education campaigns to control tuberculosis or brucellosis e.g. through hygiene and consumption of boiled milk, or public awareness and mobilisation to collect and bury or burn animal carcasses.

Assessment - the rapid participatory assessment conducted under the provision of primary-level clinical veterinary services (section 6.4.1) should include a rapid assessment of zoonotic diseases, in terms of actual cases or potential risk of disease occurrence. In emergencies, anthrax may be associated with abnormal movement of livestock to grazing areas which are normally avoided; rabies may be associated with local populations of wild or domestic predators, possibly attracted to carcasses or garbage; other zoonotic diseases may be associated with close contact between animals and people, or unhygienic conditions arising from the crowding of people and animals in camps, or the breakdown of water supplies.

Zoonotic disease control - the control method will vary according to the zoonotic disease(s) in question. For some diseases, information to livestock keepers might be transferred verbally or using leaflets delivered by para-veterinary workers as an addition to their routine clinical work. Where private veterinary workers are used on a short-term basis, payment for their services by an aid agency will usually be required. Zoonotic disease control efforts between agencies and between areas should be harmonised as part of the coordination effort. Collaboration with human health agencies and programmes is beneficial to harmonise approaches and for sharing of resources.

Euthanasia and disposal - disasters may result in large numbers of injured or terminally sick animals, which require euthanasia and disposal. Animals dying as a direct result of disaster injuries also require disposal. Animal carcasses may spread disease, are unsightly, produce noxious odours and attract predators and scavengers such as packs of dogs, hyenas or jackals. Animal euthanasia should follow humane standards and practices. Depending on the sickness, injury and method of slaughter, some livestock carcasses can be fit for human consumption.

Slaughter facilities and meat inspection - in emergency interventions in pastoral areas of Ethiopia, attention to slaughter facilities and meat inspection is particularly relevant to slaughter destocking (see section 3.4). In camps for displaced pastoralists it may be appropriate to construct slaughter slabs to encourage the humane slaughter of animals by trained workers, the hygienic handling of meat, and meat inspection. In all cases, consultation with local livestock workers or butchers will help to determine the correct locations for slaughter slabs, and their design. Meat inspection procedures are generally well known. Safe disposal of offal from slaughtered livestock should be ensured.

6.7 Policy implications and outstanding issues

The policy implications and outstanding issues for veterinary care in pastoral areas during drought or other emergencies relate to policy on veterinary service provision and policies on disease control.

Policy on veterinary service provision - the MoARD recognises the economic and production benefits of mobile livestock rearing systems in pastoral areas of the country and consequently, supports veterinary service delivery which best meets the needs of mobile communities and their herds. To date, the most effective means of service delivery has been private CAHW systems which are properly designed and maintained with appropriate supervision from veterinarians. These systems fall within international standards set by the World Animal Health Organisation. All agencies are advised to follow the MoARD *National Minimum Standards and Guideline for the Design and Establishment of Community-based Animal Health Worker Systems*, and conduct proper monitoring and evaluation of these systems.

Policies on disease control - the development of disease control policies for specific livestock diseases in pastoral areas has been hindered by the limited information available on the epidemiology and economics of diseases in these areas. During normal periods, between droughts or other crises, all actors involved in veterinary services in pastoral areas are encouraged to conduct studies on livestock diseases and as far as possible, work with the MoARD to design disease control strategies to be implemented by the private sector,

government veterinary services, or as public-private partnerships. Participatory epidemiology approaches and methods are well-suited to pastoral areas and require further use by government services, research institutes and NGOs.

Annex 6.1

Examples of monitoring and evaluation indicators for primary veterinary service provision

	Process indicators	Impact indicators
Designing the system	<ul style="list-style-type: none"> ▪ Completion of participatory survey and analysis ▪ Number of meetings with community/community representatives 	<ul style="list-style-type: none"> ▪ Identification of the ten most important animal health problems in the community according to different wealth and gender groups ▪ Analysis of options for improving animal health ▪ Agreement on action to be taken
Links to drug outlets	<ul style="list-style-type: none"> ▪ Number of meetings between private veterinary workers and agency 	<ul style="list-style-type: none"> ▪ Agreement between parties ▪ Number of paraveterinarians linked to private veterinary drug supplier or agency
Rapid veterinary training	<ul style="list-style-type: none"> ▪ Number of workers trained ▪ Number and type of animal health problems covered in training course ▪ Geographical location of workers ▪ Cost of training 	<ul style="list-style-type: none"> ▪ Improved veterinary knowledge and skills among trainees
Veterinary worker activities	<ul style="list-style-type: none"> ▪ Number of starter kits supplied to veterinary workers ▪ Cost of starter kits supplied ▪ Quantities and types of medicines supplied to veterinary workers ▪ Cost of medicines supplied to veterinary workers ▪ Number of treatments per disease per livestock type per worker per month ▪ Number of vaccinations per disease per livestock type per worker per month ▪ Income received by veterinary workers ▪ Number of monitoring forms submitted by veterinary workers ▪ Number of disease outbreaks reported by veterinary workers 	<ul style="list-style-type: none"> ▪ Livestock mortality over time ▪ Geographical coverage of veterinary workers ▪ Proportion of livestock-rearing households serviced by veterinary workers ▪ Proportion or number of workers functioning after training ▪ Drugs and vaccines resupplied to CAHWs based on revenue collection ▪ Action taken according to disease outbreak reports ▪ Food consumption in community related to improved animal health and according to wealth and gender groups ▪ Income in community related to improved animal health and according to wealth and gender groups ▪ Influence on policy

(Source: Catley et al., 2002).

Annex 6.2 Further reading

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7. Restocking

7.1 Overview

A restocking programme aims to rebuild a productive livestock holding for pastoralist households that have lost most of their animals as a result of an emergency, and have no means of their own to recover. Restocking may be appropriate after various types of disaster, such as drought, flood or conflict. Almost by definition, restocking takes place after an emergency although in the case of a slow onset emergency, some degree of forward planning may be possible. However, the need for restocking after slow onset emergencies also reflects a failure of other livelihoods-based responses much earlier on. Relative to most other types of intervention, restocking is an expensive option because it requires the replacement of livestock. It follows that in most restocking projects the number of recipient households is very much determined by project budget.

In agro-pastoral communities, households are less dependent on livestock than pastoralists and so relatively fewer animals are provided. These communities may also be less mobile than pastoralists, thereby making monitoring of households easier. For pastoralists, restocking is more difficult due to the larger number of animals that will be required to establish a viable herd size and the mobile nature of the affected communities which makes delivery of animals and monitoring the success of the initiative complex.

Pastoralists use various indigenous strategies during drought to try to avoid losses of livestock, especially breeding females. These strategies include:

- Extending the movement of herds and flocks beyond commonly used areas in order to locate better pastures at more distant locations
- Undertaking supplementary income generating activities locally
- Out-migration of some household members to earn additional income and to reduce demands on the household asset base
- Modifying herd structures: specifically replacing large stock (cattle, camels) with small stock (sheep, goats) that will reproduce rapidly in order to re-establish viable herd sizes
- Gifts or loans from less severely affected clan households to poorer households, as practised by Afar, Boran, Somali and other pastoralists.

Externally-supported restocking is needed when these traditional mechanisms break down. Programmes may be implemented with the aim of rehabilitating herds or flocks in the short-term or as long-term development projects, and various types of repayment and credit

systems can be used. External interventions should always attempt to complement and build upon indigenous approaches rather than to replace them.

Restocking programmes should not be carried out in isolation from other rehabilitation efforts directed at both the human and livestock populations of the affected areas. Other interventions are needed because it usually takes several months or longer for herds to become sufficiently productive to make a substantial contribution to livelihoods. For example, a new herd of breeding goats will need to deliver new offspring and these offspring will have to become young adults before sales are possible. Therefore, restocked households may require food aid, safety net support, basic household items and veterinary care. These diverse inputs require good coordination between agencies.

*Table 7.1
Advantages and disadvantages of restocking*

Advantages	Disadvantages
Can allow rebuilding of the asset base of affected communities in a manner that is compatible with traditional means of securing livelihoods.	Restocking is time-consuming and labour-intensive compared with other post-emergency interventions.
Restocked herds should be sustainable in the long-term without the need for further intervention – at least in the absence of further emergencies arising.	Planning can be complex and, particularly in drought situations, future threats due to unpredictable rainfall can threaten long-term viability.
Other development interventions that might offer similar long-term benefits – such as the establishment of irrigation agriculture – are too costly, high maintenance and unacceptable to potential beneficiaries.	Costs, particularly initial costs are very high per household. It is important that financial provisions are adequate to ensure that the programme can be implemented equitably in affected areas.
After severe droughts, surplus grazing is available. Restocking allows this to be used effectively before its quality declines and the risk of bush encroachment develops.	The most-severely affected families are often in remote areas that are difficult to access. The costs of restocking these areas may be unacceptably high.
Can help to reduce dependency on feeding camps and food aid more rapidly.	The following threats should be avoidable if a restocking programme is planned effectively: <ul style="list-style-type: none"> o There is a risk of overgrazing if the carrying capacity of grazing areas is not properly assessed; o The species composition of herds may change limiting their contribution to the traditional livelihoods asset base; o Restocking efforts can erode traditional coping mechanisms if not properly built upon and complementing indigenous approaches.
Helps to restore the personal dignity of affected individuals by supporting a rapid return to traditional lifestyles.	

7.2 Needs Assessment and Planning

As restocking with pastoralists in Ethiopia has usually been used after drought, there is often more time available for assessment and analysis relative to interventions used earlier on in the drought. Agencies should take advantage of this time to conduct proper assessments to inform the need, feasibility and design of restocking.

The following key questions need to be considered when restocking interventions are under consideration and a supporting checklist is provided in Annex 7.1.

7.2.1 Local acceptability of restocking

For many pastoralist households after drought, restocking is probably the most acceptable route back to a traditional way of life. Other interventions may involve a major departure from pastoralism resulting in the loss of the skills and knowledge needed for the successful management of livestock in fragile environments. These alternative interventions include more settled agricultural production, but this livelihood option is also highly dependent on rainfall. Although alternative livelihoods strategies are now attracting increasing attention from aid organisations, to date experiences have been small-scale and where benefits have been measured, these have reached only a small proportion of a population.

In summary, it seems that restocking will be the preferred recovery option for some pastoralist households, while others may prefer to move out of the pastoral sector and receive other kinds of support.

7.2.2 Cost issues

A major issue affecting the design of any restocking programme is cost and in particular, the relatively high cost per beneficiary household. In terms of overall cost, restocking generally compares favourably with alternative development initiatives although initial expenditure may be considerably higher because of livestock purchases. However, these costs need to be set against the potentially self-sustaining nature of restocking programmes in the longer term and their capacity to build household wealth. Similar benefits would not generally be offered by, for example, irrigation schemes or food-for-work programmes. Even for agencies which have used restocking extensively, there can be tension between administrative staff or programme managers who wish to see a high number of households reached with fewer animals for a given budget, and technical staff who have better understanding of viable herd size and traditional restocking strategies. It is possible that restocking with sub-optimal numbers of animals contributes to low success rates and repeated bouts of restocking almost on a yearly basis, although this issue requires further research.

Box 7.1

The cost of restocking

The major costs to be taken into account when considering a restocking programme include:

- Operational costs of managing the scheme including salary, transport and accommodation of personnel
- Cost of procuring the animals
- Costs of veterinary inputs
- Cost of food aid
- Equipment for use by the programme or distributed to recipients. This might include plastic jerry cans for carrying water, ropes, axes and other items.
- Overhead costs, including maintaining holding facilities, animal losses, administration etc.
- Monitoring and impact assessment costs

From 2002 to 2003 Save the Children UK implemented a restocking project for 500 IDP families in Fik Zone, Ethiopia, as a post-drought response, providing each household with 30 breeding sheep or goats. The project was implemented with the DPPC and Somali region livestock bureau. The total budget was Eth birr 2.2 million, equivalent to Eth birr 4,400 (US\$ 489) per household; this budget excluded the cost of food aid and household items, which were provided by other agencies such as the Christian Relief and Development Agency and UNICEF.

The project evaluation concluded that although substantial benefits had arisen due to the restocking, the restocking package should have included at least 50 sheep and goats per household. This would have increased the project budget to Eth birr 3.1 million – an increase of 41% if 500 households were still to be targeted. Alternatively, with the original budget of Eth birr 2.2 million and an increased number of 50 livestock per household, the number of recipient households would be reduced to around 300.

This example illustrates the challenge faced by aid agencies when deciding how many households to restock, and how many animals to provide. The evaluation of the SC UK project indicated that a budget of around US\$690 per household was needed.

Source: adapted from Wekesa (2005)

One way to reduce the costs of restocking might be to agree an in-kind contribution from communities, so that the costs are shared between an agency and the community. In some ways, this approach can build on traditional restocking practices. Cost-share arrangements have been tried in pastoralist areas of Ethiopia, but have not yet been fully evaluated.

The re-emergence of cash distributions as a drought response in some countries raises the possibility that cash would be more cost-effective than restocking as a way to transfer assets to households during drought recovery. In theory, the transaction costs for cash distribution are lower than for restocking, and households can also select the types of purchases they need to make.

7.2.3 Community participation

Restocking schemes can only succeed if the affected community is involved in the design, implementation and assessment of the project. Given that most pastoralists already have

traditional systems for restocking, community participation should play an important part in the selection of recipients, defining the types and numbers of animals for restocking, purchase of stock, community in-kind contributions of livestock, overall management of the project and impact assessment. Therefore, each of the activities implemented in a restocking programme should be planned in such a way that the community is consulted and actively involved. This is particularly important if the constraints facing affected households and the capacity that the community and its members can contribute to the establishment of a successful restocking programme are to be addressed effectively. Specifically there is a need to assess:

- The broader impacts of the emergency on capacity to re-establish traditional lifestyles e.g. reduced access to former grazing land, disappearance of markets, loss of traditional arrangements with sedentary populations, reduced access to transhumance routes.
- Likely future threats to a traditional lifestyle either as a result of the current emergency or through a repetition of events.
- The extent to which management capacity has been eroded at the household level and possible means of re-establishing this.
- Adequacy of labour inputs for managing mobile herds.
- The perspectives of affected households on the benefits of re-establishing pastoralism in the area as opposed to seeking new livelihoods opportunities.
- Persistence and strength of community leadership and community social structures for mutual support, resolution of disputes and other roles.

7.2.4 Environmental issues

Early proponents of restocking assumed that restocked households would move away from drought centres or IDP camps with their animals and therefore, environmental degradation around such areas would be reduced. However, the relatively short duration of many restocking projects meant that environmental impacts were often not measured or attributed to restocking. Consequently, the potential environmental benefits of restocking are not well recorded.

At the stage of planning a restocking intervention, it is necessary to consider where the animals will be grazed and assess potential environmental impacts. Such assessment can be conducted with communities, using methods such as participatory mapping.

7.2.5 Timing of restocking

The decision on when to implement a restocking programme needs to address the inevitable trade-off between the immediate needs of the affected population and the viability of the programme. Implementing restocking too early will result in unacceptable

levels of risk to the introduced animals whilst unnecessary delays may limit the capacity of targeted households to benefit from the livestock. At the household level, restocking may start to be considered as a viable intervention when livelihood assets have fallen below the minimum survival needs to sustain households. It has been suggested that, at the community level, this point is indicated when at least 30% of the community has been materially affected by the emergency.

The following indicators may be helpful in determining the timing of a restocking intervention:

- Restocking should be carried out as soon after the disaster as possible to facilitate quick re-establishment of a pastoral way of life for those families who wish to return to pastoralism.
- It is unwise to introduce large numbers of grazing animals into an area at a time when resource availability is limited (e.g. during the dry season in an arid environment). It is also important to be sure that the crisis is over before restocking. If the immediate consequences of the emergency are still apparent, livestock introduced into the area will face increased difficulty in adapting and their survival prospects may be compromised by competition for feed and water.
- After drought, wet conditions are often associated with increases in the incidence of certain diseases, particularly parasitic diseases. It follows that restocked animals need to receive preventive veterinary care and restocking should only take place if such care can be provided.

It should be reiterated here that traditional restocking may be taking place continually, to some extent at least, and that external restocking initiatives should attempt to complement this where possible.

Restocking is not a long-term intervention. Ideally, it should start at an appropriate time and continue only as long as is necessary for the effective re-establishment of pastoralism in the target area. These considerations should be built in at the planning stage and the following issues need to be taken into account when determining the point at which restocking should be discontinued:

- Household food availability may be taken as the key indicator of the need for relief aid. However, in terms of involvement with restocking programmes, it is probably more appropriate to judge the “job done” when recipients are able to deliver the essential management that their restocked livestock need to survive.
- At the community level, disengagement of restocking schemes should depend largely on the achievement of predetermined objectives and milestones. In the crudest sense, all the selected recipients should have received the minimum number of animals specified by the scheme before disengagement is considered.

7.2.6 Market analysis

Terms of trade for livestock deteriorate dramatically during drought, and rise after the rains. This means that livestock prices are usually high at the time when restocking takes place. Agencies should take account of price fluctuations when planning restocking, and assume that demand and prices for breeding females will be relatively high. Similarly, if it is known that an aid agency is about to purchase livestock, prices can increase even further.

If a large-scale programme is envisaged, an assessment of the availability of breeding females in local markets will also be needed. This kind of assessment can include a review of market sales volumes in previous years, and informal discussions with traders. In the event that animals have to be purchased from distant markets, relevant transport and other costs should be included in the project budget.

7.2.7 Areas for restocking

In order to make effective use of the finite financial resources available for restocking programmes, inputs should be targeted at the most seriously affected geographical areas and vulnerable households in these areas.

Restocking operations can be implemented at community, village or household level. The decision on the most appropriate scale of operation needs to involve target beneficiary communities as well as other stakeholders. Experience and operational logic suggest that for restocking to succeed, the focus should be on individual households within selected communities. However, the possibility of targeting the community at large, particularly if implementation is designed to complement traditional support mechanisms, should not be ruled out. In this case, financial capacity and the scope and severity of the disaster determine the proportion of the community to be restocked.

In order to be able to select appropriate target communities, and to help in planning of the restocking scheme, detailed information will be needed. Informal interviews with community members and community leaders are useful for developing profiles of potential intervention areas. Once these have been selected, sample households can be assessed to provide more detail on the likely scope and scale of restocking that will be needed. The number and distribution of supported villages can be determined by the scale and severity of the disaster. Again local communities, possibly through their leaders, and public services at district level need to be consulted as part of the decision-making process. Expressed needs must then be matched against available financial resources with the direct participation of local government administration in the decision-making process.

7.3 Design and implementation of restocking

7.3.1 Selection of individual beneficiaries

The selection of appropriate beneficiaries has been widely recognised as key to the success of community-based programmes in general and as a major challenge in restocking initiatives. In this respect, the mechanisms by which traditional restocking takes place may provide useful indicators for an exogenous programme to aid the selection of recipients. Community leaders and a broad spectrum of representatives of the target community should be involved in the selection process. It is important that the criteria for selection of beneficiaries is established and applied publicly to allay any concerns within the community. In addition, the actual selection should take place in public and be completely transparent. Application of clear selection guidelines and active community involvement are needed to manage potential discontent with the selection process.

As noted in section 7.2.1, a key issue affecting selection is the preferred livelihoods strategy of households and a clear desire to resume a pastoral way of life. With the current pressures on pastoralism, it is possible that some people will opt to try other ways of making a living. For those households wishing to be restocked, there should also be an assessment of their capacity to manage livestock in terms of factors such as labour requirements. Therefore, not all of the most vulnerable households are necessarily good candidates for restocking. For example, it is possible that disabled or elderly people should receive other forms of assistance.

7.3.2 Types of livestock for restocking

Determining the appropriate number, species, sex and age of animals to be distributed is an important part of any restocking programme. Whilst the options here will be limited, to some extent, by what is available in the market, making the right choices can have a large impact on the ultimate success or failure of the programme. Where possible, restocking programmes should draw on indigenous restocking practices as these practices reflect local interests and objectives. Small ruminants will often be the first choice for restocking initiatives, at least in the early stages of recovery. They are less affected by limited feed quality and availability, are relatively easy to get to market and reproduce rapidly, facilitating further rebuilding of viable flocks. This should not, however, rule out the possibility of restocking with large ruminants whenever there is a strong demand expressed by the community and there are adequate resources available - in flood and conflict areas, for example, where pasture availability is not a major concern. Provision of pack animals might also be considered in response to a request from the community. Pastoral families, when offered the choice, will generally tend to opt for combinations of sheep and goats. In some pastoral societies in Ethiopia goats may be preferred to sheep as they are more drought-tolerant, produce more

milk and sell at higher prices. On the other hand, sheep may be preferred due to their higher social or cultural value and for their more fatty meat.

Under normal circumstances, animals for distribution should consist mainly of mature or young breeding females to promote flock or herd re-establishment and household milk supplies. Young kids without their mothers should be avoided as they are likely to suffer high mortality before reaching maturity, and recipients will not, in any case, gain an immediate benefit from them. Pregnant females may be desirable if available and if they do not have to be trekked long distances. To support good reproductive performance in goats and sheep flocks, a practical ratio of breeding males to breeding females of 1: 20 is to be preferred.

As a general rule, restocking interventions should use indigenous types of animal because:

- These animals are likely to be well-adapted to local feed sources, climate and disease challenges
- Beneficiaries are already familiar with the management required by these animals and can therefore be expected to take care of them properly
- They are more widely available than introduced genotypes and are normally less expensive
- Local purchasing of livestock can have knock-on benefits through the injection of cash into the local economy.

Preservation of well-adapted but threatened indigenous livestock types is a global concern. Promoting the conservation of indigenous livestock genetic resources for current and future generations is likely to deliver future benefits in terms of the capacity of pastoralists to cope with and recover from similar emergencies.

7.3.3 Number of animals provided

Due to resource constraints, no restocking initiative will support replenishment of all losses. Finances are also unlikely to be available to support implementation across all affected communities. A more realistic strategy is to focus on reinstating the minimum number of animals required to initiate normal reproduction of animals in the beneficiary households with a view to securing household food supplies in the next season. This minimum number should also allow the pastoral society to split their flocks and continue normal mobility after restocking. If this cannot happen, the pastoral households are likely to remain in their settlement areas with subsequent over-utilisation of the rangeland resources around them.

There is no standard minimum number of livestock to be provided in a restocking programme, and following the principle of community participation, this should be discussed with the community to agree on the right number in a given context. Using the

experience from the Somali region (Box 7.1), 30 breeding sheep and goats were provided with reasonable impact, although it was recommended after evaluation that 50 to 70 animals would have been better. Due to the high cost per household, it can also be possible to use a 'cost-share' arrangement in which the community agree to provide some of the animals from their own herds. For example, SC US activities in Dollo involved the community itself in providing 50 per cent of the livestock for restocking.

7.3.4 Purchasing arrangements

Choice of markets - ideally, livestock should be purchased from local markets as these animals are most likely to be adapted to local environmental conditions and diseases, and transport costs will be minimised. If local markets are used, it also means that beneficiaries can be present at the time of purchase, and even select the animals they prefer. Alternatively, they can select a community member or relative to select animals on their behalf. Purchase of livestock for restocking from cross-border markets should be avoided where possible in order to reduce the disease spread. Examples of how these issues may affect livestock purchase for destocking are presented in Box 7.2. A disease of particular concern in pastoral sheep and goats is Peste des petits ruminants and it is known that the transmission of this disease commonly occurs through livestock markets.

Box 7.2

Experiences with the purchasing of livestock for restocking

There have been cases in Ethiopia of cross-border movement of livestock for restocking in Dollo Ado district of Somali Region with pastoralists expressing serious concerns regarding disease risk. The importance of involving them in decision making is clear. In a restocking project conducted by Save the Children US in the Borana zone, purchasing was handled by community leaders and beneficiaries with no subsequent complaints regarding the quality of the stock distributed. In Somali Region there was no community involvement with brokers being solely responsible for purchasing. In this case, many animals were purchased from distant places (as far away as border districts in Kenya). A considerable number of complaints were received about the stock acquired in this way.

Livestock inspection – livestock should be inspected for signs of ill-health at the time of purchase by a trained veterinary worker such as a veterinarian or animal health technician.

7.3.5 Credit and repayment options

A range of credit, repayment and further stock distribution systems have been used in restocking projects. Repayment systems vary from cash repayments to the provision of offspring from "first-level" beneficiaries to "second-level" beneficiaries, with the latter attempting to create a cascade of livestock through the community and thereby amplify the benefits of the programme. In general, recipients need to agree not to sell any of the

animals they have been given for a period of at least one year. Whichever approach is adopted this needs to be agreed with the community and individual recipients before any animals are delivered.

The on-the-ground activities of restocking projects tend to take place over a very short period of time. Once the animals have been transferred to recipients the major activity is completed. This means that, although any credit repayment or redistribution system will not be managed within the main programme, provision must be made to ensure that these activities can continue until repayments have been made. This is likely to cause considerable problems unless arrangements for repayment or redistribution of animals are kept simple. Ideally, the responsibility for these activities will be transferred to local community institutions.

7.3.6 Complementary interventions: veterinary care

Evaluations of restocking programmes show that losses due to disease can be dramatic. Outbreaks of diseases such as contagious caprine pleuropneumonia can cause high mortality in sheep and goats, but are preventable using relatively inexpensive veterinary inputs. Other health problems, such as worms and ticks can also be prevented or treated. During the initial assessment for restocking (section 7.2), pastoralists can identify and prioritise diseases which need to be addressed by the programme.

Veterinary care can be considered at two main stages during a restocking programme:

At the time of livestock purchases – livestock should be inspected for health problems, and given a one-off treatment with antihelmintic and/or acaricide as needed. A first dose of relevant vaccines might also be administered at this point. The one-off treatments can be provided by local, private veterinary workers with the implementing agency covering costs.

After livestock distribution – recipient households should have access to basic veterinary care from CAHWs or other recognised veterinary workers. In areas where no CAHWs are present, the establishment of a CAHW system should be considered as a means to improve veterinary services for both restocked households and non-restocked households. As CAHWs work as private service providers, the project will need to assess whether restocked households should pay for veterinary care and if not, devise a system to cover the CAHWs' costs. Care will be required to avoid confusion within communities which may arise if some households are required to pay for CAHWs services while others are not. A voucher scheme for restocked households, for say one year, may be one approach but this would have to be designed and accepted by the community as a whole.

7.4 Monitoring, evaluation and impact assessment

Livestock for restocking should be distributed to beneficiaries in a relatively short time but it will take considerably longer to determine the impact of the programme. Even so, without an investment in effective regimes for monitoring, evaluation and impact assessment the opportunity to learn valuable lessons for implementing similar programmes in response to future emergencies will be missed.

Some useful indicators for restocking programmes include:

- The extent to which dependence on food aid has been reduced and the time-scale over which this has been achieved
- Changes in the size of the household's herds and flocks and whether these are adequate for providing for the family
- Subsequent perceptions of standards of living before and after the emergency
- Indications of the extent to which a normal, pastoral way of life has been resumed following the restocking intervention
- Direct consumption of livestock products e.g. use of goat milk to feed children.

This process can take three or four years to achieve and ideally will include repeated monitoring of restocked families to facilitate the identification of trends and subsequent risk factors.

The information needed relates both to operational difficulties and to evaluating socio-economic impacts. Operationally, there is a need to monitor animal health and other husbandry practices to alert all stakeholders and perhaps organise assistance if large numbers of animals are lost to disease, drought, or raiding. Data on herd or flock dynamics (births, deaths, sales and exchange of restocked animals as well as family movements) can be costly to collect but offer valuable insights into performance after restocking. In practice it may not be possible to make monitoring visits more frequently than once in a season or even yearly, although it may prove effective to link this with other activities that are highly valued by pastoralists such as the delivery of animal and even human health care.

7.5 Policy implications

Up to this point, this chapter has considered the implementation of restocking initiatives from a technical standpoint and attempted to provide some indications regarding best practises and some of the potential difficulties that may be encountered. However, technical interventions cannot operate in isolation from the current policy environment. Thus, it is in the interests of technical practitioners to be aware of the key policy issues that may affect their work and, whenever possible, to canvas policy makers on improving policy support for relief

and development activities that include a restocking component. The following general policy areas are likely to have considerable impacts on the viability of livestock restocking programmes aimed at pastoralist livestock keepers:

Policies that protect the natural capital of pastoralists

These policies include those that are directly aimed at the protection of the resource base on which pastoralists and agro-pastoralists depend. Relevant considerations here include:

- Policy disincentives in pastoral land use work against the resilience and recovery of pastoral livelihoods. For instance, the traditional systems of vital grazing sanctuaries have been disappearing under pressure from human population growth, crop encroachment and commercial agriculture.
- The current policy dialogue on costing hitherto “free” water and veterinary services needs to consider the heavy dependency of pastoral societies on their livestock and the risks associated with disrupting this dependency. Pastoral societies tend to have poor bargaining positions.

Policies that develop the financial capital of pastoralists

Pastoralists consume livestock products directly at household level while also depending heavily on the marketing of livestock. Proper consideration of the following policy issues can contribute to the ability of pastoralists to access markets and thereby support their long-term capacity to derive a sustainable benefit from livestock keeping:

- The terms of trade for pastoral communities deteriorate dramatically when drought sets in. These communities need special treatment in livestock marketing and grain supply if they are to depend less on relief. For instance, it is justified to establish special marketing corridors (outlets) before the drought as a measure of destocking to ease the grazing pressure, and at the same time, reduce economic losses from death of animals.
- Indigenous micro-financing institutions can provide for a large-scale conversion of live banks (livestock) into safer cash, and hence, they need to be strengthened.

Policies that raise awareness among professionals of needs of pastoralists

Many professionals in the relief and development sectors do not have direct experience of the pastoralist way of life, particularly the needs and objectives that relate to the management of pastoral herds. Direct policy support to awareness-raising may be needed to ensure that professionals are better equipped to integrate these considerations into their efforts to support pastoral communities. For example:

- Restocking should be part of the local development agenda. Government institutions should plan for the livelihoods recovery of pastoral societies after any drought. Relief should also consider the food habits of the pastoral society. For example, for pastoral societies milk instead of grain should be provided

- Government policy should recognise the relevance of indigenous coping strategies at the herder level, and thereby strengthen post-drought rehabilitation objectives at the national level
- Pastoral livestock development should be included in academic and policy training of stakeholders.

Annex 7.1 Checklist for planning restocking projects

This checklist should be used in conjunction with section 7.2 on Needs Assessment and Planning.

Should we consider restocking?

- Can adequate funds be made available for a reasonable coverage of affected households in the target area?
- Is the carrying capacity of the area sufficient to allow the re-establishment of viable herds or flocks by recipient households?
- Are there any alternative responses that could result in a better developmental outcome for the community as a whole?

What are the constraints and capacities that will influence a restocking programme?

- Are there procedures in place for full community consultation regarding the implementation of restocking?
- Have potential beneficiaries been consulted about their objectives in restocking?
- Is there any evidence of the following trends that may hinder the re-establishment of a pastoral way of life:
 - reduced access to former grazing areas?
 - reduced access to water sources in traditional grazing areas?
 - reduced access to transhumance routes?
 - disappearance of traditional markets?
 - loss of traditional arrangements with sedentary populations?
- Do early warning systems or other intelligence suggest an elevated risk of further disruption within the next two years?
- Are households sufficiently intact to provide adequate labour for managing herds and flocks?
- Do the requisite institutions and managerial skills required for re-establishing a pastoralist lifestyle still exist within the target community?
- Are local government and other institutions engaged in the process?

When should we restock and when should we stop?

- Can we identify a point at which the emergency no longer poses an immediate threat to restocked animals?
- Does this point occur sufficiently early in the recovery phase to meet the needs of affected communities?
- Do we have time to put in place effective arrangements for disease management or provision of supplementary feed and water for restocked animals?
- When should we make purchases of livestock for restocking so that we make the optimum use of available financial resources?
- Does our initiative include the assessment of indicators that will determine when disengagement will take place?
- Have we made arrangements for post-restocking activities (e.g. supplementary feeding, veterinary care, cost recovery)?

Where and who should we restock?

- Have we conducted an assessment of the most severely affected areas?
- Have we linked this to an assessment of the communities that will derive the greatest developmental benefit from restocking?
- Have we determined an appropriate scale for restocking (household *versus* community)?

Annex 7.2
Further reading

Anon (2007). Livestock Emergency Guidelines and Standards (LEGS) – First Consultative Draft
<http://www.livestock-emergency.net>

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Sandford, S. and Habtu, Y. (2000). Emergency Response Interventions in Pastoral Areas of Ethiopia. London, UK. Department for International Development

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