LEGS

Livestock Emergency Guidelines and Standards

Revisiting the Economic Impacts of Early Drought Response

How does early response affect households in pastoralist areas?

LEGS Briefing Paper | March 2018

BACKGROUND

One important aspect of LEGS good practice for designing livestock projects during drought is the use of the drought cycle management (DCM) model[1]. The concept of early response is central in the DCM model, as is the correct timing and sequencing of different livestock interventions according to the stage of the drought. This approach is also illustrated in the LEGS Participatory Response Identification Matrix (PRIM), which shows how LEGS livelihoods objectives can be met at different stages of a drought, using different combinations of interventions. Both the DCM and PRIM, and the need for early response, are supported by cost comparisons of livestock vs. no livestock assistance, such as the comparison of the costs and benefits of commercial destocking vs. food aid[2]. This showed that commercial destocking cost 137 times less than food, and had better impacts. Another analysis assessed the economic benefits of early response to drought in Ethiopia and Kenya, and used an area-wide approach under which humanitarian assistance is delivered across pastoralist households, regardless of the wealth or initial livestock holding of these households[3].

This Briefing Paper takes a different perspective on assessing the value of early response, and focuses on the impacts of livestock projects on poorer households in pastoralist areas. These households often have relatively few animals, and during normal (non-drought) years can struggle to increase their herds due to the need to sell some animals to meet basic domestic needs such as food, healthcare, livestock services and school fees, and because of animal losses due to disease or other causes. Furthermore, household economic growth to a distinctly better financial position, with more animals, is not linear but occurs as notable "step ups" from one level of wealth to another[4]. For these reasons, poor households are often caught in a poverty trap, in which small increases in financial assets are transient, and never enough to reach a higher level of financial security. The impacts of drought are particularly important for these households, because drought can cause high livestock mortality and this makes it even more difficult for households to secure and build livestock assets. Therefore, the paper considers how early response affects the livestock of poorer households in pastoralist areas during drought, and then after drought, how the impacts of early response relate to herd growth and recovery.

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[1] For example, see the USAID/AKLDP briefing paper on drought cycle management at http://www.agri-learning-ethiopia.org/wp-content/uploads/2014/07/AKLDP-Technical-Brief-DCM-May-2014-HQ.pdf

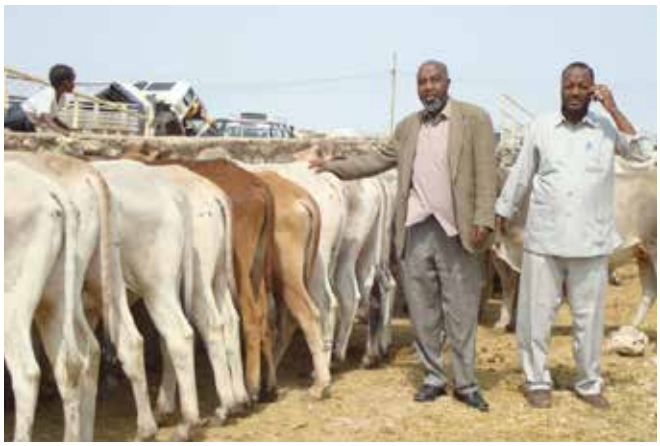
[2] Catley, A. and Cullis, A. (2012). Money to Burn? Comparing the costs and benefits of drought responses in pastoralist areas of Ethiopia. Journal of Humanitarian Assistance, 24 April, 2012 https://sites.tufts.edu/jha/archives/1548

[3] Cabot Venton, C., Fitzgibbon, C., Shitarek, T., Coulter, L. and Dooley, O. (2012). The Economics of Early Response and Disaster Resilience: Lessons from Kenya and Ethiopia. DFID, London https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67330/Econ-Ear-Rec-Res-Full-Report_20.pdf

[4] Lybbert, T.J., Barrett, C.B., Desta, S. and Coppock, D. Layne. 2004. Stochastic Wealth Dynamics and Risk Management Among a Poor Population. The Economic Journal 114, 750-777 http://www.ophi.org.uk/wp-content/uploads/ssLybbert-et-al-2004.pdf

THE ECONOMIC IMPACTS OF EARLY AND LATE RESPONSE

Many years of experience of implementing livestock projects during drought mean that much is known about the costs and practicalities of implementation. This includes information on the prices of livestock and livestock feed, and how prices change as drought progresses. In general, livestock prices fall and feed prices increase during drought, and these trends alone point to the value of early response. There is also a large body of research on the economics of pastoralism in Africa, which explains the economic logic of building herds and the concept of a minimum herd. Herd growth equates to financial growth, and is also an important strategy for coping with drought. A minimum herd is the number and types of animals needed for a pastoralist household to function in a particular area, and when pastoralists describe wealth and poverty, they often refer to herd size. From a LEGS perspective, the livelihoods objectives of asset protection and rebuilding assets during drought should support these households to maintain critical livestock assets and recover, and prevent a shift from "poor" to "destitute" in terms of livestock assets. As stated in LEGS, *"For households that depend on livestock for their livelihoods, vulnerability is directly linked to livestock assets. The greater the value of livestock assets, the greater the resilience of household to cope with shocks"*[5].



Using information on livestock and food prices, herd economics, drought mortality and the causes of excess mortality, herd reproduction, and a household's basic food needs, it is possible to develop simple economic models to predict and compare the impacts of different livestock interventions, at different stages of a drought. Therefore, models were developed based on the following conditions:

- A single poor household was used, comprising two adults and two children, and with a herd of 50 sheep and goats, and 10 cattle at the start of the drought. This herd is equivalent to 12 Tropical Livestock Units (TLU), or 3 TLU/person. Typically, a household needs at least 4.5 TLU/person to function as a pastoralist household[6], and so this household lacked a "minimum herd".
- A drought of six months duration was modelled, with an estimated mortality of livestock of 20% per month across all species. This mortality was attributed mainly to declining pasture and browse i.e. animals died from starvation.
- During the drought, the household received food assistance. This aspect of the model is based on the experience that food aid has dominated drought response in pastoralist areas for many years, and this situation is unlikely to change in the near future.
- After drought, the model is run for three years. The household needs to meet its basic food needs during this period. The model assumes that young male sheep and goats will be sold to buy cereals for the family, and, that the family will receive 50kg of food aid per year.
- The post-drought model is run only for three years because by the fourth year after drought, it is assumed that another shock will affect the household. This shock could be another drought, a food price increase, a conflict, or a health or other crisis affecting a family member. This second shock will likely result in a loss of livestock again, or, the need to sell some animals.
- Mortality in fed animals is estimated at 5% during the period of feeding, and regardless of whether the feed was purchased by the household, or provided by a project.
- At the end of the drought, it is assumed that fed animals are in a better body condition than unfed animals, and so have a higher market value and better reproductive performance. Unfed animals recover full reproductive performance and value 12 months after the end of the drought.

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[5] LEGS 2nd edition, p.3 http://www.livestock-emergency.net/download-legs/

[6] Little, P., J. McPeak, C. Barrett, and P. Kristjanson. 2008. Challenging orthodoxies: Understanding pastoral poverty in East Africa. Development and Change 39 (4): 585–609

The model was run using four scenarios:

No livestock intervention: this model shows the impact of drought on livestock losses, and the status of the herd three years later. This model acts a baseline against which the livestock interventions below can be compared.

Early commercial destocking: this model assumes that the household sells 3 young bulls during the early stages of drought in month 1, when prices of livestock are still relatively good, and livestock feed prices have not increased. The household uses about two thirds of this income to buy animal feed, and feeds 2 adult cows and 15 adult female sheep and goats during the drought.

Early commercial destocking plus livestock feed: this model is the same as the previous one, but assumes that an NGO runs a livestock feed project in months 4 to 6 of the drought. Under this project, the household is able to feed 2 more adult cows in months 4 to 6.

Late response, slaughter destocking: this model is based on a slaughter destocking project in the emergency phase of the drought, in month 4, and assumes that no livestock projects have taken place. At this point, animals are in poor condition, their value is low, and the price of livestock feed is high. The household receives cash from the sale of 2 cattle, and uses most of this money to buy livestock feed; 2 of the remaining cows are then fed in months 4 to 6.

One of the advantages of modelling is that many of the values used in the model, such as livestock and food prices, are known with some accuracy, as are the price trends during drought. Similarly, the basic food requirements of the household are known, as are the basic rations needed for livestock maintenance. Other variables such as livestock mortality rates and reproductive performance are more difficult to estimate, and will vary from one drought to another. However, if the aim of the modelling is to compare different interventions, any inaccuracies apply more-or-less consistently across the different scenarios, and the comparative aspect of the modelling is still useful. Table 1 shows the results of the modelling.

Table 1: Impacts of livestock interventions on herd losses and recovery

Scenario	Herd Status at End of Drought		Herd Status Three Years After Drought	
	TLU* (proportional loss)	Value (USD)	TLU*	Value (USD)
No intervention	3.9 (67.5%)	636	4.7	1219
Early commercial destocking, month 1	6.1 (49.2%)	1165	12.8	3515
Early commercial destocking month 1, plus feed project, months 4-6	6.8 (43.3%)	1399	14.9	4032
Slaughter destocking, emergency phase, month 4	4.3 (64.2%)	790	9.5	2282

Notes: The pre-drought herd used in the model comprised a herd of 50 small ruminants and 10 cattle (a total of 12 TLU), with a total value of USD 3,211, for all scenarios. *TLU – Tropical Livestock Unit; 1 cow = 0.7 TLU; 1 sheep or goats = 0.1 TLU.

- As expected, a scenario with no livestock intervention results in the highest loss of livestock (67.5%) during the drought. Three years later, the household has only slightly rebuilt the herd, and the herd remains substantially smaller than the pre-drought herd. This household could now be categorized as very poor or destitute, and would need to draw very heavily on diversified livelihood activities such as causal labour, firewood collection and sale, or contract herding for others. This household is probably caught in a poverty trap, and remains highly vulnerable. Slaughter destocking produces a better impact in terms of livestock losses at the end of the drought, but these losses are only slightly lower than no intervention. Relative to no intervention, slaughter destocking leads to better herd growth after drought, but after three years, the herd is still substantially smaller than the pre-drought herd size.
- The two early interventions, both involving commercial destocking, result in lower losses of livestock, and three years later, the herd size exceeds pre-drought levels. The best impact is seen when early commercial destocking is combined with targeted livestock feed supplementation.
- A general conclusion from the model is that early interventions involving commercial destocking support a return to pre-drought levels of herd ownership. The findings from the model are consistent with studies that report the very high benefit-cost of commercial destocking during drought[7].

[7] Abebe et al.; Abebe, D., Cullis, A., Catley, A., Aklilu, Y., Mekonnen, G. and Ghebrechirstos, Y. (2008). Livelihoods impact and benefit-cost estimation of a commercial de-stocking relief intervention in Moyale district, southern Ethiopia. Disasters 32/2, 167-189

COST COMPARISONS: DESTOCKING VS. RESTOCKING

- A further analysis compares the costs of commercial destocking (scenario 2) with the costs of restocking a household that lost livestock with no intervention (scenario 1). Using the example of a commercial destocking project in southern Ethiopia in 2006, the total cost to the implementing NGO was USD 24,483, and approximately 5,405 households were involved i.e. an implementing cost of USD 4.53 per household[8].
- After drought, we can assume that the household with no intervention was restocked to a level equivalent to a household involved in commercial destocking i.e. the restocked household receives livestock equivalent to 2.2 TLU (see Table 1: 6.1 TLU less – 3.9 TLU = 2.2 TLU). If we further assume that the restocked animals are all sheep and goats, this equates to 22 sheep and goats with a value of approximately USD 660 to the implementing NGO. Additional costs are veterinary care of USD 1 per animal, plus a 10% overhead for the NGO. This takes the cost to USD 750.20 per household.
- The cost of commercial destocking is therefore 165 times less expensive to an aid donor and implementer, relative to the cost of restocking.

CONCLUSIONS

- The results of the models illustrate the importance of early drought response, and the massive financial benefit of commercial destocking over restocking, in terms of aid costs. The LEGS Core Standard 2 on Preparedness includes the need for early response, and LEGS includes specific guidance on how to design and implement commercial destocking during the early stages of a drought. If commercial destocking is to become more widely used, the standards of Preparedness (Core Standard 2), Technical Support and Agency Competencies (Core Standard 3), and Coordination (Core Standard 8) are particularly important, as is the LEGS guidance on designing commercial destocking (LEGS Chapter 4).
- Simple modelling is a useful tool to assist preparedness, and could also be used in project proposals to illustrate the impacts of different interventions. This applies not only to emergency proposals, but also proposals for development projects that include flexible funding or a crisis modifier[9].
- The wider use of commercial destocking also relates directly to the development of livestock marketing more generally in countries with pastoralist populations, and arguably, is primarily a development issue. The priorities here include the improvement of basic infrastructure, especially roads, to enable better market access and use of temporary markets during drought, and to reduce the transport costs of traders. Simple "bush markets" can work well, and elaborate market infrastructure is rarely needed. Governments can also use tax holidays or similar approaches during drought to support commercial destocking. These types of long-term issues fall under LEGS Core Standard 8 on Policy and Advocacy, "Where possible, policy obstacles to the effective implementation of emergency response and support to the livelihoods of affected communities are identified and addressed."
- Overall, the economic impacts of livestock support on poorer households during drought depend on two main factors – the timeliness of the response, and, adherence to LEGS standards and guidelines for project design and implementation.

[8] Abebe et al. (2008), ibid

[9] Catley, A. and Charters, R. (2015). Early Response to Drought in Pastoralist Areas: Lessons from the USAID crisis modifier in East Africa. USAID/East Africa Resilience Learning Project, Nairobi http://www.agri-learning-ethiopia.org/wp-content/uploads/2016/07/pa00m1px-2.pdf

ACKNOWLEDGEMENTS

Prepared for The LEGS Project by Andy Catley

Image credits: FAO Ethiopia; Guido Govoni; Yacob Aklilu; Kelley Lynch/Save the Children

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