

**Livestock, Destitution and Drought:
The impact of restocking on food security post-disaster**

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INTRODUCTION

Restocking is increasingly viewed as the primary method of rehabilitating the small-scale pastoral sector after disaster. In the last decade, approximately \$100 million has been spent on programmes in sub-Saharan Africa¹. In the early years of restocking, the majority of projects among pastoralists were implemented in response to disaster. In general, restocking was seen as a method to ‘rehabilitate’ the impoverished into the social and economic fabric of pastoralism. In the ensuing decades, the focus of programmes has subtly shifted. At present restocking projects are being implemented as relief, rehabilitation and as a means of development. Projects are viewed as a method of supporting a households immediate nutritional needs and livelihood long-term. As such, restocking is often justified as a means of improving household food security. However, little evidence exists that programmes are able to fulfil these goals. This paper examines concepts of food security in relation to pastoralists and attempts to quantify the impact of restocking on pastoralist households in Northern Kenya.

Although restocking has been carried out in a large number of nations, Kenya was chosen due to large number of programmes which have been implemented over the last fifteen years. Presently, over 20 projects have been instituted in response to drought among pastoralists. Four of these projects provided the basis for this study. The projects chosen differed in scope, environment, time since implementation and the number of livestock given.

The first section of the paper, analysis how food security can be both theoretically defined and practically applied. Whereas, the second section examines the impact of restocking projects on food security at both the household and project level. Food security parameters such as capital, investments and stores were evaluated. Household economic conditions were utilised as a proxy to measure food security. At the project level, the influence of the size of the restocking package on present and future food security was evaluated.

SECTION I: FOOD SECURITY

Food security, is an often quoted term with little consistency or explanation. Moreover, food *strategies* are often used as if synonymous with food *security*. Whereas, the former is the means to achieve the latter. According to Maxwell (1996, p. 155), approximately 200 different meanings have been offered for the term. As implied by the numerous definitions, ‘food security’ has been ‘extended’ beyond considering only items of

¹ The figure includes the cost of projects in Kenya, Mozambique, Eritrea, Ethiopia, Sierra Leone, Namibia, Togo and Zimbabwe and as such may be under-representative of the total expenditure.

physical substance(food). Furthermore, the inclusion of ‘access’ or ‘entitlement’ as a defining feature of food security offers another dimension as both concepts involve the notion of **rights**. Part of the conceptual confusion may be related to the differing contexts in which food security is required. For example, after disaster, food security relates to the immediate nutritional needs of the displaced and destitute. In a development context, food security relates to both nutritional needs and sustainable livelihoods.

The term was first coined in 1974, after the World Food Conference in response to fluctuating global food price and supply. During the 1980’s, the emphasis shifted from national and global food supplies to the individual level. The World Bank (1986) offers one of the most commonly accepted definitions:

Food Security is the access of all people at all times to enough food for an active and healthy life.

However, the above definition is an unworkable concept for the second premise of ‘an active and healthy life’ does not rely on the first premise of ‘access of all people at all times to enough food’. The addition of ‘at all times’ as a necessary condition implies 24 hour access to food, which of course is absurd. There is a further problem with the notion of what would constitute ‘access’. For example, a livestock keeper could claim to have access to food as he could obviously ‘access’ his herd for this purpose but we would still argue that he did not have ‘food security’. Equally, it appears obvious that the supply of relief food during famine for subsistence living is inadequate. Whereas, gifts of livestock post-disaster can only fulfil the criteria if they are sold or slaughtered.

By the late 1990’s, the household had become the focus of attention, and the definition was further broadened to include the concept of livelihoods. Maxwell (1996, p. 157) offers a more recent definition of the term:

A country and people are food secure when their food systems operates in such a way as to remove *fear that there will not be enough to eat*. In particular, food security will be achieved when the poor and vulnerable, particularly women and children and those living in marginal areas, have secure access to the food they want.

The difficulty of this definition is ‘security’ rather than having objective criteria is based on **belief**. Secondly, the definition is then placed on the ‘access’ of particular groups on ‘the food they want’ so the criteria is then placed on **desire**. Neither belief nor desire are secure phenomena.

The intention of this paper is not to offer definition 201. Rather, the limitations of food security as a concept need to be recognised. The definition does not need to be extended but the role of food security as only one of the necessary features for well-being must be clarified.

In addition, while it may be true that we are **entitled** to food security, this doesn’t offer a description of the term but merely that we have right to it. A large body of literature exists examining food entitlements. Amartya Sen’s (1981) claim that failure to entitlement leads to food insecurity is correct. However, prior to discussing entitlements,

it is important to first have a common understanding of the term. The difficulty is which of the definitions are we then going to chose.

Therefore, the approach of the paper will be to narrow the definition to its determinant parts. As such, security is defined as follows (Collins,1990:1319):

se+cur+ri•ty (si'kjʊeriti): 1. the state of being secure. 2. assured freedom from poverty or want.

Thus, 'food' security, should be the 'assured freedom' from hunger or want of food. In this manner, food security is one element of a basket of goods which comprises a persons well-being (Thomson, 1996). As Davies (1996) correctly points out:

the achievement of food security is but one sub-set of objectives ... which determine why the poor take decisions and spread risks, and how they balance competing interests in order to subsist both in the short and longer term.

However, in practice, food security generally describes a minimum and not a maximum state of well-being. The definition needs to both reflect the reality of the poor and allow for criteria that can be measured.

At the macro-level, food security is related to three primary factors 'food availability, access and use' (Webb and Von Braun, 1992). For households, however, the availability and access to food will be similar. Therefore, at the household level, the primary determinant of food security is availability with a secondary factor being the ability of food to be utilised by members. The criteria may also vary for different societies or production systems. For example, in pastoralist communities, 'food security' is linked to both herd off-take and the availability of maize meal. Specifically the term denotes sufficient milk, meat and maize meal to obtain maintenance level nutrition. Whereas, for subsistence farmers, food security is bound inextricably to crop production and output, with animal off-take secondary.

Problems in producing and acquiring food are perceived as two separate risk factors in agricultural communities, for pastoralists, poor food security can arise from a combination of both. For example, during drought, milk production drops dramatically and at the same time, the terms of trade for livestock and grain decrease. This composite of risk factors may explain the increased incidence of famine among communities dependent on livestock. As Swift (1989, p. 9) concurs:

...pastoralist [are] especially vulnerable to changes in the normal animal to cereal price ratios. If animal prices fall (because animals are in poor condition, or many herders are selling, or few people want to buy), pastoralists face an exchange crisis even if the price of cereals does not rise, although the same forces that bring down animal prices are likely to push up cereal prices.

Furthermore, for pastoralists, food security, as defined above, may not be the driving motivation during times of food stress. Evidence demonstrates that the protection of economic assets often takes priority over the nutritional needs of household members (Corbett, 1988 p. 1099, De Waal and el Amin, 1984). De Waal and el Amin in a study

of famine responses in South Darfur Sudan suggest that household coping strategies revolve around the avoidance of destitution and not, until all assets have been depleted, on the avoidance of starvation.

This has important implications for restocking. As destitution avoidance is the motivation behind the variety of coping and adaptive strategies of pastoralists, economic indicators may be useful proxies for food security. The study examined the impact of restocking on household income and expenditures in order to understand the vulnerability of restocked households to food stress. The allocation of labour regarding restocked herds was also examined to analyse the impact of restocking on income diversification strategies. Finally, a herd projection model was created to determine the long term sustainability of restocked herds. Four projects in Northern Kenya were examined. Programmes were selected that varied in the time since restocking and the number of livestock given.

Project 1, was located in Samburu district and distributed smallstock to Samburu and Turkana beneficiaries. Project 2-4 were located in Isiolo district and the majority of project beneficiaries belonged to the Boran ethnic group. At the time of the study, the Isiolo district had not received rain for three consecutive rainy seasons. Beneficiaries of Project 3 were particularly hard hit by the drought.

MATERIALS AND METHODS

The field work portion of the study was performed over a four month period from August to December, 1996. This research was part of a larger study examining the socio-economic impact of restocking. The following data collection and analysis methods were used:

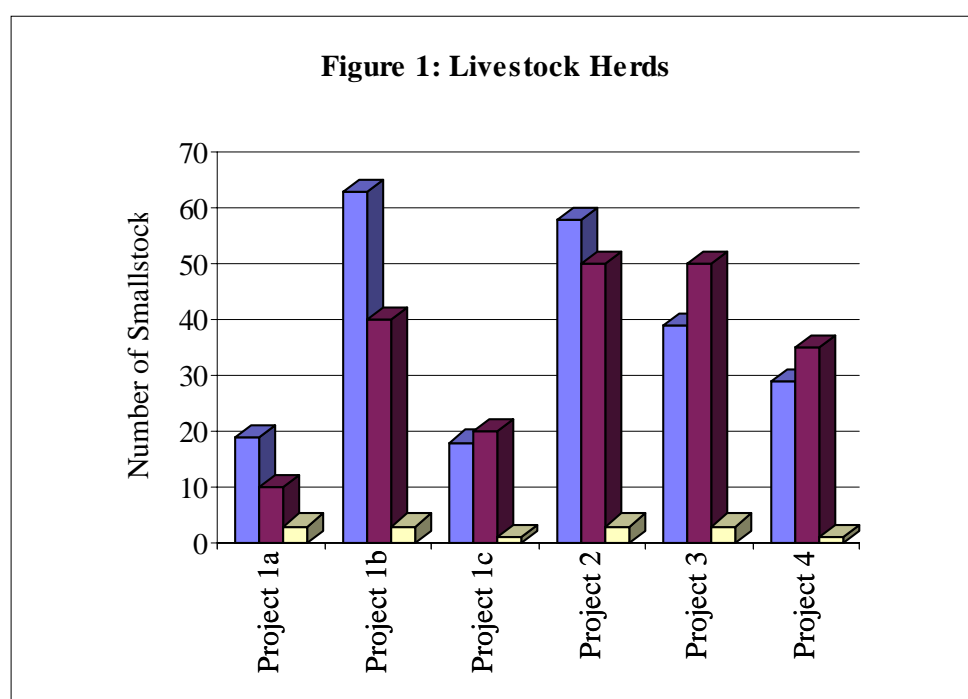
1. A literature review was performed to analyse past experiences of restocking projects in Kenya and collate all available information on food security. Evidence of the social, environmental and economic benefits of restocking were examined.
2. A formal questionnaire was administered to 173 restocking beneficiaries to obtain quantifiable information on herd productivity, household income and expenditure. A data set of 48 community members, who were not restocked, was also collected for comparative purposes. Of the total, 23% of the informants were female headed households.
3. Group interviews with women, elders, community leaders and restocking committee members were held to further explore perceptions regarding restocking, community participation and food security issues. Key informants were also identified.
4. Informal and semi-structured interviews with key informants were used to gain insight into the social impact of restocking, food security issues and traditional livestock redistribution mechanisms.
5. A gross margin analysis was performed to analyse the profitability of restocked herds.
6. Livestock morbidity and mortality rates were determined and herd projections were created using a spread sheet based livestock model in order to determine the long-

term impact of restocked herds on household food security. The influence of the different restocking packages on future herd viability was also examined.

7. To assess long term sustainability, a follow up of beneficiaries of the first restocking project in Kenya was performed.

RESULTS

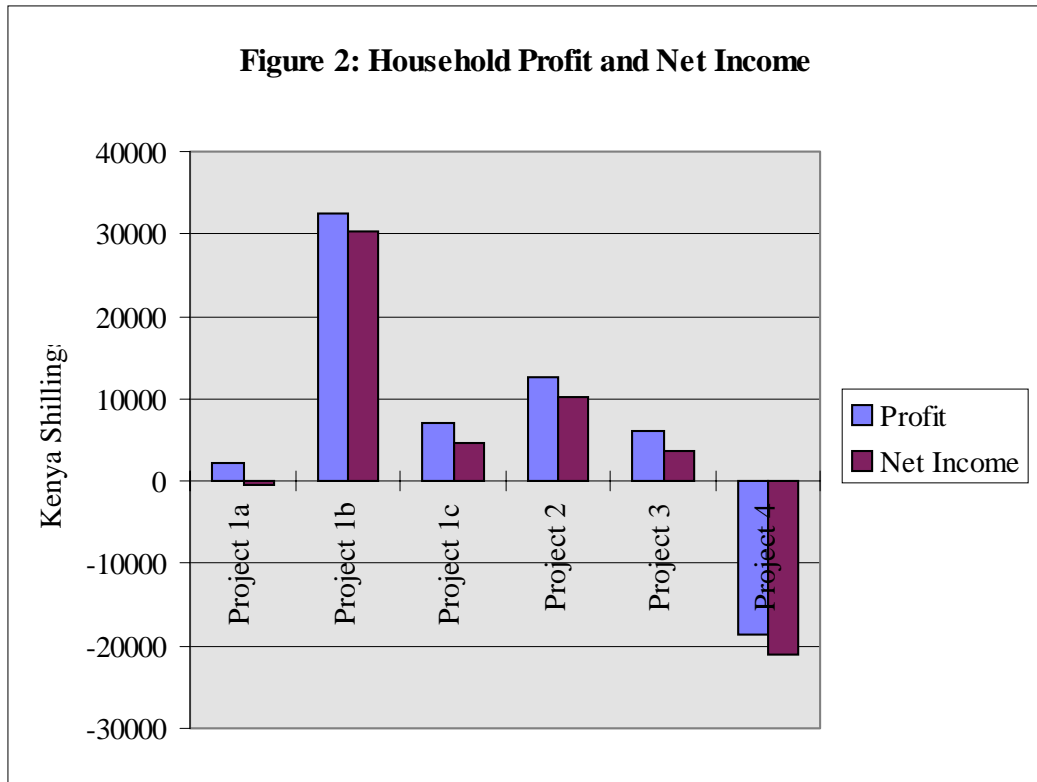
Restocking packages differed widely between projects. The number of livestock distributed ranged from 10-50 smallstock with varying proportions of sheep and goats (Table 1). One year after restocking, beneficiary herd size varied considerably among projects (Figure 1).



The mean number of smallstock owned pre-restocking across the projects was 2.3. However, the Samburu (Project 1b,c) owned the largest number of cattle prior to restocking at 1 per restocked household, whereas the Turkana (Project 1a) owned the largest number of smallstock (5). This has important implications for the mean household income and consequently food security.

Household income

From the results of the analysis the mean net household income from restocked herds was £54 per year. However, net income for beneficiaries from two of the four projects was negative. Figure 2 compares the net household income and profit for the restocking beneficiaries involved in the study. The calculation includes the change in value of the herd. Thus, the price difference between livestock given to herders at the time of restocking and the present value is accounted for in the total income figures.



From the analysis, a number of interesting points arise. First, it appears that Project 4 beneficiaries received no benefit from their herd. This is due to the falling price of livestock and negative terms of trade for herders during the ongoing drought. When the project was initiated, the opening value of the herd was close to 50% higher than the closing value at the time of the study. Conversely, the increase in the value of the herd for beneficiaries in Project 1b accounts for a large portion of the profit and net income. Furthermore, beneficiaries of Project 1b owned the most amount of cattle prior to restocking. The majority of beneficiaries sold milk in a nearby town which accounted for a large proportion of income.

Beneficiaries of Project 1a, who were restocked with 10 smallstock, after consideration of labour requirements, gained no profit from herds. This has important implications for the concept of minimum viability and the number of animals that projects distribute. Livestock, however, are just a small portion of total income for restocked herders. The majority of herders were involved in additional activities to generate income.

Income Generating Activities

Among the Borana, the most common activities noted were: selling miraa (qat), tobacco, paraffin, collecting water, wood, charcoal, gum arabic, herding for others, wage labour and remittances from relatives. Women provided the labour for the majority of income generating activities, including some involvement in livestock trading. Due to the drought, milk was not being sold. Among the Samburu and Turkana activities differed slightly and included: selling milk, tobacco, firewood and charcoal, changaa and busa (local liquor and beer). A few herders (men) were involved in livestock trading activities.

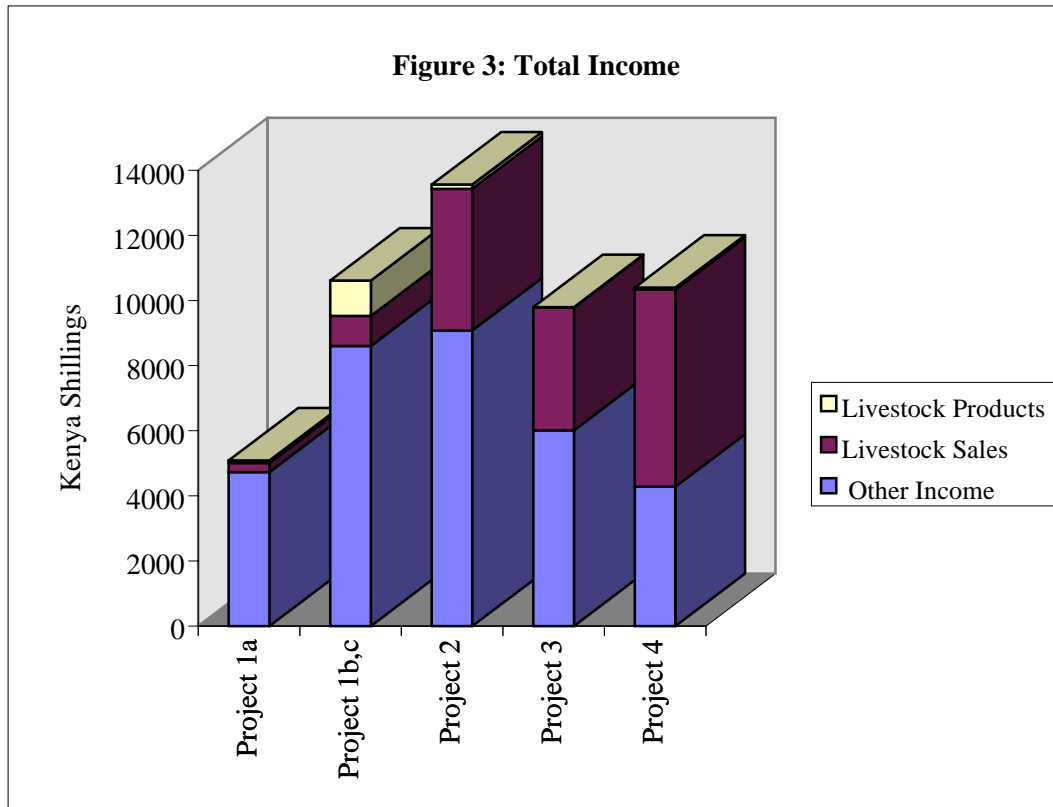
In this study, 83% of the restocking beneficiaries were involved in alternative income generating activities. The remaining 17%, however, were not simply the beneficiaries

with the largest herds. One third of the families not involved in other income generating activities were female headed households with a mean herd size of 24 smallstock. For the most successful restocked herders (owning > 100 smallstock), involvement in the wage economy either through direct employment or remittances from family members was the most common form of additional income. Thus, it appears that the least successful herders were not earning additional income, while the most successful had the most steady and reliable sources of cash.

Project 3 beneficiaries had the smallest proportion of income from alternate activities (table 2). This may be a reflection of the severity of the drought in Isiolo district at the time of the study. Few families have income to invest in petty trading activities during times of food stress.

Table 2: Estimated Income from Alternative Activities

	INCOME FROM ALTERNATIVE ACTIVITIES	TOTAL	PERCENT OF TOTAL INCOME
Project 1a	4727	5086	93
Project 1b,c	8606	10613	81
Project 2	9080	13560	66
Project 3	6014	9799	61
Project 4	4279	10394	41

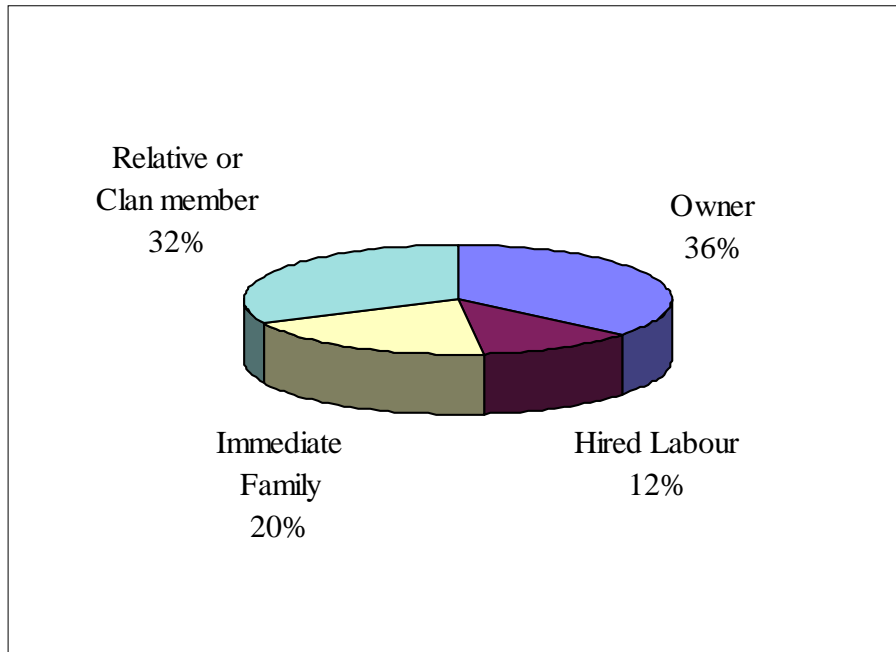


From the figure, the majority of income is derived from non-livestock related activities. Thus, the herding requirements of restocked animals may represent an opportunity cost. Consequently, once restocked, owners often delegate daily care of the herd to others, such as family members, relatives, clan members or hired labour.

Herd Labour

Figure 3 represents the proportion of owners, hired labour and relatives who herded restocked animals among the Borana (Projects 2-4). Herders were careful to state that management decisions are always retained by the owner. However, in reality, livestock are often kept at a great distance and direct supervision is not always possible. In this manner, households may lose both the productive value and capital value of herds. This has important implications for the impact of restocked herds on food security.

Figure 3: Labour (Average Projects 2-4)



Thus, the majority of herds among the Borana (Projects 2-4) are not cared for by the direct beneficiaries. Approximately one half of all herds were managed by distant relatives or hired labour. In general, hired labour is perceived by both restocked and non-restocked herders as being less optimum than care and management by the rightful owner. In the most successful of restocked households, the owner was directly responsible for the animals. When the beneficiaries were asked the reason for their success, most believed that hard work and a strong commitment to the animals were the primary factors. However, why many restocked herders are not directly managing their herds requires careful consideration.

Smallstock are most often the domain of women. Women are also responsible for the bulk of income generating activities, child rearing and providing food for household consumption. Traditionally, children are responsible for herding smallstock. However, the Borana households who participated in the study, typically have 2.5 children in school. Therefore, labour appears to be the primary constraint. Thus, opportunity cost of herding livestock is often deemed unacceptable and animals are given to relatives and friends.

Due to the above factors, restocked female headed households face particular problems in caring for their herds. When questioned, some female beneficiaries did not know the exact status of their herds i.e. births, deaths or recent purchases of livestock drugs. Grandin (1992) notes the plight of some Borana widows who entrusted the care of their restocked herds to older sons. Many of these children had been raised in town and were not accustomed to the arduous conditions of the herding camps. The sons subsequently sold the livestock claiming the animals were stolen or lost. However, although women are reported to be disadvantaged, widows also comprised 50% of the top percentile of the most successful restocked herders interviewed. The reasons why these women were able to overcome the odds requires further research.

Household Expenditures

Household expenditures in some cases out-stripped income derived from the restocked herds. With the exception of unpredictable expenses such as hospital or funeral costs, major household expenditures for the typical restocked family included food stuffs, livestock drugs and school fees.

Restocked families bought varying amounts of veterinary pharmaceuticals. Traditional treatments, however, are still prevalent and often used in conjunction with purchased drugs. Grandin (1992), in a review of the Garba Tulla restocking project, also noted the Borana spent a 'significant amount on veterinary drugs'. She estimated that restocked households paid approximately 450 K/= per year, or 8% of their total income, on medicine for their herds. A similar figure was obtained by this study.

Sending children to school also represents a significant expense for families. Payment is required for tuition, uniforms and books. Table 3 represents the proportion of income spent on school fees.

Table 3: Annual Expenditure on School Fees

	MEAN ANNUAL HOUSEHOLD EXPENDITURE ON SCHOOL FEES (K/=)	% OF TOTAL INCOME
Project 1a	154	3
Project 1b,c	97	1
Project 2	405	3
Project 3	791	8
Project 4	1030	10

There are large differences in the amount of income spent on school fees across both Districts. Although school fees were higher in Isiolo district, the Borana invest greater amounts in educating children than the Samburu or the Turkana. For the Borana, education is seen as a promising investment for the future.

Herd Projections

A herd model was created using the following production parameters derived from restocked herds.

Table 4: Starting herds for Projects 2-4

	Project 2	Project 3	Project 4
<i>Sheep (female)</i>			
Immature (0-12)	0	0	0
Mature	24	40	23
<i>Sheep (male)</i>			
Immature (0-12)	0	0	0
Mature	1	2	2
<i>Goats (female)</i>			

Immature (0-12)	0	0	0
Mature	25	9	11
<i>Goats (male)</i>			
Immature (0-12)	0	0	0
Mature	3	2	2
Total	53	53	38

Table 5: Herd Parameters: Drought and Normal Years

Herd Growth Rate:	Drought	Project 2 (Normal)	Project 3 (Normal)	Project 4 (Normal)
Kidding rate:	25.0%	49.7%	70.0%	70.0%
Lambing rate:	46.0%	67.0%	80.0%	80.0%
Mortality rates				
Kid mortality rate:	35.0%	35.0%	35.0%	35.0%
Lamb mortality rate:	29.0%	29.0%	29.0%	29.0%
Adult goat mortality rate:	34.0%	10.0%	10.0%	10.0%
Adult sheep mortality rate:	42.0%	10.0%	10.0%	10.0%
Off-take rates				
<i>Sheep (female)</i>				
Immature (0-12)	0.0%	19.0%	19.0%	19.0%
Mature	32.0%	3.0%	3.0%	3.0%
<i>Sheep (male)</i>				
Immature (0-12)	0.0%	18.0%	18.0%	18.0%
Mature	15.0%	65.0%	65.0%	65.0%
<i>Goats (female)</i>				
Immature (0-12)	0.0%	23.0%	23.0%	23.0%
Mature	23.0%	5.0%	5.0%	5.0%
<i>Goats (male)</i>				
Immature (0-12)	7.6%	43.0%	43.0%	43.0%
Mature	23.0%	8.0%	8.0%	8.0%

The herd projections demonstrated that given stable environmental conditions, beneficiaries restocked with 50 smallstock at the end of five years, can expect a herd of 85 smallstock. However, with one year of drought, the number is dramatically reduced. If off-take and mortality rates for adult smallstock is increased to drought levels, beneficiaries at the end of five years will have herds of approximately 30 smallstock.

After the drought, given the high rate of abortion, lambing and kidding rates are never able to fully recover. Thus, at the current levels of mortality and off-take, one year of negative growth can seriously hamper economic viability. In this case, the herd will not reach pre-drought levels until 10 years after the project. During this time beneficiary herds would remain vulnerable to further drought and livestock disease. Under these conditions, food security remains problematic and herders would still require further aid.

Beneficiaries restocked with 35 smallstock (25 sheep and 10 goats), on the other hand, experiencing two years of drought in Years 0 and 1 will have a total of 48 livestock after five years. Given this scenario, it will take five years for the goat herd to approximate levels at the time of restocking. The sheep herd, at this time, will have a breeding nucleus

of only 20 mature females. Again, beneficiaries are vulnerable to further livestock losses and must remain dependent on alternative sources of income.

The model is based on the following starting herds and production parameters:

From the model, it appears the size of the initial restocking package is less important to future outcome than lambing and kidding rates. In addition, using this model, beneficiaries of the first restocking project in Kenya, could be expected to have 132 smallstock after 13 years. However, today the mean herd size is 39 smallstock. Drought years were included in the model in Years 0, 1, 8 and 9 to reflect the occurrence of actual drought in Northern Kenya. Consequently, the impact of drought alone cannot account for the results. Mortality rates and off-take must be taken into consideration. In 1992, there was a suspected outbreak of Nairobi Sheep disease in the district (Grandin, 1992). During this time, the mortality rate for sheep may have approached 75%. If this outbreak is incorporated into the model in Year 8, beneficiaries should have herds of 96 smallstock at the end of Year 13. Therefore, the remaining difference must be caused by an increase in the off-take rate.

CONCLUSIONS

The results of the study demonstrate, that restocking projects have little long term impact on food security or livelihood security. Alternate income generating activities, not livestock provided the majority of income and had the greatest impact on household economic conditions and consequent food security. In general, in pastoralist systems, smallstock are a form of 'store' or may act as an easy way to augment income during times of food stress. Beneficiaries with restocked herds also utilise herds for this strategy as evidenced by the herd projections. Thus, although restocked herds act as stores, the economic returns from herding the animals as capital are low. Thus, during drought or times of food shortages the most sensible strategy for herders is to sell off animals.

In addition, the analysis of the first restocking project in Kenya demonstrated 23% of beneficiaries remain destitute and own less than 10 smallstock, while a further 10% have been restocked by other agencies. Thus, 33% of sampled households are at present no better off than prior to restocking. Although there have been some successes, 10% of herders own over 100 smallstock, the long term sustainability of restocking is questionable.

References:

WEBB, P. and VON BRAUN, J. (1994). *Famine and Food Security in Ethiopia: Lessons for Africa*. John Wiley and Sons, Chichester, UK.

GRANDIN, B. (1992). Evaluation of the Garba Tulla Mission restocking program. Report to ITDG, Nairobi.