

**RESTORING COMMUNITY LIVELIHOODS AND FOOD SECURITY
THROUGH LIVESTOCK ASSET DURING DROUGHT DISASTERS: CASE
STUDY OF MWINGI, KENYA**

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ABSTRACT

Some of the world's poor and most disaster-vulnerable communities are also those most reliant on livestock. Whenever disasters strike, in addition to the immediate devastation, food insecurity and loss of life, the loss of livestock can leave a secondary legacy of economic instability, debt and dependency. In 2011, a collaborative approach to mitigate both immediate and long-term effects of the devastating drought affecting Kenya's livestock and people was conducted in Mwingi. In that year, East Africa had suffered the worst drought in 60 years following three years of poor or failed rains. More than 11 million people faced starvation in the region and in Kenya alone, 3.5 million people were affected by the crisis, which was declared a national disaster. For the people of Mwingi in Kenya, the keeping of livestock – including cattle, goats, sheep and camels – is the primary source of livelihoods and forms the basis of the regional economy. As the drought continued, daily life of Mwingi people became a struggle for survival for both people and their animals. Of their estimated animals thought to have been affected, in some areas, up to 45 per cent of the animal population died. A strategy to mitigate the effects of the drought was designed through participatory drought analysis and needs assessment. Subsequently, a drought response team was deployed in the region targeting to secure and restore valued asset of the people of Mwingi - the livestock. Management of livestock during that crisis helped to safeguard livelihoods and food security of the affected region. By the end of the disaster management there were perceived benefits in terms of improved body condition of the animals, avoided animal mortalities and indirect benefits derived from surviving livestock. With resumption of rains, farmers were able to continue depending upon their secured animals assets for livelihood. The cost-benefit analysis indicated the intervention generated \$2.74 of benefits in the form of avoided losses for every \$1 spent. If the time period was extended to 3 years, the benefit-cost ratio increases to \$6.69 in benefits for every \$1 spent. This case demonstrates that interventions on drought crisis focusing on actions aimed at animal welfare could help maintain and restore the livestock as a livelihoods asset of the regions' farmers and help to enhance their food security.

Key words: Drought, Livestock, Livelihoods, Food Security

INTRODUCTION

Whenever disasters occur, they erode development initiatives, challenge the capacities of vulnerable groups, and frequently overwhelm process of recovery to the pre-crisis socio-economic state of affected communities [1]. Disasters always come with a climate of insecurity, fear and negative impacts in terms of displacement, damage to infrastructure, disruption of economic activities and to a large extent deeper impoverishment of the affected community [2].

Disaster management and mitigation are important for sustainable development, especially in the developing countries, where the population vulnerability to disasters is high. Indeed, if proper mechanisms and infrastructure for disaster mitigation and management are put in place in these countries, disasters cannot end up completely crumbling development and claiming lives in such situations [3]. However, a historical analysis of the disaster management in Kenya alongside other developing countries continues to reveal great gaps in disaster response and mitigation strategies [4,5].

In most developing countries, whenever disasters occur, there are no established policies and mechanisms for response, which end up being ad hoc interventions [5]. In instances where there are policies, challenges with implementation, finances, weaknesses in disaster mapping and identification and lack of good political goodwill hamper the disaster response and mitigation processes [5,6].

Despite animals being an important asset of livelihoods that support various communities in developing countries, in disaster situations such as droughts, the animals are often forgotten victims mostly because there is no elaborate link between the livestock asset and livelihoods of the affected communities or simply due to lack of political goodwill [4,7]. Animals suffer the effects of droughts, flood, famine and war as humans do and initiatives that go to support animals during these situations can help restore and secure an asset that can make the communities cope better with the effects of disasters [7]. However, until today, few of such initiatives are in place in developing countries.

This paper shows a case on how an initiative to integrate animals as part and parcel of disaster management can generate benefits and be used to cushion destruction of human victims' livelihoods and enhance the recovery process through safeguarded food security. The case also demonstrates how it is prudent, therefore, when conflicts and other disaster situations arise, immediate response should be offered targeting to protect both animals and people.

CASE BACKGROUND AND METHODOLOGY OF INTERVENTION

Kenya has a land mass of approximately 583, 000 Sq. km and geographically, it is divided into arid, semi-arid, highland, coastal strip and lake basin areas [8]. The country has a population of over 39 million people, with over 60% living in the rural areas and dependent upon agriculture for their livelihoods [9]. Over 80% of the people living within ASAL (arid and semi-arid land) depend solely on livestock for their livelihoods.

In September 2011, the government of Kenya (GOK) declared the drought facing the country then as a national disaster. The drought had affected 3.5 million Kenyans and it was caused by a three-year failed or poor rains. In partnership with other players, GOK started addressing the problem through consultations within departments, including the Director of Veterinary Services (DVS) and the National Disaster Operation Centre (NDOC) at the Office of the President. These departments designed a joint strategy with the University of Nairobi (UON) to combat the drought effects affecting the people of Mwingi because this region was not covered by any other non-governmental organization at that time. The UON veterinary response unit (UON VERU) targeted its disaster response and mitigation activities through initial participatory assessment tool of disaster analysis and needs assessment (DANA) conducted in the affected Mwingi sub-counties in the month of September 2011. Following the findings of the DANA, the World Society of protection of animals (WSPA) supported an UON VERU operation to conduct disaster management activities to assist the communities through a livestock intervention approach targeting to secure and restore the livestock asset for enhanced livelihood of the people so as to cope with the effects of the drought crisis.

The DANA involved data collection from the larger Mwingi within the six Sub-counties: Mwingi East, Mwingi central, Mwingi West, Kyuso, Mumoni and Tseikuru (Fig. 1-2). Mwingi is approximately 10030 Sq.km and borders Tana River, Kitui, and Tharaka.

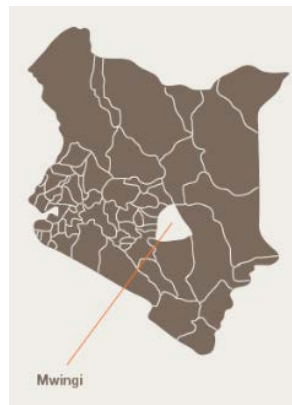


Figure 1: Map of Kenya showing Mwingi

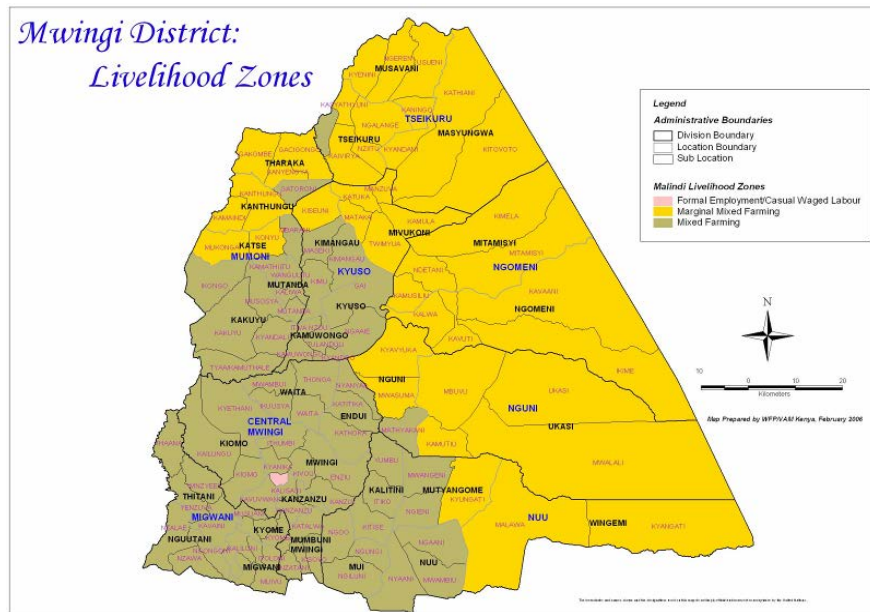


Figure 2: Map of Larger Mwingi

During disaster management, the first activity is DANA [7]. Participatory methods are usually used to conduct DANA. The methods used in this case were: focus group discussions, targeted interviews and questionnaires. Mwingi area was endowed with high livestock population (Table 1). A three year failure of rains was reported. The drought was affecting more than 3.5 million in the area. The pasture situation was bad and animals were surviving on local dry shrubs and root tubers. The livestock were affected due to poor body condition and lowered immunity. There was also massive migration of animals from neighboring Tana River and Garissa districts into the area in search of pastures, water and markets.

The impact of the drought on the animals is summarized in Table 2. There were some reported disease outbreaks through spread and transmission. The livestock was facing starvation, massive nutritional deficiencies and illness as a result of poor body condition. In addition, the scarcity of water and pasture forced farmers to move their herd long distances each day – between six and 40 km – in search of feed, placing great strain on the animals and also bringing them into contact with livestock from other areas and subsequently spreading disease and parasites. Animals were more stressed at overcrowded watering holes, where farmers competed for water and pasture for their herds. Both human and livestock located along the Tana River, Kyuso and Tseikuru cut lines were competing for space and water around boreholes, which were fast drying up. Human conflict was evident due to competition, livestock theft and destruction of food crops as the pastoralists trekked long distances with their livestock in search for water around the boreholes; they migrated 6-40 km a day, taking them up to 1-3 days to return. Many animals died during the migration and in some areas up to 45% mortalities were reported. Many animals were also being walked long distances to markets places to be sold off but most of them reached in very bad body condition, and sometimes nobody wanted to buy them and eventually died or got slaughtered for family consumption. The water holes were drying up fast and many animals were suffering due to longer queues

for water. Plant tubers were rapidly depleting and hunger on animal was biting deeper. Destocking was taking place at low rates; animals were suffering because farmers were hoping rains will come soon. The immunity of the animals was decreasing on a day to day basis. The welfare and physical condition of the animals was declining and the livelihoods and food security of the region's farmers was threatened. It was reported that the condition of the livestock affected the farmers' ability to till their fields, transport goods and the livelihood because the price paid for any animals sold at market was very low. It was established that the survival of Mwingi people was inextricably linked to that of their livestock.

During the analysis, the main threats detected for livestock asset within the region were:

1. General drought effects; animal death from starvation (not thirst) - cattle and sheep were more drought resistant while young and pregnant animals were the most vulnerable
2. Massive nutritional deficiencies
3. Common disease perpetuating factors; low immunity, high parasite burdens and stress
4. Infectious diseases and parasitism

Based on the outcome of the DANA, an intervention targeting to secure and restore the livestock asset as a means of the peoples' livelihood was agreed upon. The intervention option of provision of veterinary services was opted for in this disaster management strategy.

THE INTERVENTION METHODOLOGY AND RESULTS

Intervention and Results

Disaster assistance was planned to initially aim at providing an emergency response to provide veterinary services mainly targeting to boost the immunity of animals to enable them cope with the drought and also withstand the effects of then expected short rains; usually the rains make animals succumb mainly due to effects of rush grass and lowered animal immunity [7]. In such an intervention, the expected benefit would be to avoid animal losses through mortalities.

The objectives of the DART were to:

- Increase prospects of animals in the drought stricken area surviving until the next rainy season
- Boost resilience of the affected communities to future droughts through securing their asset
- Build capacity for improve disaster mitigation for challenged communities

DART operations ensured:

- All animals were dewormed
- All animals received multivitamin boosters
- All animals received molasses mineral blocks
- All animals received supply of fodder throughout the period prior to rains
- All animal diseases were treated and/or control measures taken
- All injured and/or sick animals received emergency medical care

Five DART teams were formed with a central control base located within Mwingi Central. Each of the team was tasked to deal with a sub-county within the area. Teams 1-5 were deployed in Kyuso, Mumoni, Tseikuru, Mwingi Central and Mwingi East (Fig. 3).



Figure 3: DART teams during disaster management Operation

The animals attended by the DART teams are shown in Table 3.

Results of Monitoring and Evaluation

The teams attended to a total of 36,266 animals. The district veterinary officers reported that the effect of the drought on the livestock had intensified and was worse since the time the DANA was conducted. Also, based on their experience of the drought of 2009 in the region, where the farmers did not destock their livestock and ended up losing up to 50 % of the animals to death, this time around significant destocking through sale of animals had been done. The livestock/wildlife interface increased during the drought as the livestock moved in wider areas in search of pastures. Cases of livestock attack by wild animals had been noted, especially hyena bites.

Interviews indicated positive feedback from the community (farmers, provincial administration staff, peace committee, Somali pastoralists) concerning the DART. The communities were grateful and looking forward to positive impact of the intervention for the animals and their livelihood. The appreciation by the community was manifested in various ways; one farmer wrapped and brought to the DART team a sample of the worms expelled from his donkey following deworming the previous day and another farmer slaughtered his goat and shared with team members (Fig 4).



Figure 4: A happy farmer sharing a meal he prepared for team 3 in Tseikuru

Community ownership of the project was manifested when two of the stolen mineral blocks were traced brought back by community members, who took it upon themselves to investigate and identify the culprits.

Effective feeding of livestock at watering points was continuously ensured by contracted women groups, who purchased and supervised the feeding of animals using grass hay collected locally from the nearby hills (Fig 5).



Figure 5: Grass hay collected from hills and used to feed livestock at watering points

Disease control and peace committees comprising members from the provincial administration, animal health assistants, community leaders, and other government ministries monitored the feeding of animals and at the same time assisted the women groups at feeding points.

By the time the team left in November 2011, the condition of the animals in the area had significantly improved, as had the condition of the surrounding countryside, thanks to the recent rainfall. With plants growing again, farmers were able to take their animals back to local areas to graze. The intervention was appreciated as timely and highly important and farmers called the DART team severally to inform on the progress and rains started in Mwingi three months later and the animals coped much better thereafter.

A subsequent cost benefit analysis conducted based on post-intervention response (Table 4), provided the economics basis of evaluating the intervention. The analysis was used to assess the number of animals reached, the total cost of the intervention and the benefit/cost ratio. The analysis focused on the household income impacts to owners of livestock who brought their animals for treatment. It did not consider indirect costs and benefits of the intervention relating to other regions and industries. Specifically, the aim

was to assess the economic contribution of the first stated aim of the intervention - to increase prospects of animals in the drought stricken area of Mwingi surviving until the next rainy season. Based on our analysis, over a one year time period, Mwingi intervention generated \$2.74 of benefits in the form of avoided losses for every \$1 spent. If the time period is extended to 3 years, the benefit-cost ratio increases to \$6.69 in benefits for every \$1 spent.

DISCUSSION

Impacts of disaster are high on the weak sections of the community [10]. In many developing countries there are a good number of people who can't earn "a dollar a day" (D.A.D) [6]. When developing countries are disaster prone, the poor suffer the impact acutely. Many of the poor are small holders, who largely depend on animals for livelihood. It is apparent that even though animals are the main source of livelihood to the poor, disaster management of animals do not figure anywhere in preparedness, mitigation or rehabilitation [5]. In fact animals can play a major role in all the components of disaster management of these countries [11]. There is a significant participation of women in conventional animal husbandry system where a large array of indigenous breeds of domestic and semi-domestic animals live in absolute harmony with man and nature; a situation that can prevent at least some disasters [5].

Thus, animals and women can play a significant role during disaster management. Animals are the means of transport of food and water, and invalid people when no other transport is possible. Animals are also movable assets of the farmer, which can be salvaged and used during response period or while victims live in shelters [2]. Even in their death, animals can serve the community by providing material gains, with their hide, bone, lard and carcass. Damaged crops and grains unfit for human consumption can easily be used as animal feed and fodder. Critically, also animal rearing is a major diversion from shock for disaster victims and helps them tide over their depression [5].

With steps taken to reduce animal losses in disaster-prone regions, food security improves and self-reliance increases [10]. The inclusion of animals in disaster preparedness and recovery activities is critical to the survival of livestock-dependent communities: meaning that animal welfare should be viewed not only as an integral part of disaster recovery but ultimately as a supporting component of humanitarian relief work, and should be included as part of planning for disasters from the start [5,7]. The benefit value such strategies depend on the duration over which income is attributed to the intervention and the discount rate [8]. This is typical with cost benefit analysis and some approaches to this include: Basing duration on average length of ownership for animals or expected lifespan based on estimated age at the time of the intervention and basing the discount rate on available rates of finance to rural communities, through banking, microcredit or informal lending markets. In this case study, a strategy of disaster management has been demonstrated that led to a more effective response and a better outcome for animals and people. Such strategies end up being more participatory, cognitive of community needs and delivering the most appropriate intervention that help the affected animals and the community. Once the animals survive until the next rainy season, the asset of the community is protected and their livelihood restored. This

approach is widely supported by the United Nations global guidelines within the SPHERE and LEGS approaches of emergency interventions.

CONCLUSION

As well as reducing animal suffering during this disaster management, the action proved also to help maintain and restore the livelihoods of the regions' farmers by enhancing their food security. There is a great return (benefit) of incorporating animal component during disaster management as shown by the generated benefits. The present value depends on the duration over which income is attributed to the intervention and the discount rate. Thus, enhancing community livelihoods and Food Security can be possible through safeguard of livestock asset during disaster management.

Table 1: Estimated Livestock populations Affected by the Drought in Mwingi

Species	Central	Mumoni	Kyuso	Tseikuru	Mwingi West	Mwingi East	Total
Cattle	19,810	14,020	25,000	20,000	11,090	27,000	116,920
Goats	41,970	85,000	95,000	65,000	19,000	80,000	385,970
Sheep	3200	10000	55000	15,000	1000	5,000	89,200
Pigs	100	-	-	-	-	-	100
Rabbits	162	-	-	-	-	-	162
Chicken	14,680	70,000	14,270	20,000	10,160	70,000	199,110
Ducks	40	-	-	-	-	-	40
Donkey	3,030	2,000	10,520	6,500	4,000	15,000	41,050
Camels	Nil	Nil	1,000	3,000	-	3000	7,000
Hives	18,624	-	-	-	6,600	-	25,224

Table 2: Impact of Animal Losses: limited to cattle, goats sheep and donkeys

District	% Animals dead	Causes of Death
MUMONI	30 % population	Starvation
KSUYO	40% population	Starvation and diseases
TSEIKURU	40% population	Starvation and diseases
MWINGI EAST /NUU	45 % cattle 5% goats 10 % donkeys	Starvation and disease

Table 3: Animals attended to during DART Operation in Mwingi

Team and Location	Cattle	Sheep and goats	Donkeys	Camels	Total
Team 1: Mumoni	1,560	5,851	852	544	8,807
Team 2: Kyuso	1,611	2,824	293	0	4,728
Team 3: Tseikuru	1,055	6,434	467	290	8,246
Team 4: Mwingi Central	2,310	4,764	453	0	7,527
Team 5: Mwingi East	2,729	1,974	2,255	0	6,958

Table 4: Cost benefit analysis undertaken on Mwingi operation in Kenya

1. Intervention details		
Treatments provided	Number	36,452
Animals treated	Individual	20,707
Animal saved	USD	10,354
Cost of Intervention	USD	39,968
Cost per treatment	USD	1.10
Cost per animal	USD	1.93
<i>Key:</i> 1. Basic intervention details based on WSPA's intervention report documents. 2. Estimates of the annual potential income of the animals saved by the intervention. 3. Net present value estimates over 1, 3 and 5 years. 4. Benefit-cost ratios over 1, 3 and 5 years.		
2. Estimates and discount rate		
Annual Income of Livestock Saved	USD/annum	136,925
Discount Rate	%	25%
3. Net present value over 1,3 and 5 years		4. Benefit/Cost Ratio
NPV 1 Year	USD 109,540	2.74
NPV 3 Year	USD 267,278	6.69
NPV 5 Year	USD 368,230	9.21

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