

Cost-Benefits Analysis of Kajiado Drought Animal Disaster Management

April 2017

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Background

The large-scale failure of rains during October-December 2016 following the strongest El Nino effect led to a devastating drought across parts of the Greater Horn of Africa (GHA). Central and southern Somalia, south-eastern Ethiopia and northern and eastern Kenya received less than a quarter of their normal seasonal rainfall.

All this leading on eroding of households' and animal resilience. This situation is further complicated by already existing underlying issues like animal diseases outbreaks, ecosystem mismanagement, human wildlife conflict, and resource based conflicts among pastoral communities.

Impact on Animals

⇒ Depletion of water levels and water sources.

⇒ Depletion of pastures and crops.

⇒ Livestock deaths

⇒ Maasai pastoralists livelihood negatively impacted.

⇒ Animal Welfare decline as they are trekked for longer hours in search of water and pasture.

⇒ The Maasai nutrition status declined as availability of milk and meat and tradable animals plummeted. This further reduces their ability to protect their animals.

The Animal Emergency Response

World Animal Protection partnered with the Kajiado County - department of veterinary services (DVS) and the University of Nairobi faculty of Veterinary Medicine (UoN) veterinary emergency response unit (VERU) to undertake an intervention from 11th to 21st April 2017

Animals Reached

Response Intervention	Households	Cattle	Sheep & Goats	Donkeys
Animal Feeds- Hay and Mineral Salt		17,971	58,790	2,032
Deworming & Lumpy Skin Diseases Vaccinations		8,070		
TOTALS REACHED	416		86,863	

Scope of the Analysis

This analysis is based on investigating the economics of saving livestock in a disaster. It is a framework to estimate the potential impacts of losing livestock in a drought disaster on communities and households. Losing livestock in a disaster has real economic consequences as livestock often play a critical role in economic productivity.

Post-intervention response reports provided data used to assess the number of animals reached and the total cost of intervention. This analysis focuses on the household income impacts to owners of livestock whose animals were saved by the Kajiado operation (treatment and feeding). However, it does not consider indirect costs and benefits of the intervention relating to other regions and industries.

Specifically, the aim is to assess the economic contribution of the below stated aim of the intervention: To boost survival prospects of animals in the drought era to survive to the next drought in Kajiado County.

Goal

To better understand the economic impact of veterinary emergency response units (VERU) operations during droughts on local and regional economies.

Methodology

This analysis uses cost-benefit analysis as its foundation. We acknowledge this analysis has uncertainty but recognize that this analysis is currently of its kind in Kenya.

Assumptions

Due to the uncertainty involved in such assessments. We made a number of assumptions in our analysis, these include:

- We assume that current market prices for livestock do not represent the present value of their future production. Instead of current market prices per animal, we have adopted a value flow approach in estimating production of milk, meat & draft uses.
- That 50 percent of animals were male and 50 percent were female. This is an important ratio as it impacts on assumptions above milk production. In the absence of any data, we have taken the middle ground assumption, which has the effect of resulting in conservative estimates.
- That 50 percent of animals that were treated survived as a result. In other words, if the intervention didn't take place the animals would have died.

Results

1. Intervention details

Treatments provided	Number	80,000
Animals treated	Individual	86,863
Animals saved	USD	43,434
Cost of Intervention	USD	34,034
Cost per treatment	USD	0.40
Cost per animal	USD	0.39
2. Estimates and discount rate		
Annual Income of Livestock Saved	USD/annum	574,381.4
Discount Rate	%	25%
3. Net present value over 1,3 and 5 years		4. Benefit/Cost Ratio
NPV 1 Year	USD 4,595,505	13.5
NPV 3 Year	USD 11,121,194	32.9
NPV 5 Year	USD 15,446,674	45.4

Key: (1). Basic intervention details based on VERU post-intervention reports

(2). Estimates of the potential income of the animals saved by the intervention

(3). Net present value (NPV) estimates over 1, 3 and 5 years

(4). Benefit-cost ratios over 1, 3 and 5 years

Interpretation of Results

The VERU response intervention activity in Kajiando generated benefits. Depending on duration, the present value of the intervention generated benefits of \$13.5, \$32.9 and \$45.4 over 1, 3 and 5 years, respectively for every 1\$ spent. Undertaking both a feed and treatment intervention generated higher benefits than just treatment as seen in a similar drought Makueni, Mwingi 2013 which had xx benefit.

The results demonstrates benefits of the strategy to include VERU operations for drought response to improve on efficiency and enhance livelihoods of livestock-dependent communities during disasters shows VERU should viewed an integral part of drought disaster management (Buchanan, 2000; Nusbaum et al., 2007).

Limitations and Sources of Data

The limitations of this study include the assumptions above but also a lack of data about the actual income earned by livestock holders in the regions where operations took place.

Data about income and prices of livestock in our estimates are based primarily on the work of Behnke & Muthami (2011) and citations within that report.

References

- Behnke R, D Muthami, 2011. Contribution of Livestock to the Kenyan Economy. IGAD LPI Working Paper, No. 03-11.
- Buchanan S, 2000. In "Emergency preparedness." from Paul Banks and Roberta Pilette. Preservation Issues and Planning. Chicago: American Library Association: 159-165.
- Nusbaum KE1, BE Rollin, JS Wohl, 2007. The Veterinary profession's duty of care in response to disasters and food animal emergencies. Journal of the American Veterinary Medical Association: 231 (2) 200-202.