

LIVESTOCK INTERVENTIONS: IMPORTANT PRINCIPLES FOR OFDA

Livestock owners in many developing nations are at serious risk of losing animals to natural and human-caused disasters. Devastating losses to animal herds can be attributed to lack of food, dehydration, disease, severe cold, or fighting and looting. Because the reason for animal loss is so different in each of these cases, the responses of aid agencies to each of these various disasters must be situation-specific, and must often incorporate a range of multi-sectoral interventions. In addition, there is often a wide range of target populations within a given region, so interventions must not only be flexible, but must often focus on more than one group at any given time.

It is widely understood that households that are able to keep their core assets can survive better in the event of a disaster. Responding to livestock owners who are at risk of losing their animals is often critical, since livestock play an important role in saving lives and maintaining livelihoods worldwide. When disasters hit, livestock productivity changes and losses may occur. When conditions improve, livestock are important assets in helping people to recover nutritionally and economically. In times of insecurity, with displacement of local populations, livestock can provide important support for families allowing them to move away and still maintain some food security because the animals move with them.

Livestock offer a multitude of benefits to both pastoral families and families engaged in mixed farming. They provide high protein foods (milk, meat, eggs, blood) for the household. Milk, eggs, goats, and poultry can be sold to purchase salt, oil, vegetables, or to pay for school fees or animal health care. Infrequent sales of large animals provide funds for major purchases. Livestock provide transport and traction for farm activities, and their urine and feces can serve as fertilizer or as sources of fuel. Skins and hides serve a variety of uses. In addition, livestock are a productive investment for household capital and are culturally associated with gifts, loans, rituals, and social obligations.

In some regions of the world, including much of the Horn of Africa, pastoralism may be the only viable means of existence. Lack of water and arable land suggests that a switch to an agricultural lifestyle would not be a feasible alternative. In many of these areas, livestock interventions may be needed with increasing frequency. Livestock owners, themselves, adopt practices that promote food security and reduce risk. Some animals may be placed with other families to avoid total loss from disease or disaster. Keeping different species (e.g., cattle, sheep and goats) allows grazing resources to be used more efficiently than keeping only one species, and also reduces disease risk. Pastoralists with large herds often split their herds into smaller groups to more

rationally use grazing resources and to reduce the risk of loss from theft, disease or disaster. Traditionally, pastoralists have also kept certain areas as reserve grazing sites for drought seasons.

In the case of severe emergencies, livestock losses can reduce income and food security for up to five years as flocks and herds are rebuilt. If emergencies continue, as in conflict situations, losses may be so severe that rebuilding is not a viable option. People lose their livelihoods and become increasingly vulnerable. In these cases, many strategies to reduce the risk of destitution of livestock owners have been suggested and tried. These strategies include the timely removal of livestock (destocking), market subsidies, provision of supplemental fodder, financial services, and, in some cases, restocking of small herd animals. Not all programs have met with the same degree of success, and little attention has been given to the long-term impacts of the suggested interventions.

Nevertheless, it is well recognized among aid workers that disasters can present opportunities for further development, if the relief interventions are well planned. Extensive information on livestock in pastoral groups and mixed farming systems is available from specialists, libraries and resource centers, such as the International Livestock Research Institute (ILRI/CGIAR). This existing knowledge can provide valuable insights into what interventions may be appropriate. A participatory appraisal of local conditions and conversations with local people will add to these insights. Community dialogue is valuable to ensure that appropriate community members are involved in the intervention and that people are empowered and willing to cooperate in any intervention under consideration.

Defining the problem

Each disaster will present a different set of challenges and issues, and may also affect certain populations more than others. The disasters that can threaten livestock in a given region range from slow onset (chronic) to rapid onset (acute), to complex, and the populations most affected may be pastoralists, small farmers with minimal livestock holdings, or those who manage mixed farming systems.

Slow onset disasters may recur yearly, and can often be predicted on the basis of climate shifts and weather patterns. Drought and ensuing famine are perhaps the most serious threats to livestock holdings worldwide. Animal mortalities from malnutrition increase because fodder is insufficient or inappropriate. Endemic diseases increase when herds mix at watering points and weakened animals have low resistance. Livestock losses can be enormous. For example, in 2000, a drought in the Horn of Africa led to the deaths of more than 90% of the cattle in many regions, causing extensive suffering and a widespread need for food aid and other life-sustaining interventions.

Livestock deaths can also result from acute disasters which are more difficult to predict and, therefore, harder to prepare for. Disease, floods, landslides, and extreme cold weather can all lead to the rapid loss of animals, wiping out a family's assets in a matter of days or even hours.

In emergency situations, the presence of livestock can exacerbate conflict when refugees with animals compete for reduced forage and water resources, or when moving herds destroy crops. Often, livestock are slaughtered to generate income or stolen by soldiers or other desperate people. Forced migration of people without their animals can also severely affect the lives and livelihoods of livestock owners. Severe losses can occur over the space of several months or more gradually over several years.

In some cases, economic crises may have serious impacts on a livestock system. Anything that disrupts the market structure of a region can have devastating impacts on local economies. For example, Saudi Arabia and its Gulf Arab neighbors imposed a ban on livestock imports from several countries in the Horn of Africa for fear of Rift Valley fever in CY2000. This ban severely impacted herders in Somalia, Kenya, Ethiopia, and other regions who relied on this export market, and exacerbated ongoing problems with drought and conflict in many areas of these countries.

Regardless of the cause of the disaster, livestock interventions should always be based on a strong understanding of the affected system. It is important to understand the economic and cultural roles of livestock in the community, the various gender roles played in management of the animals, and the extent to which livestock contribute to household food security and income throughout the year. *The severity of livestock loss suffered by each community must be examined in relation to acceptable levels of losses that still allow maintenance of viable herds.* Economic indicators are also important to recognize, including changes in the price of livestock and feed on local markets. In addition, before deciding on an appropriate action, the ecological impact of any potential interventions should be carefully examined, since many problems will only be exacerbated by inappropriate responses.

Defining vulnerable populations

The vulnerability of livestock owners to emergency situations will vary, often depending on whether their lifestyle is pastoral (nomadic or semi-nomadic) or if it incorporates crop production into a mixed-farming system. In pastoral systems, populations gain most of their food and income from livestock. Pastoralists usually live in arid, semi-arid, or mountainous areas where crop production is difficult and the availability and distribution of forage varies seasonally with precipitation. Pastoralists cope with this variability by migrating with their herds. Mobility helps pastoral production systems maintain optimum rates of productivity by allowing the pastures time to recover after grazing. In these systems, livestock production is absolutely critical to the economy because there are few or no economically viable alternatives for income generation.

Mixed farming systems include both livestock and crop production; populations may be either sedentary or agro-pastoral (livestock spend a portion of the year in distant grazing areas while crops are produced close to home). Livestock and crop production complement each other and provide many advantages over crops or livestock grown alone, including reduced risk and increased productivity. Animals can graze on crop residues that would otherwise be wasted and provide manure to fertilize the soil and improve soil structure. Livestock can also survive a short, dry spell, ensuring food security when crops fail.

A third group of people that has emerged over time are former pastoralists that have recently started farming to become agro-pastoralists. This trend may be the result of desperation, if pastoralists no longer view their way of life as viable, but it may also be the result of inappropriate government policies that encourage agriculture at the expense of pastoralism. However, in many of these regions, the environment is not suitable for agriculture since rainfall is low and unreliable. Pastoralism may be the only lifestyle suitable for such a harsh climate. In some areas, government authorities (often regional and local) have considered installing irrigation systems using spatial water sources or permanent rivers. Irrigation, however, entails not only a sophisticated organizational structure that many ex-pastoralists would find difficult to manage, but also places heavy pressure on water sources that are often stressed simply by human and livestock needs. In addition, farming entails the clearing of land for plowing and planting, often resulting in further environmental degradation, as well as land ownership, which is the antithesis of the communal ownership on which pastoralism is based. The tensions and tribal conflicts that result are enormous.

Defining appropriate interventions

Assessing options for livestock interventions requires an understanding of the role of livestock in local production systems and an evaluation of the need to preserve the nutritional and economic benefits of livestock resources. Knowledge about the severity and distribution of the emergency is important to identify target regions. Monitoring the climate and other conditions is helpful because the situation may change rapidly. In pastoral economies where few alternatives to livestock production exist, interventions generally revolve around attempts to support traditional coping mechanisms, develop alternatives, and strengthen and build livelihoods and local capacity.

Interventions set in place by the USAID Office of Foreign Disaster Assistance are designed to be timely, and immediately useful for a vulnerable population. Although some of the best livestock interventions in a region may be policy- or market-related, these long-term changes may be better suited for development programs than for OFDA-funded relief projects. However, any relief or preparedness interventions undertaken in a region should tie directly into ongoing development programs or should set the stage for further development work, since livestock issues are incorporated into the strategic plans of missions working in pastoral areas. The loss of livestock during an emergency situation causes disruptions in both current and future income, since livestock have life cycles that span many years. *For this reason, a combination of short-*

term interventions and long-term strategies to preserve and enhance livestock assets are very appropriate in this sector.

Defining appropriate interventions in emergency situations is not an easy task, since conditions will vary greatly between regions and communities. A great deal of information may be needed before determining which interventions may be best suited for the situation. Some useful questions to ask to assist in gathering this information may include:

- ❑ What are the indications that OFDA intervention is needed, and when should BHR/OFDA and other USAID bureaus intervene? Specifically, what is the nature and the complexity of the emergency, and what are its effects on livestock movements and marketing?
- ❑ How likely is it that the system will recover without interventions? What problems do the livestock owners in the region define, and what actions have they taken to preserve, sell, or move their livestock? Are livestock movement corridors open? In short, will existing ethnic coping strategies be sufficient for recovery? How can OFDA interventions build upon coping strategies of the targeted population?
- ❑ What is the estimated severity and duration of the emergency? What is the recent history of emergencies in the area – are pastoralists still recovering from a previous disaster? What are the potential losses in number of livestock if conditions remain unchanged or if they worsen?
- ❑ What interventions are being considered for the area, and what are the costs and timeframes involved for donors who must organize and administer particular interventions? How will livestock interventions influence or be influenced by other interventions? How will linkages of interventions affect response capabilities? What are the potential effects of the livestock interventions being considered? Has there been success with similar approaches in the past?
- ❑ What is the expected length of time that will be needed to rebuild the pastoral economy? Does OFDA have the resources and commitment to continue funding until the need is met? If not, what interventions would best start the process to recovery without causing serious harm when funding ends?
- ❑ How well do the NGO's proposing to work in the region understand local capacity? Are aid workers aware of community groups that currently exist in the area, and do the projects they propose serve to strengthen local systems rather than undermining them?

LIVESTOCK INTERVENTIONS

In emergency situations, livestock owners face difficult choices. They may opt to take such actions as moving with their animals to another area, selling some stock to reduce pressure on

resources and to buy supplemental feed for valuable animals and breeding stock, or seeking animal health care. Unfortunately, none of these actions will prevent serious animal loss in the event of a serious or long-duration emergency.

Livestock interventions in a region generally should support the actions of the local populations, but which of those actions to support is a difficult question to answer. Interventions must be planned within a systems context, taking into account the people, crops, livestock, natural resource base, government policies, accessibility, market factors, cultural norms, infrastructure, and the interrelationships among all of these factors. Effective solutions require that people working on livestock interventions cross-sectoral boundaries. Even within a pastoral community, households may be diverse in terms of livestock, available labor, and social networks; interventions may need to address these differences on the household level. Widespread community support is one of the best indicators that an intervention will meet with success.

Emergency destocking

Emergency destocking has been implemented recently (CY 2000) in several communities in the Horn of Africa. As conditions deteriorate in pastoral lands, livestock are unable to find the fodder needed to sustain them, and begin to weaken and die from malnutrition or disease. Supplemental grain and fodder availability on the local market decreases. Because of this, prices of livestock drop too low (and prices of grain rise too high) for pastoralists to make enough of a profit on their animals to purchase what they need. Emergency destocking programs provide for the intentional removal of animals from a region before they die. The programs provide a fair price to farmers for the livestock, based on animal gender and age but not on health. In some cases, the animals are then slaughtered, and the meat (fresh or dried) is provided to feeding centers in the region. This program can be used to supplement food aid and increase the availability of high protein foods.

The *advantages* to destocking programs include:

- ❑ Salvages some value from stocks that would otherwise have been lost.
- ❑ Reintroduces cash into the economy so pastoralists can purchase other needed items, including vet drugs, water, school fees, etc. This can also serve to revive local businesses as cash becomes available within the community.
- ❑ Creation of markets in isolated areas that are far from established market centers.
- ❑ In some cases, allows a high-protein supplement to food aid to be provided at local feeding centers, with low costs for transportation and preparation.

The *disadvantages* to destocking programs include:

- ❑ If destocking is initiated early, when markets are still in good condition, the program may interfere with the local market since prices offered by NGOs may impact the local market function.

- ❑ With destocking programs, agencies are essentially buying stocks from people just to give them back the meat. Not only is this not sustainable, these activities by outside agencies may actually interfere with traditional destocking mechanisms.

Other considerations when undertaking a destocking program:

- ❑ Destocking programs should go into effect as soon as food aid is required in a region; need for food aid should serve as an indicator that such programs are needed. Destocking is best carried out before the livestock become emaciated and when there is still a commercial market for them. Therefore, close monitoring of livestock rearing conditions is necessary, and relief resources should be available on relatively short notice.
- ❑ Meat produced from these programs should be provided to the communities fresh, if at all possible. Drying the meat is not as efficient, since there is more waste, it is more labor-intensive and less hygienic, and security issues can arise (e.g. guarding the meat).
- ❑ This can be combined with an animal feeding program to maintain a minimal number of reproductive animals for restocking.
- ❑ Destocking is a method of transferring income to maintain the purchasing power of the pastoralists; a transfer of grain for animals instead of cash can be provided, but this removes the power of choice from the pastoralists.

Animal health measures

Support of viable private or decentralized animal health systems can encourage increased efficiencies and sustainability without creating dependency. Programs can also work with communities to ensure that pastoralists who are economically marginal have access to animal health care. Where animal health systems do not exist and there is a lead time of at least six months before high livestock mortality rates are expected, the creation of a community-based animal health care delivery system may significantly reduce livestock deaths in a region. Improving animal health care may be most important when animals face serious drought conditions. In some situations, the livestock owners themselves may need to be shown that simple health interventions at the start of prolonged drought (e.g. deworming) can significantly increase the animals' chances of survival. While herd sizes may dramatically decrease during a drought, significant livestock losses can also follow the first rains after drought when animals that are already weakened by malnutrition succumb to parasites, dysentery, and disease. Vaccination programs and primary animal health care may prevent some of these drastic losses associated with the onset of rains.

Investing in animal health programs has the significant *advantage* of preventing the spread of disease, and therefore reducing further livestock deaths. If programs are started and maintained at the community level, this can significantly improve the capacity of local communities to care for their animals – a significant advantage over the long term. *However*, some would argue that disease is nature's way of monitoring herd sizes and maintaining animal populations at a number that the environment can sustain. Improving animal health care immediately prior to a disaster

may have the unintended effect of leading to an overall reduction in animal health since more competition for resources will occur. Animal health interventions should therefore be linked to offtake or marketing interventions where possible.

Nutritional supplementation

Nutritional supplementation is the provision of feed or nutrient blocks for improving energy and nutrient intake of cattle. In some cases, livestock feed availability can be increased simply through local (regional) purchases of fodder, and transportation of this fodder to pastoral zones. In other cases, the provision of high-nitrogen cattle feed can allow animals to utilize some low-quality sources of fodder that normally wouldn't provide them with enough nutrients and energy to survive. Nutrient blocks (e.g. urea-molasses) can also be used in emergencies to supplement fodder intake. The blocks may be specially formulated to provide energy, nitrogen, and important vitamins and minerals to enable animals to survive until pasture conditions improve.

The *advantages* to nutritional supplementation programs include:

- ❑ Reduces environmental degradation by allowing cattle feed to come from an area outside of the area where they normally forage.
- ❑ Have long-term benefits for the herders. In most cases, feed security is more important to pastoralists than food security, since keeping animals alive ensures that their families will be able to survive beyond the drought or disaster.
- ❑ If nutrient blocks are used, they can be formulated to include antihelminthics to prevent further livestock death when rains start. The blocks themselves have a long shelf life, so they can be strategically pre-positioned, and can be linked to sanctuaries or zones of refuge (see below) by placement prior to drought. The roughage component of the animal diet can then be increased as necessary.

The *disadvantages* to nutritional supplementation programs include:

- ❑ The program may unintentionally promote large herd sizes. Importing fodder or nutrient blocks to maintain a large herd of animals may encourage a high stocking rate, which further degrades the environment and depletes natural resources.
- ❑ Cattle need more than 4 pounds of feed per day [4 pounds for an animal is the same as about 250 g (about half a pound) for humans – not enough], so it would take a great deal of input to maintain a herd of these animals. This makes feed provision programs cumbersome, expensive, and difficult to implement.
- ❑ In many cases, urea/molasses blocks or salt blocks are not available locally, so are quite expensive and difficult to procure. Note: such blocks COULD be produced locally if a market were available, thus decreasing costs associated with transport.
- ❑ Urea/molasses blocks and salt blocks induce thirst in animals, so additional water would be necessary to maintain the herds.

Other considerations when undertaking a nutritional supplementation program:

- ❑ Drought often serves to get nature back in balance, reducing the number of animals competing for scarce resources in a region. Nutritional supplementation can upset this balance, leading to massive overgrazing of still-scarce recovering resources.
- ❑ In most cases, therefore, destocking is essential for any animal feed intervention program, maintaining only a small reproductive core for later breeding to restock.
- ❑ Nutritional supplementation can also be used to improve the health/nutrition of animals destined for the international markets prior to export, but must always be linked to the removal of the animals from the overstocked rangeland.

Livestock refuges

Livestock refuges are established before an emergency occurs, and are to be used only during periods of environmental stress (e.g. drought). Water boreholes are included in these refuges, nutrient blocks can be stockpiled, and the pasture is allowed to grow and rejuvenate since it is not often grazed. During drought, only a core number of animals from each herd are allowed into the refuges. This provides animals with a place to go in times of drought for food and water, and the stockpiling of nutrient blocks in the area can reduce the impact of livestock on the refuge environment. This is a traditional system used by nomadic livestock owners, but the system is breaking down since many of these refuges are currently located in conflict zones, or are being turned into national parks.

A serious *disadvantage* of the promotion of livestock refuges relates to issues of access and use of the refuges. Access and stocking rates could be quite difficult to regulate, especially during times of severe drought. Conflict and unrest could result if the refuges are not sufficiently capable of providing for the livestock and family members of all herders in a region. In addition, leaving grazing lands ungrazed for long periods of time may reduce the quality of the forage and lead to a less productive pasture over the long term.

A recent suggestion to hit the humanitarian aid circles is to drill boreholes during times of drought and then cap them when the drought is over. This is highly unlikely to succeed, however, since communities will likely protest having to travel great distances for water when a capped borehole is much closer.

Provision of alternative water sources

In many nations, existing water systems cannot support a high number of livestock and people. More water resources are needed, and the rehabilitation of wells and maintenance of water sanitation is important. Under drought conditions, tankering of watering may be essential to keep animals and humans alive, but it is expensive and not effective over the long term. Water

harvesting allows water to be retained for emergencies. Water development (e.g. drilling new boreholes) may also provide water in areas that are arid.

The *advantages* to water provision programs include:

- ❑ Water provision enhances animal survival, since neither animals nor humans can survive without water.
- ❑ In many mountainous or hilly areas, water harvesting reduces erosion from highlands to lowlands, improving productivity in both areas.
- ❑ Water harvesting can allow some low-input agricultural production *if the land itself is suitable for agriculture*.

The *disadvantages* to water provision programs include:

- ❑ New boreholes can be disastrous for the surrounding environment. Livestock owners try to stay close to water sources with their animals, so the area 60-80 km around the new water source often becomes severely degraded. For this reason, water resources should be kept outside of rangelands. In some grazing areas, water pans or small dams might be useful in extending dryland grazing by 4-8 weeks. These can be linked to community development and management of local resources. However, they may not be replenished if rains are erratic.
- ❑ In some cases, water development can have severe social and political impacts on a society, depending on the culture. Conflict related to water rights may also develop at borehole sites.
- ❑ Aquifer capacity must also be addressed or the long-term impact can be devastating (e.g., drying of aquifers, subsidence, etc.).
- ❑ In some cases, livestock owners become dependent on boreholes, and abandon the nomadic lifestyle that is appropriate for the environment in which they live.

Market and infrastructure support/ Transportation

Market and infrastructure support can include a range of interventions, all designed to improve the ability of farmers and herders to sell their commodities and to purchase other necessities. In most cases, the linkage of markets for trade, transport, and sales is appropriate; improved infrastructure links would allow animals to be transported from some areas to support agricultural communities in other areas. For example, livestock produced in a non-arable zone may be sold in agricultural zones to provide animal labor for work in fields. Other infrastructure improvements (e.g. meat processing plants, chilling facilities) may be important in moving animal products to international markets. Trade subsidies (20-50%) can also help to facilitate movement of animals from one site to another, or to a market for slaughtering.

International market linkages can be important in maintaining economic solvency for pastoralists forced to sell their herds in times of crisis. If infrastructure and policy linkages allow, animals

can be sent to intensive feeding programs, then sold to international markets. Providing market and infrastructure support can also strengthen rural grain markets. If a market and a means for profit-making exists in rural areas, commodities will move into the region if the infrastructure allows. In most cases, though, these market interventions must be implemented at higher levels, not at pastoral levels.

The biggest advantage for supporting improvements in market and infrastructure is the long-term positive impact on society, not just for herders and their families. Unfortunately, it is often difficult to measure the impacts of these programs on the local communities since immediate changes are seldom evident. Although linkages to international markets can allow livestock owners to sell their animals readily, there can be problems associated with these linkages. If foreign markets impose livestock bans due to disease, sanctions, or other political reasons, it can cause serious problems for herders relying on sales to these foreign markets. For this reason, for international livestock trade, some method of disease detection and protection must be in place, as well as safe routes of trade and transport.

Considerations when implementing a subsidized trade/transport program include:

- ❑ A well-planned control program must be enforced to prevent traders from removing the animals one day, and bringing them back for resale later. The purpose of a trade subsidy is to remove animals from the system for external markets or slaughter, so a significant paper trail must be in place to provide transparency to the system.
- ❑ These programs can serve to build local capacity since they involve local traders, rather than put them out of business. Subsidies, for example, can stimulate local businesses, involve women's groups, and link to existing community systems. Such programs can also serve to open up new markets for sellers, and can serve as a strong linkage to development programs in the area.

Policy

Policy issues include those related to international policy (allowing trade and providing guidelines for cross-border interaction), as well as empowerment of local livestock owner organizations. Examples of policy issues include those related to accountable land use, gender and wealth equality. Advantages of working within the policy arena include the likelihood of long-term impact, but in many cases, these programs can be complicated, hard to implement, and difficult to plan, especially under emergency situations, given their long-term nature. For this reason, it is important to link livestock emergency relief to any ongoing policy development initiatives.

It is also difficult in some regions to ensure that policies are more than paper promises. Although a policy stating that every district should have a famine prevention plan in place is a step in the right direction, it is very different from having systems in place that are actually able to mobilize in times of drought.

Among the many global policy issues affecting pastoralists, land tenure is likely the most serious. Depending on environmental conditions, some lands are only suitable to nomadic pastoralism, should not be farmed, and must be communally owned and available for best use. However, the expansion of agriculture systems onto communally owned land ultimately affects use, and leads to the question of who owns the land. It has long-term implications, and gets to the heart of the issue of ownership and protection of communal lands. National parks are also starting to encroach on key areas in many countries, forcing pastoralists out of lands that they traditionally have used for dry season grazing. In many cases, governments are interested in eco-tourism, and must maintain healthy populations of wildlife to draw tourists. Because contact between wild animals and livestock may lead to the spread of disease (both to and from the wild animals), governments are not tolerant of marginal populations grazing their animals close to these park boundaries.

Training and education

Training and education programs, including agricultural extension, may be important to improve productivity in agricultural systems, or to increase local understanding of grazing land management. In some areas where agricultural production is possible, pastoralists are abandoning their nomadic lifestyles and attempting to cultivate the land, but they lack the indigenous knowledge of farming systems, and are essentially learning as they go. In these situations, extension services may improve productivity, and training may increase overall sustainability of the systems. Programs to fund advanced training (e.g. training of animal health care workers, extension workers, para-vets, etc.) can all increase local capacity, improving sustainability and having a long-term impact on the local communities.

Financial services

Financial interventions should include the provision of credit to livestock owners, and a method for saving assets, which may involve grants, loans, cattle banks, cooperative savings accounts. In many risk-prone and marginalized livestock rearing animals, access to credit is almost impossible. This furthers the depression of local economies so support to small loan schemes should be considered when developing relief interventions.

Diversification of assets

Diversification of assets can be an important intervention in areas that are chronically vulnerable to disasters. Programs that support diversification would allow herders and their families to earn income without relying solely on their livestock. These programs may involve women's groups and other community groups in planning and implementation, and may be particularly important

in pastoral territories where women have some degree of autonomy. Retraining herders to use other trades and skills can also help them to provide income for their families during times of hardship.

Early warning systems

Numerous early warning systems are in place throughout the developing world to warn of imminent or upcoming drought, floods, and other disasters. The technology is in place to improve prediction capabilities, and, in the case of drought, to warn that forage is becoming unavailable and of poor quality. Response planning to follow early warning is critical in order to appropriately intervene when these systems sound a warning. Response planning mechanisms and interventions should exist within each community and should allow for rapid response on the part of those districts. All planned interventions must be community-based and should take into account the needs and priorities of local groups. The interventions must take all local context and capacities into account.

Changes to grazing and agricultural systems

In many cases, a switch from long-cycle crops to short-cycle crops can help to provide a more rapid recovery following a food and/or feed deficit. While short-cycle crops often don't yield as much as their long-cycle relatives, they can cut a month or more off the growing cycle, allowing yield to be harvested and available to consumers fairly quickly following a disaster. In agropastoral systems, animals may rely on stalks and residues of crops harvested for grain. For example, some sorghum varieties are short-season, and can be used both as a grain for humans and as an animal feed.

In agricultural zones, root crops are often more appropriate for the region than cereals and grains, which require high rainfall and good fertility. Many root crops produce residues that provide high-quality fodder for livestock, and are well adapted to low moisture and low fertility. In nomadic systems, facilitating the movement of animals and people along traditional pathways may help to spread out the demand for fodder over a wide area; in some cases, this can be coupled with the support of traditional coping mechanisms.

Restocking

Restocking programs aim to supply livestock owners with breeding animals to increase their herd size over time. These programs can be implemented in a variety of ways, including loans of animals, or restocking small stock only. Restocking is an expensive proposition, and requires a good understanding of the carrying capacity and resilience of the environment in which the

animals will reside. Restocking programs that are not carefully reviewed and well-planned will not only fail, but may also have a strong negative impact on the environment in which the livestock owners reside.

Listed below are important points to consider when evaluating a restocking program, or when reviewing a plan to restock. Of course, not all points will be relevant for all situations.

- ❑ *Consider what species of animal will be used to restock the herds of livestock owners.* Will the project focus on poultry and small ruminants (e.g. goats and sheep), or will restocking of large animals be included in the scope? Be sure to note the ages and sexes of the animals that will be provided in the program, since young females are most important for breeding to naturally restock herds. In many cases, though, young females are not available for sale in the region. For example, following the conflict with Ethiopia in 2000, the Eritrean Ministry of Agriculture considered a restocking program with animals from neighboring Sudan. Although the cattle would have been well adapted to the region, there was a ban on exporting young female cattle from Sudan. It is usually better to restock pastoralists with small ruminants, since they generate quickly, enabling families to access cash with which to purchase larger animals. Their dietary range is a bit wider than that of cattle, and it is logistically easier to implement. However, if the restocking were for highland farmers who use oxen to plow fields, cattle would be the appropriate choice.
- ❑ *Consider where the stock will come from, and whether they will be well adapted to the region to where they are going.* If one region has been hit by a drought, chances are good that regions with similar conditions have been hit too. If animals will be taken from one region to another, how will their adaptation to the new region be assured? The livestock disease profiles of the two regions should be analyzed in advance to ensure that diseases are not spread, and the animals are immune to the diseases found in the new area. Ensure that animals are vaccinated and healthy prior to introducing them to new areas. Of equal importance in livestock production interventions, build on existing technologies and avoid importing new technologies, species or breeds.
- ❑ *Consider the targeted population for receiving animals.* Understand specifically who will receive the animals, since a more specific targeting than the community in general is important for success of restocking programs. In most cases, particularly where cattle are involved, animals should be provided to those families whose livestock holdings have just fallen below the level of self-sustainability. Although it may seem important to provide animals to families with none, keep in mind that a minimum number of animals is needed to support a family on milk and meat, so those families with no animals would most likely sell the animals to those with larger holdings in order to get money to survive. The best way to ensure such considerations are taken into account is to involve local communities in both selection of beneficiaries and the type of livestock to restock. It is good practice to encourage local communities to give their own livestock to a restocking program to complement the inputs of the external agency.

- *Consider the timing of the restocking intervention.* It is unwise to add animals to an area when competition is likely to be strongest (e.g. during the dry season in an arid environment). Also, it is important to be sure that the crisis is over before restocking. If a drought is ongoing, and animals added to an area will compete for limited resources, and will likely face the same fate as the animals they are replacing.
- *Consider the need for other interventions and the availability of necessary inputs.* Are water, fodder and health care for the animals available? Is it necessary to combine a restocking program with other interventions (e.g. health care, market support, etc.)? Without these interventions and inputs, further animal deaths will result, and the program will ultimately fail. Animal health programs, including vaccinations, are particularly important since livestock mortalities during drought are frequently due to disease and nutritional deficiencies. If the provision of feed is impractical and animals are malnourished, the provision of animal health care can make a large difference in mortality rates of drought-stressed and weakened animals. In livestock health interventions, make use of existing veterinary knowledge and successful community-based delivery systems, including perception of diseases, traditional treatments (if they are considered effective) and traditional healers.
- *Consider the environmental impact of the restocking program.* The focus of livestock programs in a region should be on sustaining a key nucleus of breeding-age animals rather than whole herds. Recovering rangelands will not be in their most productive state, so will only be able to support small populations of livestock. Harsh droughts are frequent occurrences and can actually help maintain a balance among livestock, people and range resources. Relief activities should avoid upsetting this balance. When considering a restocking program, take into account the number of animals that will be provided to each household when looking at overall stocking densities. To avoid environmental degradation, the stocking rate of a region should be directly related to the carrying capacity of the rangeland, or further problems will result. If resources are not available to support these additional animals, not only will environmental destruction result, but the animals themselves will become malnourished. The carrying capacity and stocking rates in a region should be good indicators of whether or not a restocking program will be successful. Barring knowledge of these figures, consider the historical evidence of stocking density, and whether that evidence supports the restocking program or negates it.
- *Consider the cost.* Restocking programs are expensive. Is it cost-effective to restock, or are further livestock interventions likely to be needed regardless of stocking rates?
- *Consider the benefits.* Who benefits from restocking, and are there other (less costly and less risky) ways to assist these populations? It is important to exercise caution with restocking interventions. Beneficiaries may view restocking as a handout, and therefore not take the program seriously. In many cases, animals do not remain with intended beneficiaries for long. It is for this reason that any restocking program should be community-based and involve contributions from local people.

- *Consider the impact on local markets and community systems that are already in place.* Livestock interventions should support (or at least should not subvert) existing systems and should prepare the beneficiaries to carry on when the assistance ceases. Consult local economists for help in conducting a cost-benefit analysis to address issues of long-term sustainability and impact on local markets. Restocking proposals should be supported by a detailed analysis of traditional restocking mechanisms, data on the extent to which they are still functioning, and sound reasons why these mechanisms should be disrupted or supported. Livestock traders should be contracted if the program is large; not only will this help the local economy, but it will also aid the NGOs in implementing the project. As much as possible, support traditional restocking mechanisms, since in many cases, communities can source and allocate stocks with little external help.
- *Consider the extent of community buy-in.* Plan a participatory intervention early, making sure that livestock owners themselves have agreed on the problem and given it high priority. Participation requires that adequate time be scheduled to carry out community dialogue, capacity building and liaison and come to agreement on local responsibilities. Work through existing pastoralist membership organizations (of which there are many).
- *Consider gender issues.* Identify and support the roles and decision-making capabilities of women as livestock owners, care providers, feed gatherers, birth attendants, and users of livestock products. Women are the primary beneficiaries of livestock in most systems.
- *Consider issues of land access and conflict resolution.* In relief situations, explore options to move people and livestock out of drought areas. Research alternative sites very carefully. If people in the new area are unsupportive or from different ethnic groups, the option may be unworkable.