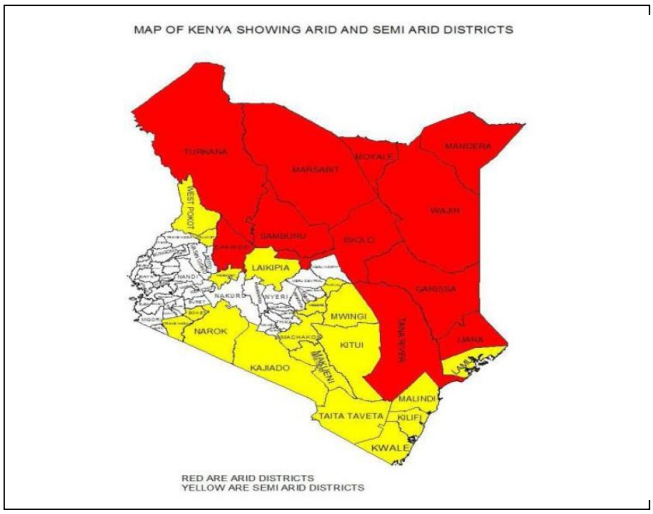
# Economics of Resilience Study – Kenya Country Report

Catherine Fitzgibbon, Independent Consultant, June 2012

## 1 KENYA - COUNTRY CONTEXT

Kenya's current population is 38.6 million, an average per capita income of US$1,573 and is ranked 128 out of 169 countries in the UNDP's Human Development Index[1]. Although this places Kenya above many of its neighbours in the Horn of Africa, such statistics mask wide diversity and inequality. The World Bank estimates that 42% of income in Kenya is controlled by less than 10% of the population, whilst 45.9% of the population survive on less than $1 per day. Economic development has been focused on the main urban centres of Nairobi and Mombasa, and the fertile densely populated highlands stretching across the Rift Valley from Mount Kenya to Lake Victoria. These areas support the commercial agricultural production of export and domestic crops that form the back bone of the economy. However over 80% of Kenya's land mass is defined as arid and semi-arid lands (ASALs). These are home to nearly one third of the population and 70% of the livestock herd. These areas are characterised by low and erratic rainfall. While the economy of the arid districts is dominated by mobile pastoralism, in the better-watered and better-serviced semi-arid areas a more mixed economy prevails, including rain-fed and irrigated agriculture, agro-pastoralism, bio-enterprise and conservation or tourism-related activities.

These ASAL populations experience the lowest development indicators and highest incidence of poverty in the country. They contain 18 of the 20 poorest constituencies in Kenya. In the vast northern districts of Turkana, Marsabit, Wajir and Mandera between 74% - 97% of people live below the absolute poverty line[2]. Pastoralist communities remain the most chronically food insecure groups in the country experiencing consistently high malnutrition rates that are habitually above international emergency thresholds[3]. The population has the lowest density of health facilities and highest maternal mortality rates in Kenya.

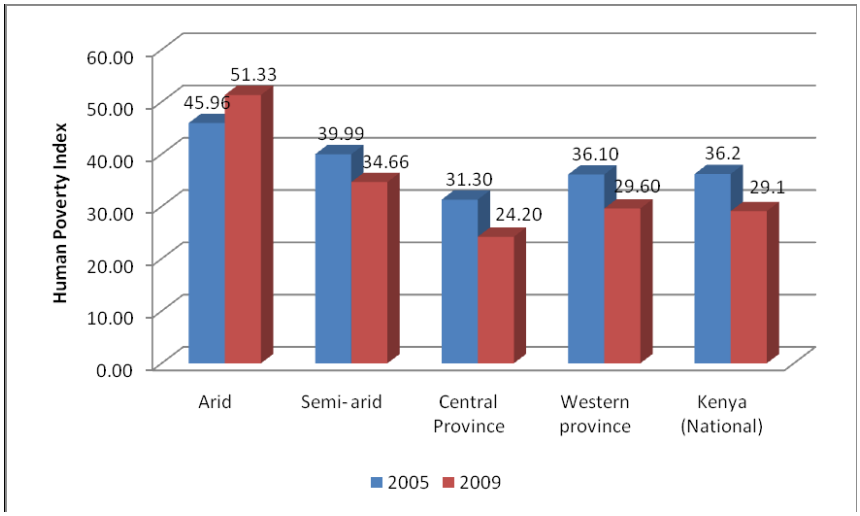



[1] UNDP Human Development Report 2011

[2] Releasing our Full Potential – Draft Sessional Paper on National Policy for the Sustainable Development of Northern Kenya and other Arid Lands: 2009 Government of Kenya, Office of the Prime Minister

[3] A Causal Analysis of Malnutrition, Including the Minimum Cost of a Healthy Diet (2007) produced by Save the Children UK and funded by the European Commission

**Figure 1: Poverty Rates in Arid and Semi-Arid Lands and other parts of Kenya**



## 2 DISASTER AND RESILIENCE IN KENYA

### Humanitarian Crises due to Drought

In common with the rest of the Horn of Africa, drought is an inherent part of life in the ASALs of Kenya. In the last decade drought episodes were experienced in 2001, 2003, 2006, 2009 and 2011. In addition major floods occurred in 2006 and 2010, as heavy rains followed drought periods.

**Coordination of Drought Emergencies in Kenya**

Kenya has a draft Disaster Management Policy however no official policy or legal framework exists.to guide disaster management. The recently launched Drought Management Authority is an important step in addressing this and keeping the focus on the regular drought emergencies in the ASALs of Kenya. The Government and relevant stakeholders, including the Kenyan population in general and disaster- affected populations in particular, have in the past managed disasters reasonably well, courtesy of the multi-sectoral and multi-agency approach. Institutions such as the Kenya Food Security Meeting (KFSSM) and its technical arm, the Kenya Food Security Steering Group (KFSSG), the Arid Lands Resource Management Project, the National Disaster Operations Centre, St. John's Ambulance, the Uniformed Forces and Sectoral Ministries, among others, have had a measure of success. Collaboration and co-operation between the NGOs is weak and ad hoc. The UN cluster system has been activated from time to time, primarily after the post-election violence in 2008. Clusters vary considerably in their levels of activity and effectiveness. Clusters are often primarily focused on the humanitarian needs of the 500,000 refugees in Kenya, mostly located in the camps at Dadaab and Kakuma.

**Longer Term Trends of in Drought Emergencies**

A recurrent question is the extent to which droughts are becoming more frequent or more intense. Some argue that examination of long term rainfall patterns and NDVI[4] data for Kenya show the frequency of drought and erratic rainfall has not changed, see figure 2 below. However there is also evidence that climate change has already caused a rise in average temperatures (see Figure 3 below for Turkana). The impacts of this are predicted to affect countries such as Kenya more intensely than other world regions, because of their higher vulnerability and lower adaptive capacity[5]. One implication is that even if rainfall stays the same evapotranspiration rates will increase. For ASAL areas this is likely to reduce the growing seasons for pastures and mean water sources are likely to dry up sooner. Climate change experts agree that the real impact of rising temperatures will only become apparent in the longer term i.e. 20-50 years. The impacts must be viewed in the context of the affected populations' vulnerability, for example land–use patterns, rising populations, ability to diversify incomes etc. It seems clear that even if the intensity of droughts is not increasing currently, the economic, social and other impacts on Kenya are increasing.

[4] Naturalised Density of Vegetation Index
[5] Ibid

Figure 2: Rainfall variability in the East Africa region, from 1900 - 2000. (Graph: Brad Lyon, ILRI)

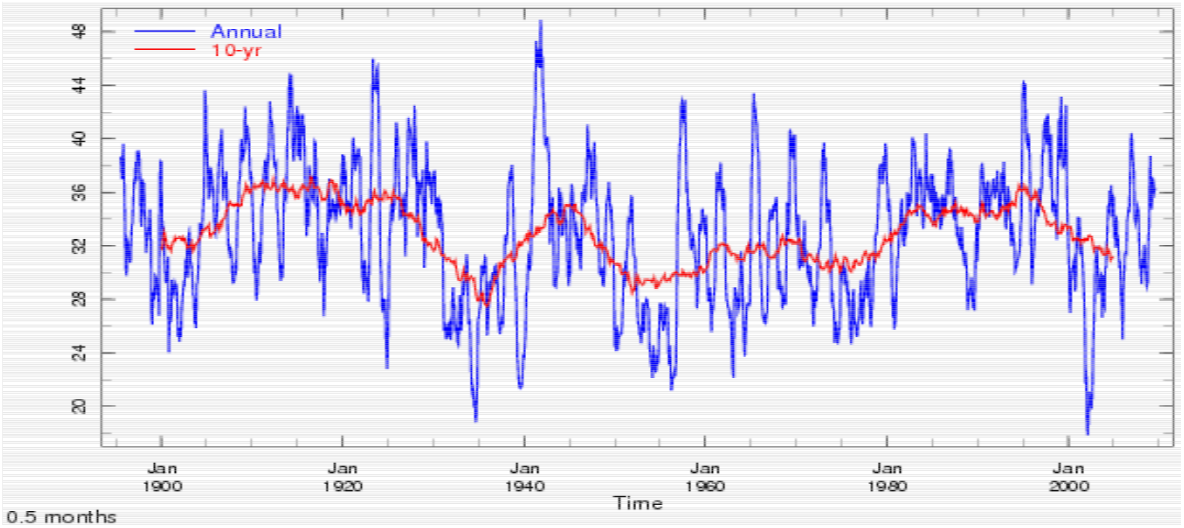
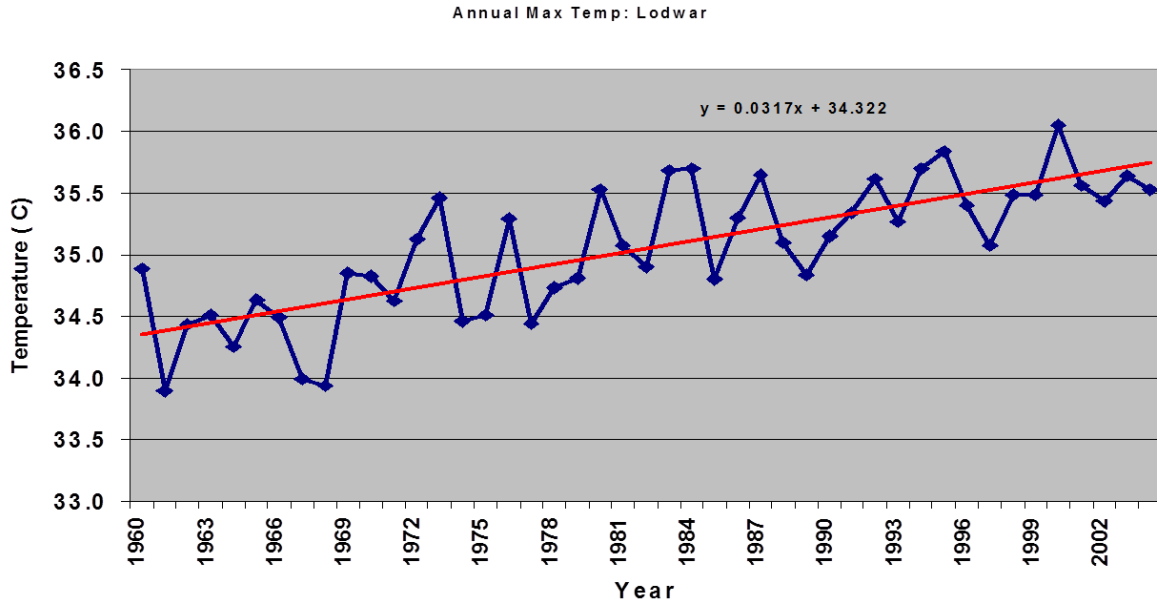



Figure 3: Temperature Change in Lodwar, Turkana, northern Kenya (Source: Kenya Meteorological Office)




## Pastoralism in Kenya

Pastoralists in Kenya are found in all the arid districts and in some of the semi-arid. The term pastoralism is used to describe societies that derive some, although not necessarily the majority, of their food and income from their livestock. Many pastoralists also cultivate crops (agro-pastoralists) and carry out other economic activities to meet their subsistence needs. Pastoralist and agro-pastoralists are also characterised by being wholly or semi-nomadic. This means they differ from mixed or sedentary farmers in that "most of the food their livestock eats is natural forage rather than cultivated fodders or pastures".

It is now more widely acknowledged that pastoralists are astute land managers whose mobility enables them to make the most productive use of drought-prone rangelands. Repeated studies have shown pastoralism in Africa to be between 2 and 10 times more productive than commercial

ranching alternatives[6]. Pastoralism makes a significant contribution to Kenya's economy with livestock production accounting for 50% of agricultural GDP. A recent assessment by IGAD[7] estimated that the contribution of ruminant livestock to national agricultural production is actually 150% higher than previously thought at Ksh 319 billion (US$3.8bn). Domestic and export demand for meat is high and unlike neighbouring countries such as Ethiopia, Sudan and Somalia, Kenya is a livestock importer rather than an exporter. An estimated 22% of the nation's beef is supplied by cattle walked across Kenya's borders.

**Table 1: Livestock Populations in Kenya**

| | Total Population from 2009 Census | ASAL Population | Highland Population |
|---|---|---|---|
| **Cattle** | 17,467,774 | 12,155,974<br>70% | 5,311,800<br>30% |
| **Sheep** | 17,129,606 | 14,354,925<br>87% | 2,174,681<br>13% |
| **Goats** | 27,740,153 | 25,250,865<br>91% | 2,489,288<br>9% |
| **Camel** | 2,971,111 | 2,968,670<br>100% | 2,441<br>0% |

Source: Contribution of Livestock to the Kenyan Economy; 2011;IGAD

Despite this, pastoralism is only beginning to be accepted as a valuable economic production system. For many decades governments perceived pastoralists as "backward", economically inefficient and environmentally destructive. This resulted in decades of neglect, marginalisation and chronic under-investment in the livestock sector resulting in limited market integration. Consequently despite the importance of livestock to the national economy, many pastoralists in Kenya are becoming poorer. A livelihood study in 2007 in North-eastern Kenya found a notable increase in poverty with the very poor and poor wealth groups increasing from 45-50% of the population to 50-60% in the preceding five years[8]. Pastoral communities are increasingly locked into a negative spiral of poverty that has destroyed their resilience to drought. A significant number of pastoralists have lost all livestock and abandoned their traditional way of life altogether. Many of these 'drop-out' or destitute pastoralists have settled in existing or new 'urban' settlements in search of alternative livelihoods. Unfortunately, the increase in income-earning opportunities in these settlements has not matched their growing numbers resulting in an increasing dependency on food aid. Consequently droughts, which were an intrinsic part of pastoral livelihoods, are increasingly precipitating a crisis or disaster resulting in repeated humanitarian or emergency responses. Such responses often fail to recognise the underlying factors that have increased the vulnerability of pastoral communities, these include:

- **Land fragmentation:** pastoral mobility is increasingly restrained as land is converted for agriculture or ranching, is invaded by non-local plants, is enclosed for individual use, or removed to become a protected area[9]. Poor land use planning means dry season grazing areas and water points are no longer accessible to pastoral herders
- **Population increase:** Populations in the ASAL areas of Kenya have increased dramatically in the last two decades. For example the population of North Eastern Province increase six fold between 1989 and 2009 from 371,000 to 2.3 million. Clearly it will be difficult for this delicate eco-system to support such numbers by pastoralism alone.

[6] Global Review of the Economics of Pastoralism, Davis and Hatfield, 2006

[7] The Contribution of Livestock to the Kenyan Economy; R.Behnke and D. Muthami; IGAD LPI Working Paper No.03-11; 2011

[8] Vulnerability and Dependency in 4 Livelihood Zones in North Eastern Province, Kenya; Save the Children UK (2007)

[9] The causes, processes and impacts of land fragmentation in the rangelands of Ethiopia, Kenya and Uganda; F. Flintan; REGLAP; (2011)

- **Low literacy and education provision:** Rates of retention, survival and completion in Northern Kenya are way below the rest of the country. The dropout rate at primary level in 2007 in the north was nearly twice the national average: 6.6% as against 3.5%. Only 42.3% of students in the north completed their primary school cycle in 2007, compared with 81% nationally[10]. Northern Kenya also has the lowest ratios of trained teachers to pupils, lowest performance in the national examinations, and lowest rates of transition to university.
- **Poor infrastructure:** ASAL areas have the lowest proportion of tarmac or quality roads in the Kenya, only one town (Isiolo) is connected to the national grid and telecommunication coverage is significantly lower than other parts of the country. Water and sanitation infrastructure is poor with 43% of people in arid districts taking over one hour to fetch water[11].
- **Weak market integration:** Poor infrastructure leads to inflated prices for food and other basic commodities as a result of high transportation costs[12]. Similarly there has been very limited investment in the area's highest value industry – livestock. Animals are often raised far from functional livestock markets and passes through multiple middle men before final sale at central livestock markets. Consequently remote producers rarely realise best value. Poor infrastructure also undermines an effective supply chain for highly perishable livestock products such as milk and meat.

[10] Sara Ruto, 2009: 'Education on the Margins', unpublished background study for UNESCO

[11] Arid Lands Resources Management Project (ALRMP) Phase II Baseline survey 2006

[12] In recent years maize price inflation has hit ASAL regions particularly hard with prices 70 - 130% above five year averages: Republic of Kenya 2011 Long Rains Food Security Assessment: KFSSG

## 3 COST COMPARISON OF DROUGHT RESPONSE IN KENYA

The main Resilience Report provides a fuller list of typical drought response interventions in various sectors. This section sets out the indicative, differing costs of implementing key interventions in the three categories. National costs have been identified from a range of macro-level plans and documents. However the respective costs of three approaches can be best modelled over time at the meso (District) or micro (project) level where more specific cost data exists.

### 3.1 National level

***What is the cost of humanitarian response?***

There is a direct financial cost associated with responding to each drought episode. In addition each drought inflicts a range of financial, social and other losses on the Kenya population and economy.

**Table 2: Droughts in Kenya in the last Decade**

| Major drought events | GoK and International Humanitarian Aid Received (US$)* | Number People Affected** |
|---|---|---|
| 2011 | 427.4m | 3.75m |
| 2009 | 423m | 3.79m |
| 2006 | 197m | 2.97m |
| 2003/2004 | 219.1m | 2.23m |
| 1998-2001 | 287.5m | 2.36m |

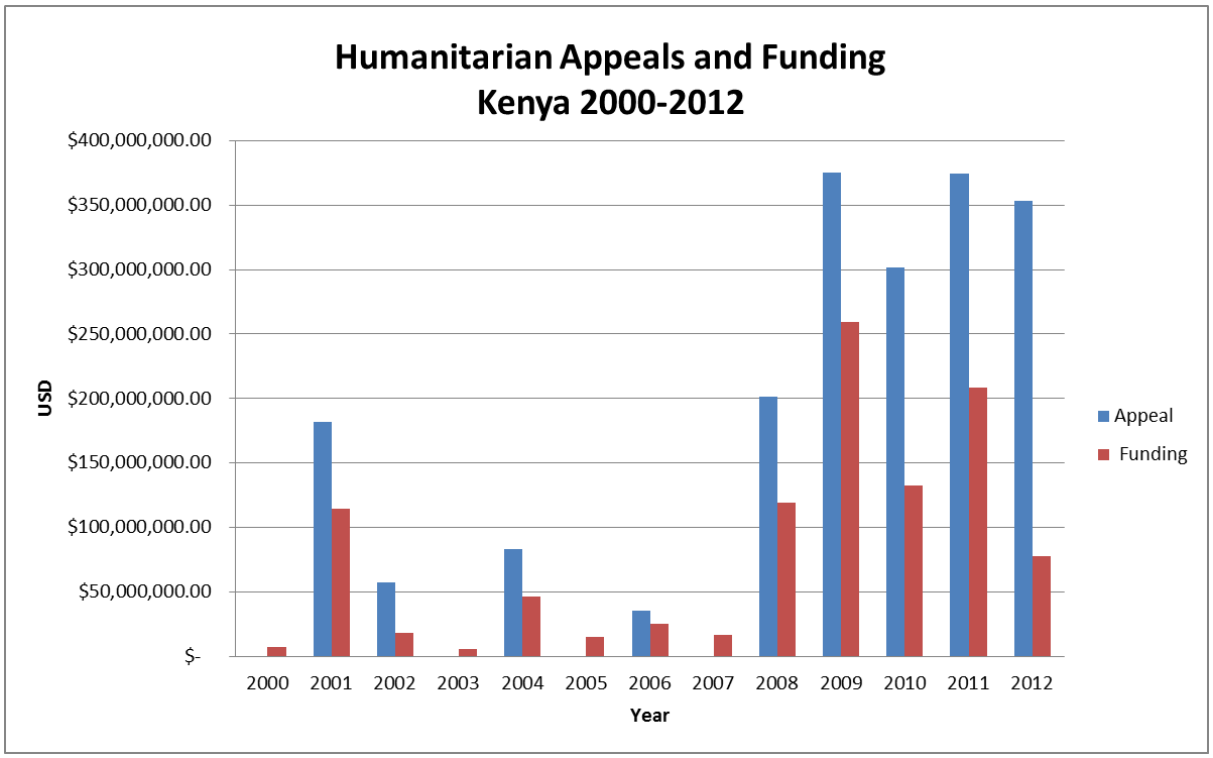
*UNOCHA financial tracking service and GoK figures

** Kenya Food Security Steering Group (GoK)

Over the last decade the amount of international humanitarian aid to Kenya has been tracked annually by UNOCHA[13] who manage the consolidated appeal process (CAP). Figure 4 below shows the amounts of humanitarian aid both appealed for (in years where an appeal was launched) and received annually from 2001. The figures shown represent drought related responses only. Consequently they exclude assistance for Somali and Sudanese refugees in Kenya (particularly the major camps in Dadaab and Kakuma) and explicit assistance to non-ASAL areas following the Post-Election Violence in 2008/9. OCHA does classify some humanitarian funding for drought as 'early recovery' however this figure is proportionately small and when projects are examined activities still very emergency focused.

[13] United Nations Office for the Co-ordination of Humanitarian Affairs

**Figure 4: Humanitarian Appeals and Funding**




Source: UN OCHA Financial Tracking Service data

UNOCHA data is a relatively comprehensive assessment of the direct international humanitarian response however clearly the Government of Kenya is also significant. OCHA has estimated that GoK allocated Ksh18billion (US$219m) to drought response in 2011. Between 1999 and 2010 the Kenyan Government spent an average of USD 173.2 million each year on food and non-food emergency operations[14]. In addition the World Bank and other donors channelled over US$125m assistance via the Arid Lands Resource Management Project (ALRMP). This latter expenditure has been classed as 'Early Response' for the purposes of this study and is outlined below.

**Table 3: GoK and Other donors Emergency Assistance in the Last Decade[15]**

| Source of Assistance | 2011 | 2000 - 2010 | Total |
|---|---|---|---|
| External Humanitarian funding | $248m | $760m | $1,008m |
| Government of Kenya Humanitarian expenditure | $219m | $1,732m | $1,950m |
| | **$467m** | **$2,492m** | **$2,959** |

**The Wider Costs of Drought Emergencies on Kenya**

The regular and periodic droughts (and floods) experienced in Kenya clearly have major socio-economic impacts and reduce economic growth. The first attempt to systematically quantify the economic impact of drought was done earlier this year when the Government of Kenya completed a Post Disaster Needs Assessment (PDNA)[16] for the extended 2008-2011 drought period. This estimated the total damage and losses to the Kenyan economy over this period was a staggering

[14] Republic of Kenya, 2010: *Kenya National Drought Management Authority, Proposal*, November 2010.
[15] Excludes budgeted ALRMP expenditure – *Source: OCHA and Ministry of Northern Kenya*
[16] Kenya Post-Disaster Needs Assessment (PDNA) for the 2008-2011 Drought; Government of Kenya with technical support from the European Union, United Nations and World Bank; April 2012

Ksh968.6 billion (US$12.1 billion). Table 4 below summarises the impact in each sector. As would be expected the livestock sector accounts for 72% of damage and losses.

The economic costs of drought affect the whole economy. The 1998-2000 drought was estimated to have economic costs of $2.8 billion from the loss of crops and livestock, forest fires, damage to fisheries, reduced hydro-power generation, reduced industrial production and reduced water supply[17].

The recent PDNA[18] suggests the economic costs are much larger than was previously thought (see Table 4 below). The regularity of drought events and the subsequent recovery period mean Kenya is set to incur large economic costs and reduced long-term growth every 3-4 years. The Stockholm Environment Institute's study on Kenya estimated that existing climate related shocks cost the country as much as $0.5 billion per year, equivalent to around 2 % of GDP.

**Table 4: Overall Summary of Damages, Losses and Needs by Sector of 2008-2011 Drought**

| Sectors | Impact (US$) | | | Needs (US$) | | | Indicative DRR Needs (US$) |
|---|---|---|---|---|---|---|---|
| | Damage | Losses | Total | Recovery | Reconstruction | Total | |
| Agriculture | | 1,453.83 | 1,453.83 | 60.61 | | 60.61 | 164.9 |
| Livestock | 673.97 | 7721.42 | 8,395.39 | 603.09 | 673.97 | 1,277.06 | 1,021.65 |
| Fisheries | 6.03 | 43.95 | 49.98 | 4.88 | 9.05 | 13.93 | 35.91 |
| Agro-Industry | | 85.95 | 85.95 | | | | |
| Health | | 56.97 | 56.97 | 62.21 | | 62.21 | |
| Nutrition | | 80.42 | 80.42 | 2.7 | | 2.7 | 1.57 |
| Education | 0.5 | 47.27 | 47.77 | 7.08 | 0.67 | 7.75 | 43.12 |
| Energy | | 388.86 | 388.86 | 156.06 | | 156.06 | |
| Water and Sanitation | 92.87 | 965.99 | 1,058.86 | 59.59 | 147.7 | 207.29 | 943.9 |
| Environment Tourism, Forestry, Wildlife | 8.88 | 0.27 | 9.15 | 9.42 | 88.7 | 98.12 | 7.77 |
| **Total** | **783.18** | **10,844.93** | **11,627.18** | **965.64** | **920.09** | **1,885.73** | **2,218.82** |

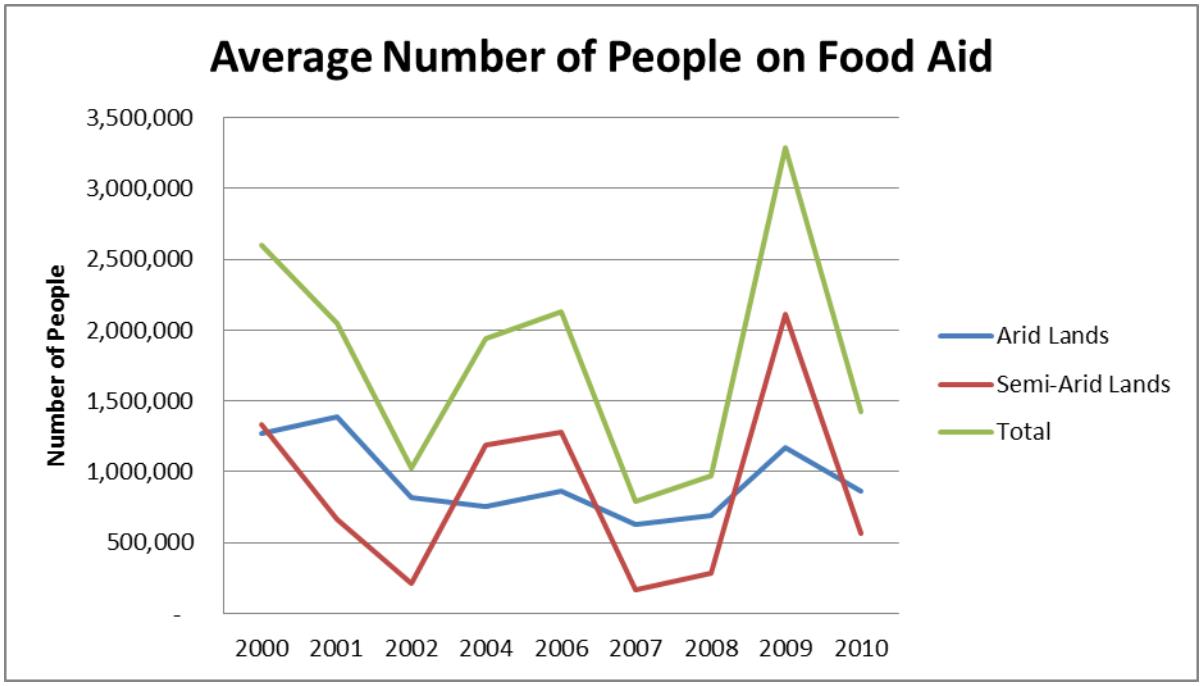
*$1USD= 83.3Kenyan Shillings

The human impact of drought is harder to measure but is reflected, to some extent, by the increasing number of Kenyans dependent on food aid, see Figure 5 below.

It is clear millions are affected by drought on a regular basis with a residual 500,000 – 1 million on food aid even in non-drought years. Given drought frequency is unlikely to decrease it is safe to assume repeated humanitarian appeals and responses will occur every 3-4 years. The Government of Kenya is increasingly being asked to foot significant amounts of the costs of drought response, with a three-fold increase between the 2009 and 2011 droughts alone. The recent PDNA is the first attempt to establish the wider economic impact of drought. This confirms that drought can seriously undermine Kenya's ability to achieve the MDG targets and its own national development strategy - Vision 2030.

[17] Economics of Climate Change – Kenya: Stockholm Environment Institute; 2009
[18] Ibid

Figure 5: Populations assessed as in need of food assistance 2000-2010




Source: Ministry of Northern Kenya

## 3.2 National Level - What is the cost of early response?

Costing early response from a national perspective is not easy as any response clearly incorporates a range of interventions some of which occur earlier than others. Generally national drought responses have rarely been described as timely and criticisms of late response abound[19] . Often the only clear activities on-going before a drought are national early warning (EW) and food security monitoring and coordination mechanisms.

***Arid Lands Resource Management Project (ALRMP)***

At the national level on-going government support for drought response in Kenya has been the remit of the Arid Lands Resource Management Project (ALRMP). This Government led programme established in 1996 with on-going funding from the World Bank (and other donors). The total program budget for phase II (2003-2010) was USS 142.85 million with contributions from the IDA (US$ 120 million), Government of Kenya (USS 17.8 million), and communities (US$ 5.05 million). The project has been instrumental in leading drought management activities in the ASAL areas. Key activities supported via the ALRMP include:

- Early Warning data collection systems and monthly bulletins.
- Staffing of Drought Management Offices in each District.
- The completion of twice annual short and long rain assessments (SRA/LRAs) that inform the allocation of humanitarian funding by government and other actors.
- Support to District Steering Groups (DSGs) to co-ordinate drought response, develop and implement drought management and contingency plans.

[19] A Dangerous Delay: Joint Agency Briefing Paper; Save the Children and Oxfam (Jan 2012)

Unfortunately donor funding to the ASALs was significantly reduced when the ALRMP closed down at the end of 2010. In the last year the Government has launched a new National Drought Management Authority (NDMA) which is being scaled up to take over many of the responsibilities of the ALRMP. The wide range of interventions included in ALRMP District Drought Management Plans can be categorised along the spectrum of relief to resilience. For the purposes of this study they have been categorised as early response. The Assessment of Drought Response to the 2008/09 Drought[20] found that drought interventions funded by ALRMP accounted for 83% of interventions in the six districts surveyed. It found that all interventions started later than was ideal in the drought cycle, those funded via the ALRMP started an average of three months earlier than those funded by NGOs. Despite this drought response in Kenya cannot be described as timely and is still heavily reliant on the short and long rains assessment reports. These are only completed following the rains and hence the interventions and resources identified are inherently late. Other reasons cited for the ALRMP's inability to trigger an early response to impending droughts include:

- ALRMP had limited resources to enact the responses recommended in all sectors.
- ALRMP lacked the political clout to ensure the resources required (especially food aid) were allocated at the scale and as quickly as required.
- Early warning bulletins were produced for each district each month and often lacked clarity or credibility.
- The collection and dissemination of findings involved limited community participation.
- Political will – it is easier to get funding approval (both for GoK and donors) when a disaster is visible and results can be clearly demonstrated, as compared with funding resilience, where the result is the disaster that did not happen.
- There is always concern that by funding early donors may end up funding a non-disaster e.g. rains may come.

Consequently although early warning data collection and dissemination mechanisms are an essential component of disaster risk reduction, they must link with wider systems to ensure they trigger response. Without the political will to commit resources well before a disaster, investment in bodies such as the ALRMP is of limited value for money. The re-vamping of the ALRMP in Kenya into the new National Drought Management Authority is a potential opportunity to address this.

## 3.3 National Level - What is the cost of resilience?

Given the wide range of interventions that could be described as resilience, this cost is difficult to assess at the national level. However recently, a couple of national estimates have been developed. These include the following:

- **Post-Disaster Needs Assessment (PDNA)[21]** – in addition to quantifying the damages and losses resulting from the drought the PDNA calculated the disaster risk reduction (DRR) needs of each sector assessed. It recognised it is imperative for Kenya to implement resilience-building measures to reduce vulnerability and the recurrent losses and damages incurred by regular droughts. The total DRR needs have been estimated at Ksh 184.8 billion (US$2.1bn) spread out over 2012 – 2016.
- **Draft Action Plan to End Drought Emergencies in Kenya** – This national draft working paper and action plan builds on the PDNA (above) and the Kenyan Government's commitment to

[20] An Assessment of the Response to the 2008/2009 drought in Kenya; International Livestock Research Institute (ILRI); May 2010
[21] Ibid

the IGAD-led Horn of Africa Drought Management Programme. Its production is being co-ordinated by the Agricultural Sector Co-ordination Unit (ASCU) and provides a 10 year estimate of investment required to end drought emergencies in Kenya. It provides a relatively similar total to the PDNA estimate. It has five interconnected elements summarised in Table 5 below. More detailed budgets have been developed for the first three years for priority interventions as a basis for securing additional funding.

**Table 5: Ending Drought Emergencies in Kenya – Summary Budget for 10 Year Action Plan**

| Element | Indicative Interventions | Estimated Budget (10 years) US$ |
|---|---|---|
| 1. Peace and Security | Strengthen early warning, conflict resolution mechanism and peace infrastructure at all levels. Capacity building of police forces. | 350,000,000 |
| 2. Humanitarian Relief (EHRP for one year only) | Implement EHRP. Promote synergies between early warning and response. Linking relief to development | 741,050,000 |
| 3. Infrastructure | Climate proof infrastructure – roads, multi-purpose dams, irrigation schemes, expanding water supply to ASAL communities, rural electrification | 764,200,000 |
| 4. Building Human Capital | Operationalise National Commission on Nomadic Education, increase participation rates in training and education and access to health facilities | 305,000,000 |
| 5. Sustainable Livelihoods | Effective management of water resources, seed bulking for pasture and forage, irrigated agriculture, value addition and marketing, social protection and assurance, livestock disease control | 38,600,000 |
| 6. Coordination and Institutional Framework | Sector-wide programme co-ordination | 115,900,000 |
| 7. National Drought Contingency (Initial allocation) | Fund to be managed by Drought Management Authority for allocation according to District / County needs and priorities | 55,000,000 |
| **TOTAL** | | **US$2,369,750,000** |

- **Medium Term Investment Plan (MTIP) for Ministry of Northern Kenya and Other Arid Lands (MNKOAL)[22]**

  Published in February 2012, the MTIP for the Ministry of Northern Kenya is a five year plan that details the costs of implementing the Vision 2030 Development Strategy for Northern Kenya and other Arid Lands. It excludes costs already included in the other sector MTIPs but includes additional activities not highlighted by the Vision 2030 document. It also calculates the benefits of the MTIP. These are derived by estimating the contribution that the implemented activities will have on the national gross domestic products (GDP) of different sectors. It is assumed that by the fifth year of the MTIP, the planned investments will be contributing, conservatively, about 30% of the national GDP realized from the relevant sectors. A summary of costs and benefits over the five years (2012-2017) is shown below.

[22] Preparation of Vision 2030 Medium-Term Investment Plan (MTIP) for Northern Kenya and Other Arid Lands; REMPAI – Resource Management and Policy Analysis Institute; February 2012

**Table 6: Estimated 5 years Costs of Implementing Mid-Term Implementation Plan of Ministry of Northern Kenya (US$ million)**

| | Year | | | | |
|---|---|---|---|---|---|
| | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Benefits of implementing the MTIP (US$ Million)** | 597 | 919 | 1,304 | 2,567 | 3,256 |
| **Cost of implementing the MTIP (US$ Million)** | 975 | 1,031 | 1,041 | 1,068 | 994 |
| **Net Benefits (US$ Million)** | -378 | -112 | 263 | 1,499 | 2,262 |
| **Net Present Value (NPV) US$ million** | $1,742m | | | | |
| **Internal Rate of Return** | 0.94 | | | | |

### Other National Plans

Kenya has a plethora of national, sectoral and ministerial development plans. The primary national plan is Kenya Vision 2030 which forms the long-term development blue print for the country. The vision is to transform Kenya into 'a newly industrialising, middle-income country providing a high quality of life to all its citizens'. Agricultural development is seen as the priority sector that will drive economic development. The Ministry of Northern Kenya and other Arid Lands has developed a supplementary Vision 2030 for the ASALs, which focuses explicitly on the specific needs of ASAL areas and the need to build resilience to drought. The budget for the strategies and plans outlined in this ASAL Vision document is discussed below. Other relevant national plans and policies include:

- National Disaster Management Policy (limited financial information included)
- Agricultural Sector Development Strategy (2010-20)
- Comprehensive African Agricultural Development Plan (CAADAP) for Kenya
- Nomadic Education Policy (2010)
- Strategic Investment Plan for the Water and Sanitation Sector in Kenya (2009)
- Child Survival and Development Strategy (2008 – 2015)
- National Nutrition Action Plan (2011)

In most of these documents the resilience building needs of the ASALs are included implicitly but rarely costed. General plans to improve agriculture and water make little separate or specific reference to the additional costs or challenges faced by the ASALs and their vulnerability to drought. The current political division of Kenya into some very large and heterogeneous provinces means the statistics and needs of the ASAL areas do not emerge very clearly in many national policies and plans. Only North Eastern Province is wholly arid. The stark differences in social indicators for this province are clear but it is also the least populated province. When national budgets are being developed there is a strong tendency to allocate funds to districts on the basis of population. Although there has been some effort to prioritise CDF and LATF[23] budgets to the poorest areas (which includes arid districts) these additional funds are actually very small when compared with Government's annual revenue spending in a less vulnerable location. For example Turkana District (population 855,399) has received Ksh 813m (US$9m) from the CDF in total since 2003. This barely

[23] CDF – Constituency Development Funds; LATF – Local Authority Transfer Fund; both funds allocated to local authorities to address locally identified gaps, increasingly allocated on the basis of poverty levels.

equates to the education budget for much wealthier Baringo District (population 555,561) for a single year (see Section 4.2 below).

**National Expenditure on Resilience by International Donors**

Despite the high profile of drought emergencies in Kenya, even international donor funding is also inherently skewed towards non-ASAL areas. For example USAID is by far the largest humanitarian donor to Kenya providing over US$231m to the drought crisis in 2011 (the majority of this was for food aid). It can be assumed the majority of this was directed to the ASAL areas (which also includes refugees in Kenyan camps). Although this represented 33% of the total international response it still represents less than 20% of total US funding to Kenya that focuses almost exclusively on the high potential areas. For example USAID spends over US$500m per year on HIV/AIDS in Kenya, which is primarily focused on the non-drought affected high potential areas[24].

A review of bilateral overseas development assistance (ODA) to Kenya in 2009-10[25] shows that humanitarian assistance accounted for approximately 15% of all assistance. The vast majority of this is likely to be focused on the ASALs, however the proportion of this expenditure that can be considered 'resilience-building' rather than humanitarian response is likely to be tiny. Further research is required to assess more clearly where aid to sectors such as economic infrastructure and services, education, health and population, which account for the vast majority of ODA, is actually spent. It seems most likely these funds focus on the high potential and highly populated parts of Kenya, not the sparsely populated drought affected margins.

## 3.4 District and Project Level Cost Comparisons

At a sub-national level it is easier to assess the relative costs of the three response categories, identified by the study, from a sectoral perspective. This section describes typical examples of humanitarian, early response and resilience interventions identified by the study for which reasonable cost data exists. Interventions include both government and non-governmental interventions in key sectors. The first part of this section outlines the relative cost effectiveness of 'humanitarian' responses when compared with 'early response' interventions in the same sector. Where possible the additional costs of associated resilience building interventions are also discussed.

The second part of this section uses the examples to model a cost and impact comparison of a 'humanitarian' (scenario A) versus an 'early response' (scenario B) multi-sectoral response to a drought event in a 'typical' drought prone ASAL district in Kenya.

The third part of this section then goes on to take the relative costs and impacts of the different approaches and model them over time. This time series modelling also enables the inclusion of estimated costs and benefits of resilience building measures (scenario C)– which are primarily multi-year rather than one off interventions.

## 3.5 The Cost of Response – By Sector

### *3.5.1 Food / Cash*

Food aid has consistently formed the back bone of international drought assistance to Kenya. Food aid normally accounts for over half of all humanitarian appeal funding to Kenya. It is consistently the

[24] http://www.usaid.gov/locations/sub-saharan_africa/countries/kenya/kenya_fs.pdf
[25] OECD.org

best funded sector[26]. In 2011 WFP received 84% of the funding required for food aid. The food security outlook for Kenya (Oct 2011)[27] estimated there are 3.75 million food insecure Kenyans and the 2012 Emergency Humanitarian Appeal Plan indicates US$192million is required this year for food aid. Given it is such a major element of national assistance it is worth assessing the current cost versus costs of early response at a meso level.

**Costing the Current Humanitarian Response**

In the last decade food aid has been distributed to nearly 2 million people annually in the ASALS of Kenya. However despite the improvements to EW systems there is an inherent delay between the food aid provided and the situation on the ground. Consequently food aid continues to arrive late and is rarely provided at the levels required to meet estimated food gaps.

The main food aid assessment mechanisms in Kenya are the annual Long and Short Rains Assessments (LRA/SRA) from which the Government of Kenya and WFP derive the beneficiary case load for food aid. These are collaborative and multi-disciplinary assessments undertaken in all ASAL areas. Given they are necessarily carried out at the end of the rainy seasons (August and January) there is clearly a time lag between the collection, analysis and release of findings. This is despite the existence of a range of more timely information sources e.g. monthly FEWSNET and District EW bulletins, satellite imagery on rainfall and vegetation cover etc. During last year's severe drought the 2011 long rains assessment (LRA) report was only made public at end of August which is when WFP started mobilising resources. In September WFP had reached only 10-15% of the caseload, and from that point on, WFP's distributions lagged behind[28]. By the time food aid supplies were secured for the full case load the short rains had arrived and the saturated road network had become impassable.

For the last decade the standard food aid ration in Kenya has been supplied at 75% of minimum WHO requirements (which is calculated to provide 2,100 kilo calories per person per day). In addition despite the needs identified by the SRA/LRA process actual allocations to districts generally follows a pro-rated share of resources available. Furthermore pipeline breaks occur frequently such that there are never 12 monthly distributions in any year. A variety of estimates exist for the unit cost of WFP supplied food aid. WFP in Kenya has estimated the current **annual cost of food aid per beneficiary as US$53.93**[29], based on 8.5 distributions to a beneficiary per year.

**Costing an alternative 'early' or planned response:** For the purposes of this Kenya study, early response is considered to mean the following: multi-year predictable and interchangeable food and cash transfers to affected populations. The allocation would be based on needs as assessed by quality livelihoods based EW / FS information monitoring. Using accurate and up to date livelihood data such as Household Economy Analysis (HEA) baseline surveys[30] for all areas, regular analyses would be run to accurately and quickly assess the numbers of households experiencing a food/ income gap. The gap could be assessed for either the survival threshold (i.e. the pure household food gap) or at the livelihoods threshold (i.e. the gap which will prevent the sale or erosion of assets thereby undermining resilience).

[26] In 2012 Food aid accounts for 53% of the appeal for US$359m and in 2011 Food aid accounted for 58% of the US$374m drought appeal for Kenya – UNOCHA EHRP 2012

[27] FEWSNET – Kenya Food Security Outlook - www.fews.net/docs/Publications/Kenya_OL_2011_10_final.pdf

[28] Food Assistance Integrity Study - Analysis of the 2011 drought response in Kenya; Transparency International 2012

[29] This is cheaper than some other estimates but excludes supplementary WFP programmes such as school feeding, food for assets and supplementary feeding programmes.

[30] Summary of HEA methodology attached as annexe.

Such an analysis was done by SCUK in the last drought (2011)[31] whereby HEA baseline data was modelled using the pervading food security information to assess the food / cash gap likely to exist in four livelihoods zones in North East Province. The outcomes are summarised on Table 7 overleaf. The population assessed were spread over food economy zones straddling three counties. The food deficits were assessed for a period of six months (April – Sept 2011) and food gaps were translated into cash amounts using the current local rate of maize purchase. The analysis would have to be redone to assess the gap for the following six months as food security variables changed. Consequently it is difficult to use this example to compare food and cash costs calculated on this basis with actual food aid costs as outlined above on a district by district basis. If the costs per beneficiary are doubled to crudely reflect a 12 month period they are actually almost exactly the same at **$54.83** as the current WFP food relief cost per person. The added benefit being the timeliness of the transfer prevents asset erosion and the size of payment is modified to reflect the differing need of various local livelihoods and wealth groups.

Is such an approach feasible in Kenya? Currently DFID is supporting the Ministry of Northern Kenya to implement the second phase of the Hunger Safety Net Programme (HSNP) which has been providing regular cash transfers of Ksh2,100 (approx. $25) to 60,000 households in northern Kenya every six weeks for the last 3-4 years. In the second phase it is proposed that the number of households accessing cash transfers will increase significantly[32]. In addition the value of the transfer is predicted to increase. Table 8 overleaf estimates the annual cost of HSNP phase two based on current projected plans. This indicates such programmes would be less expensive per beneficiary (US$45) than the current estimated cost of food aid and the figure assessed using HEA modelling. However the coverage levels proposed are much higher (>80% of the population) than those normally allocated food aid (approximately 15-30%) resulting in a greater absolute cost. Clearly the objectives of the HSNP are somewhat different, and wider[33], than those of emergency food aid. However, as the name would suggest, reducing hunger is a key objective. It should also be noted that currently HSNP payments are not being proposed as an alternative to food aid but in addition. Consequently if food aid and HSNP were to run concurrently the estimated costs per head for each intervention would need to be added together. Given the scale of coverage proposed in phase II this would represent almost complete duplication.

The initial registration of the proposed HSNP households in northern Kenya will begin shortly. Each household will be issued with an electronic 'smart card / e-voucher'. It would clearly be practical and efficient if WFP's PRRO food assistance pipeline could be distributed using the same card (and also using private distribution agents and traders in the mode of the HSNP). To increase the cost effectiveness of both interventions however there would need to be a full review of food aid assessment and targeting criteria as part of the Government's emerging Social Protection policy. Improving the timeliness and quality of EW data and full up-to-date HEA baselines are also key considerations. This would enable survival/ livelihood gaps to be filled interchangeably (and cost effectively) by food or cash as market conditions and resources dictate.

[31] Seasonal HEA Outcome Analysis for Northern Kenya: July 2011: Save the Children UK

[32] Currently it is proposed that % households receiving cash in the four most drought affected arid districts will be equal to proportion assessed as living under the absolute poverty line in the Government of Kenya's Integrated Household Budget Survey, subject to funding availability.

[33] Although these are yet to be clearly articulated

## Table 7: Survival and Livelihood Protection Deficits assessed for four Food Economy Zones in North East Kenya during 2011 Drought

| | SURVIVAL DEFICIT | | | L/HOODS PROTECTION DEFICIT | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | **# Beneficiaries with Food aid survival gap** | **Either Food MT** | **OR Cash US$** | **# Beneficiaries with L/hood protection deficit** | **Either MT** | **OR Cash** | **# Beneficiaries with both** | **Either MT** | **OR Cash** |
| **Wajir** | 162,613 | 8,421 | 4,381,214 | 166,700 | 3,254 | 1,570,710 | 166,700 | 11,675 | 5,951,924 |
| **Mandera** | 205,093 | 4,795 | 1,677,661 | 446,140 | 18,553 | 6,234,238 | 446,140 | 23,348 | 7,911,898 |
| **Garissa** | 367,834 | 18,352 | 9,241,206 | 367,834 | 7,317 | 3,782,123 | 367,834 | 25,670 | 13,023,331 |
| TOTAL | 735,540 | 31,568 | 15,300,081 | 980,674 | 29,124 | 11,587,071 | 980,674 | 60,693 | 26,887,152 |
| **Cost per beneficiary (6 months)** | | | **$ 20.80** | | | **$ 11.82** | | | **$27.42** |
| **Crude Cost per beneficiary (12 months)** | | | **$ 41.60** | | | **$ 23.63** | | | **$54.83** |

## Table 8: Estimated annual costs of HSNP Phase II

| **County** | **Est'd Population** | **% pop in poverty** | **# hhs projected to receive cash** | **Est'd amount of transfer Ksh** | **Est'd amount of transfer US$** | **Frequency** | **Annual Cost Ksh** | **Annual Cost US$** |
|---|---|---|---|---|---|---|---|---|
| **Turkana** | 855,399 | 94.30% | 134,440 | 3,500 | 42.36 | 6.5 times per year | 3,058,514,766 | 37,016,767 |
| **Marsabit** | 291,166 | 83.20% | 40,375 | 3,500 | 42.36 | | 918,531,675 | 11,116,858 |
| **Wajir** | 661,941 | 84.00% | 92,672 | 3,500 | 42.36 | | 2,108,282,085 | 25,516,237 |
| **Mandera** | 1,025,756 | 87.80% | 150,102 | 3,500 | 42.36 | | 3,414,827,204 | 41,329,166 |
| **Total HH receiving cash** | | | **417,589** | | | **Total Annual Cost** | **9,500,155,729** | **114,979,028** |
| | | | | | | **Total Ave Cost per hh** | **22,750** | **$275** |
| | | | | | | **Ave Cost per beneficiary (hh/6)** | **3,792** | **$45** |

***Using Food and Cash Transfers to Build Resilience –*** The extent to which food and cash transfers alone ever truly build resilience, is a topic of heated debate. It can be argued that transfers to individual households can build their resilience if given at the right level i.e. the livelihood threshold which prevents households from eating into assets at times of stress. Conversely it can be argued that protecting assets does not build resilience but merely maintains the status quo and the household will need the same level of assistance in the next crisis. This would mean the household is more resilient in the face of the current crisis because of the transfer but not necessarily resilient to future, repeated crisis without the transfer. Ultimately the test of a good resilience building activity is one which reduces the caseload of beneficiaries in need of food or cash subsidies via any modality.

There are a few examples whereby the process of providing food and / or cash can work to increase resilience. Food for work programmes have been expanding in Kenya recently, particularly through the WFP Food for Assets programme (FFA) whereby communities are provided with food in exchange for their participation in works that strengthen their self-sufficiency and create assets that improve their food security. In arid districts of northern Kenya, these projects focus on rainwater harvesting, micro-irrigation, and soil- and water-conservation. In Turkana 18,000 people receive food in exchange for digging or rehabilitating irrigation channels enabling the expanded production of sorghum. Production, even during last year's drought was substantial. The extent to which such programmes improve household incomes / food security needs further research to quantify benefits so that the long term value of such projects in reducing food aid caseloads can be established.

Another example is the first phase of HSNP whereby transfers were made via bank cards issued to each beneficiary. Equity Bank, the contracted financial distribution agent, therefore established banking agents in all corners of the four highly drought prone and poor districts. This has worked to extend financial services into otherwise extremely poor areas, a key factor supporting private sector development and commercial growth.

A further example is a consortium programme implemented by Save the Children and Oxfam in Wajir and Mandera in association with WFP. In this programme food aid was distributed monthly to up to 79,000 food aid beneficiaries by private sector traders from their shops rather than by NGOs. This has proven to stimulate markets with traders increasing incomes, turnover and trade in remote market locations. In addition, imported pulses in the food ration were substituted for vouchers for local food products (namely milk, meat and fish) purchased from local producers. This worked to provide a guaranteed local market for producers, many of whom were food aid beneficiaries throughout the drought period[34].

### *3.5.2 Water and Sanitation (WASH)*

Water emerges as the priority need for almost all drought affected communities. Although it does not represent the most significant humanitarian response cost, WASH interventions are the most frequent, widespread and regular. Failure to maintain adequate supplies of water to drought affected communities lead to some of the greatest financial and other costs of drought in terms of human and livestock mortality.

[34] Ref Using Food Aid to Stimulate Markets in Pastoral Areas: Internal Evaluation Save the Children UK – draft

**Cost of Humanitarian Interventions**

- *Emergency water trucking* – this is the principal humanitarian intervention requested by communities during drought. The costs comprise fuel, drivers' per diems, repair and maintenance of bowsers; purchase of some water storage facilities for communities etc. The average annual cost of water tankering in five drought affected districts in 2009[35] was estimated to be Ksh14,156,600 per district (approximately US$172,600). Establishing an average cost per head is extremely difficult because water trucking is so varied in nature. The amount of water provided per person varies enormously and is almost always below the Ministry of Water and Irrigation's recommended 10 litres per person per day. Some tankering prioritises schools and health facilities while sometimes the water is used for animals.
- *Borehole development and Maintenance*: This can include some emergency borehole development (i.e. capital costs). More usually costs include diesel subsidies and spare parts for pumps and generators to ensure existing boreholes continue to operate throughout the drought period.
- *Other water related interventions*: Likely to include distribution of water storage tanks, maintenance and construction of shallow wells and pan construction / de-silting and watershed management interventions.

The recent WESCOORD[36] annual report listed all emergency WASH expenditure provided by GoK and other agencies during the 2011 drought. In total Government of Kenya provided nearly Ksh 1.2 billion (US$14 million) in emergency water assistance which is twice that provided by the international community (US$7.2m). If total emergency WASH expenditure (approximately US$21.2 million) is divided by the total population of the 11 priority drought affected greater districts (total population 4,976,500) this gives a crude annual average cost of US$1.87 per head. Clearly this cost only includes that recorded as emergency response and is divided by the entire population of the drought affected districts although only a small proportion benefited.

**Others costs and benefits of emergency WASH**

When asked about the most useful and effective emergency response, beneficiaries regularly cite water tankering. Clearly it meets communities' most urgent need. All ASAL Districts have some water tankering capacity in terms of bowsers however the funding required to pay for fuel and per diems can take some time to mobilise. Trucking usually starts when the conditions have deteriorated and where boreholes have remained broken for several days / weeks awaiting emergency repairs. The delay in providing sufficient water has a direct impact on nutrition and health as water scarcity undermines good sanitation practices leading to increased incidences of diarrheal diseases. This will impact on child malnutrition and mortality rates. WESCOORD members have agreed that emergency water tankering (i.e. paid for by GoK or agency humanitarian funds) should only be undertaken when human life is at risk. This is not always the case and many of the water tankering projects assessed in the 2009 assessment provided water for livestock. Very often livestock owners buy water for their herds raising the necessary resources from the sale of animals (see livestock section below). Livestock mortality is very often a factor of lack of water for herds.

[35] Ref ILRI 2009 study

[36] WESCOORD (Water and Environmental Sanitation Coordination) is a sectoral specialist group under the Kenya Food Security Steering Group (KFSSG) led by the Ministry of Water and Irrigation (MOWI) and co-chaired by UNICEF.

Quantifying the millions spent privately by families and pastoral producers on private water tankering to ensure their own and their herds survival is difficult. However the livestock field team for the recent Post Disaster Needs Assessment estimated the higher costs of production incurred by livestock owners in 2011 in having to tanker water in Isiolo District alone was Ksh 83 million (US$ 1 million).

**Cost of Early Response / Resilience Interventions**

Given water is a perennial issue in ASAL areas, it regularly emerges as the primary concern when communities are facilitated to undertake risk and vulnerability assessments[37]. Consequently many NGOs have supported communities to develop appropriate, sustainable water sources, and build their capacity to manage and maintain them even through severe drought episodes. Sustainable management of water resources by local water user associations (WUAs) or groups is a key factor of successful community based disaster risk reduction programming (CMDRR). Well-functioning WUAs will have appropriate contingency plans and budgets in place to respond to the stress placed on water resources when drought hits. It is important to note that not all communities require emergency water tankering during drought periods. The majority of locations in the ASALs cope. These communities will usually have strategic water reserves in place e.g. dry season boreholes or reserve tanks. If they do resort to water tankering it is self-financed and part of their drought contingency strategy. What all agencies supporting community water schemes stress is that establishing an effective WUA takes time and requires on-going support. It is considered impossible to establish a sustainable water user association within the timeframe of a humanitarian grant (12-18 months maximum).

Ensuring drought prone communities in ASALs are enabled to access water at all times without external emergency assistance cannot really be an 'early response' but a long term resilience intervention. Consequently, in attempting to estimate the costs of this approach both hard and soft costs have been included. Estimating the costs of creating resilient water supplies for communities or districts is difficult because the investment required to provide year round access to water will vary widely depending on the specific hydrological conditions. Estimated costs for the provision of typical water supply options are listed below based on UNICEF Kenya's internal standard cost sheet.

**Table 9: Estimated Capital Costs of Indicative Water Supply Options** [38]

| | Type of Scheme | Cost KES | Cost US$ |
|---|---|---|---|
| 1 | Supply for borehole 80-100m, 50m3 masonry tank, 3 water points and extension to school and health facility | 7,704,386 | 93,273 |
| 2 | Supply for borehole 100-160m, 100m3 masonry tank, 3 water points and extension to school and health facility | 8,382,899 | 101,488 |
| 3 | Supply for borehole 250m, 100m3 masonry tank, 3 water points and extension to school and health facility | 9,259,899 | 112,105 |
| 4 | Shallow well with hand pump (ave 20m deep) | 366,337 | 4,435 |
| 5 | Creation of water pan / rock catchment area | 7,645,408 | 92,559 |
| 6 | Construction of sub-surface dams (each) | 480,000 | 5,811 |

[37] Explain bit about CMDRR/NRM etc ref REGLAP docs

[38] Costs for the North West and Rift Valley Water Service Boards were used as they most closely reflect the ASAL environment.

At a community level it can be assumed that the development of a sustainable water system would require the construction of at least one or a combination of several of the above structures (and potentially other solutions). In addition to the construction costs funding is also required to work with communities before and after the construction to identify the best water supply solution, sensitise communities and undertake hygiene promotion; and establish, train and support water management committees to ensure sustainable operation and maintenance. All agencies supporting community managed water projects stress the importance of ensuring these soft costs are provided for several years after construction. However establishing what these costs are (or should be) is extremely difficult. Often the on-going support costs are part of multi-faceted community development or livelihood programmes with successive funding streams over many years. In discussions with NGOs[39] engaged in long term community water programmes it was considered reasonable to cost such projects over 10 years to ensure 'resilience'.

Since water forms the foundation of all other community based DRR programming, this expenditure should also facilitate and support communities to undertake a range of complementary (and often low cost) activities. For example; the development of drought contingency plans, peace-building committees and other governance structures, livelihood diversification or credit and savings initiatives. With a sustainable water supply a whole range of wider community initiatives become possible e.g. irrigation for fodder production and high value crops. Schools and health facilities can also benefit from year round water, improving the utilisation and attendance rates of both. Supporting communities in the processing of planning, securing resources for and managing the implementation of such initiatives can all be incorporated as part of the on-going support costs provided over the 10 year period.

Table 10 below provides an example of a typical community water project providing for the construction of range of water infrastructure based on Table 9 above. Water costs are not particularly dependent upon the size of the community but rather the hydrological situation. In addition costs are estimated for community development and capacity building support over 10 years. It is assumed that these costs should be at least 75% of the capital costs initially reduced by half in year two and again in year six, as capacity building support is phased out. Again this support is not generally a factor of the population served. Consequently the example community water project below could be required for a community of anything from 1,000 – 5,000 people. This would give a per capita cost over the project lifetime of anything from US$84 – 418.

**Table 10 – Example of Community water project costed over 10 years**

| All costs US$ | Year 1 | Years 2-5 | Years 6-10 | Total all years |
|---|---|---|---|---|
| **Capital Cost** [40] | 100,000 | | | 100,000 |
| **Operational, management support costs** | 75,000 | 37,500 | 18,750 | 318,750 |
| | | | **Total US$** | 418,750 |
| | | | **Potential range in cost per head per year** | US$8.40 - $41.80 |

### The Wider Costs and Benefits of Community Managed WASH programmes

So are community managed water schemes a more cost effective approach? Some may argue that well managed and sustainable community water schemes function on a cost recovery basis and therefore should be generating sufficient income to cover operational costs long before 10 years.

[39] Consultations were undertaken with Cordaid, CARE, Aldef, Oxfam, World Vision, FH

[40] Cost allocation is an estimated average based on some combination of water supply options in Table 9 above.

However establishing such operations in remote locations with low literacy levels often takes longer than elsewhere, management committees need to be stronger than a few core individuals. Ideally the committees or associations need to be generating sufficient income to employ staff and not be dependent on volunteers. They will also need support to get through their first couple of droughts when they may not have established sufficient reserves to manage repairs or the upsurge in demand. Anecdotally there is wide support for community managed and supported risk reduction programmes. Unfortunately there is limited cost data to undertake a more rigorous cost analysis. In addition the long term success of communities generating increased income and other non-financial benefits are not documented. It is certainly an area worthy of further research[41].

The other key benefit of communities having sustainable water supplies is the improvement in the health status of the entire community. Diarrheal diseases are a major cause of morbidity in the wider community and one of the top three causes of child mortality rates. The chronically high malnutrition levels in these areas are directly linked to poor water and sanitation practices[42]. This has knock on effects in adult productivity and school attendance rates.

An alternative approach is to support the privatisation of local water provision (as it regularly the case in neighbouring Somalia). The best water management organisations operate like businesses. In ASAL areas however initial external support or incentive may be required as such ventures may not be profitable without charging rates that will exclude the poorest and most vulnerable. The feasibility and equity of privatisation should be considered in certain locations. Private businesses have a vested interest in ensuring their income stream continues (and actually expands) during drought.

### *3.5.3 Livestock Interventions*

Livestock production remains the most important livelihood activity in the ASAL areas, despite the decline in numbers relying on it as a primary source of income. Early response in this sector can play a critical part in reducing a community's vulnerability to drought.

**Cost of Humanitarian Response**

Typical livestock interventions in addition to water (outlined above) that take place during a drought include the following:

- *Slaughter de-stocking* – this is a common response when livestock body conditions are rapidly deteriorating. Animals, already in poor condition, are bought by agencies (including the Government) for a fixed price. The animals are then slaughtered and any resultant fresh meat distributed among needy families. The aim is to provide pastoralists with a last chance to convert their animals into cash that can be used to support coping during the drought period. The two last drought assessments[43] reports documented the costs of over 20 de-stocking programmes with an estimated 9,857 TLU[44] and 15,873 TLU purchased respectively. Average payment per animal was 1,029 Ksh in the 2000/1 drought and 1,160 Ksh in the 2009 drought. These represent cash injections to local communities of approximately Ksh 40-62 million (US$ 490,000- 750,000) in each drought event. These figures solely represent the cost of animal purchase and do not include administration or management costs.
- *Animal health* – The main activities in this category include vaccination, control of parasites, provision of drugs and associated trainings. The costs of these programmes vary widely as

[41] Cordaid is completing an evaluation of the impact of CMDRR programmes in Kenya and Ethiopia and UNDP is establishing a framework for monitoring the impact of CMDRR programmes.
[42] SCUK Causal analysis
[43] Drought, livestock and livelihoods: lessons from the 1999 – 2001 emergency response in the pastoral sector in Kenya: 2002; Y. Aklilu and M. Wekesa
[44] TLU =tropical livestock unit = 1 shoat or 0.1 cattle

the scope, scale and methodology can differ greatly. The 2009 drought response assessment documented 29 animal health interventions in 6 districts. It calculated that these provided support to over 4,000,000 animals in total. The average cost of each intervention was approximately Ksh 206,395 (US$2,500). The variation in cost between projects was extremely high with the cost per animal ranging from Ksh6 to Ksh172. If a crude average of Ksh50 per animal is taken and an average herd is assumed to be 50 shoats this requiring two rounds of vaccinations per year, a very approximate cost per head of US$10 is produced.

- *Animal feeding* – Supply of hay, supplements and some pasture related activities. The costs of 22 emergency livestock feeding projects were documented in the 2009 Drought Assessment report. This found the average cost of each project to be approximately Ksh 929,860 (US$11,257). However the number of animals supported varied dramatically from 1,700 to 48,000. It seems projects that provided supplementary feeds rather than pure fodder, e.g. hay, were able to support most animals. The cost of purchasing fodder / feed for a shoat for three months is approximately Ksh600 (US$7[45]). Consequently feeding an average herd of 50 shoats for three months would cost a household approximately Ksh30,000 (US$350). Although this type of intervention may well reduce livestock mortality for the target households, the extent to which it can be scaled up in pastoral areas is questionable. Even if support were given to enable core breeding stock to survive the costs of scaling up to a district or even wider scale is likely to prove unfeasibly expensive. Sourcing such large amounts of fodder and food supplements in an area where fodder production is poorly developed is difficult and subject to huge inflation during drought. Some of the challenges mentioned in the 2001 and 2009 Drought Assessment reports include the following problems:
    - Fodder prices had increased beyond budget estimates by the time funding was approved resulting in less fodder purchased than planned.
    - Rains arrived before fodder therefore it was unnecessary.
    - Fodder supplied was insufficient to feed the targeted animals to the end of the dry season.
    - Problems in securing feed supplements of the quality and quantity required.
    - Indiscriminate distribution of fodder resulting in a failure to target core breeding animals.

**Costs of Early Response**

The timing of livestock interventions is probably more critical than in any other sector as the impact of timely livestock responses can be spectacularly different.

- *Animal Health* – precisely the same interventions are proposed however vaccination campaigns undertaken before the drought has affected animals' body condition is far more effective than vaccination during a drought. Weak animals are far more susceptible to livestock diseases and the vaccinations themselves can harm animals if they are in poor body condition. It is suggested that late vaccination campaigns are virtually completely ineffective. Interventions that could be undertaken to improve the effectiveness of animal health programmes are outlined under resilience below. Vaccination campaigns are relatively cheap interventions. The 35 interventions costed in the 2009 drought assessment represented an average cost of US$12,000 and there were approximately six health interventions in each of the six districts sampled. This equates to an average cost per district of US$72,000.

[45] Based on Aklilu and Wekesa's 2003 estimate adjusted for inflation

- *Commercial de-stocking* – This differs from slaughter de-stocking in that the animals are sold to private sector buyers, ideally in good or reasonable condition before the drought affects animal quality and hence price. The role of the implementing agency therefore is to bring pastoral producers (sellers) and commercial livestock traders (buyers) together at a point in the drought cycle where body condition has not overly declined. This can be facilitated in a number of ways by supporting agencies. Examples include transport subsidies to enable sellers to truck animals to livestock markets; and organising ad hoc livestock fairs or markets and bringing commercial buyers to dry season grazing areas. The cost effectiveness of such projects depends on the level of livestock sales generated. Two examples from the 2000 drought are given below:

**Table 11: Comparative cost of commercial de-stocking schemes**

| Project | Cost of Project (US$) | # Animals Sold (all types) | Average cost per animal sold |
|---|---|---|---|
| NORDA Mandera | 26,388 | 21,940 | US$1.20 |
| VSF-B Turkana | 43,812 | 4,759 | US$9.20 |
| | | **Average** | **US$2.63** |

- *Peace building/ herd mobility* – These include activities that reduce/ prevent conflict that will, primarily, avoid loss of life but will also hugely benefit livestock survival by improving herd mobility. Mobile grazing over large distances is the most effective coping strategy pastoralists have in the face of drought. Funding is provided for transport, accommodation and per diems for community representatives to meet; often with a local organisation as a broker or facilitator, to agree communities' access to contested grazing areas and water sources. This intervention has been put under 'early response' as ensuring the systems and mechanisms required for successful and speedy agreements are best put in place before the drought hits. Such mechanisms may include; establishment of peace building committees; identification of appropriate representatives and negotiators; pre-agreed water and grazing agreements etc. The 2009 Assessment report estimated the average cost of a total of 88 peace building activities as Ksh 151,333 (US$1,830). This is a relatively low cost, however value for money is often directly related to timeliness. One intervention on the Ugandan border resulted in enabling the migration of 136,000 animals. However by the time negotiations were complete and the animals reached the pasture a large number had died on the way. Conversely, in the 2011 drought, there was a huge influx of livestock into Merti District from surrounding tribal areas. Cordaid's[46] long term local partner organisation was able to use its drought contingency fund to facilitate four community meetings costing Ksh240,000 (US$2,900) to negotiate access to water and grazing for an estimated 157,000 animals (worth an estimated US$18,000,000). In either case the cost per animal saved is tiny. Assuming an average household herd comprises 50 shoats the cost of each peace building intervention is still less than US$1 per household.

**Longer Term Livestock interventions that build resilience**

To establish a drought resilient livestock industry the most effective interventions described above need to move from one-off 'humanitarian' interventions to on-going activities or services. Specific interventions include:

- *Comprehensive coverage of animal health services* – this would entail addressing the enormous disparity in animal health service provision between the ASALs and the high

[46] Cordaid Partners Combined Contingency Plan 2011 Final Report; Cordaid, Nairobi

potential areas. District Vet Offices (DVOs) are woefully under-resourced given the size of the areas they cover and the disproportionately high livestock population. In most countries animal health care is provided by the private sector with governments playing a regulatory role. There are several factors affecting the development of a strong private veterinarian health system in the ASAL areas of Kenya:

- Profit margins are low on extensive services such as vaccination and de-worming which are regularly undermined by the provision of large amounts of free vaccines and drugs (often as part of emergency campaigns).
- It is hard to attract well qualified vets and even vet technicians to the very remote areas where they are needed. Currently North Eastern Province has one practising private vet in Wajir despite a county livestock population of over 4 million.
- There are no veterinary training facilities in the ASALs. The majority of vet services are offered via Community Animal Health Workers (CAHWs) who are generally trained on an informal and ad hoc basis by NGOs / FAO. They are also not recognised formally by the government who worry they will undermine the quality of animal health care. However veterinarian training facilities are not included in any of the current national development plans for the ASALs. There are several references to the construction of vocational / technical training centres which are likely to be of a comparable cost.
- The Government of Kenya does not contract out vet services to private / NGO partners in the ASAL districts despite its own lack of capacity.

It is hard to quantify the cost of addressing these factors. The NGO FARM-Africa has recently (2011) established a for-profit social enterprise called Sidai Africa Ltd. With funding from the Bill & Melinda Gates Foundation the company is setting up a network of branded franchises across Kenya, called Sidai Livestock Service Centres. Each franchise is owned, managed or staffed by a qualified veterinarian or livestock technician. Sidai purchases inputs for its franchises from reputable suppliers and is able to negotiate better prices on quality products than individual veterinarians would be able to obtain by themselves. Sidai aims to set up at least 150 franchises in the next 3 years.

So far Sidai has set up 15 Livestock Service Centres in ASAL areas as well as other parts of Kenya. Most of them were existing business that joined the network. Many of the centres already have their own network of livestock technicians and community based animal health workers to whom they sell drugs, semen and other products as well as offering them technical advice. In this way the network will penetrate deep into remote rural areas enabling even the poorest farmers to get a quality service. The initiative is planning to scale up to 150 centres in the next 3 years with profits from centres in high potential areas subsidising those in ASAL locations. The individual franchise business plan indicates the start-up costs of each are approximately US$35,000 (initial capital costs and drug stocks) plus a revenue investment of approximately US$2,500 towards running costs for the first year. Start-up costs could be double this if they were to include the purchase of a vehicle to enable the centre to do outreach along grazing routes and water points. After this the enterprise should be profit making so long as humanitarian interventions do not flood the market with free drugs[47]. Other factors that would enhance the success of private sector ventures such as this include: contracts from government to vaccinate livestock; access to sharia-compliant finance where required; and linkages with local complementary businesses

[47] Information provided by Sidai Africa Ltd www.sidai.com

such as fodder producers and supplementary feed suppliers. Sidai estimates that a minimum of 4-5 Livestock Service Centres (including two with outreach capacity i.e. 4WD vehicles) would be sufficient to provide comprehensive vet care coverage to one extensive arid district in Kenya such as Marsabit and Wajir. This would mean an initial investment of approximately US$262,500 per greater district[48].

- *Developing livestock markets* – to fundamentally increase resilience, early commercial de-stocking interventions need to be replaced by a permanent network of well-functioning livestock markets. This has been the focus of several development projects in recent years, although large swathes of the most arid districts still remain over 50-100km from a functioning livestock market. Investment in markets involves both capital hardware investments e.g. market yards, watering points, fodder and livestock storage) and on-going software support such as business training to Livestock Market Managing Committees and Councils, community awareness, access to buyers, finance and insurance opportunities. FH in Marsabit established the Merille livestock market in 2005. It did not function well initially but with on-going support (and critically the expansion of the tarmac road north to Moyale) it has now started to flourish. In 2011 despite the drought it sold over Ksh 68,000,00 (US$824,000) worth of livestock. This is more than all the 2009 slaughter destocking programmes combined. In addition the average price of livestock sold has improved over time, increasing income to each vendor. FH are keen to stress that making a livestock market work, i.e. ensuring the regular attendance of both sellers with quality animals and sufficient buyers to create competition, is not easy. FH are supporting nine markets in total in Marsabit and Moyale and their package of support includes continued investment in community based animal health workers; the establishment, continued training and support of livestock marketing and management associations; water point rehabilitation and training and support to water management committees; and underwriting loan schemes with Equity Bank for market traders. SNV operate a very similar livestock market programme in 21 markets hubs in Samburu and surrounding districts. They focus on establishing and supporting local organisations to provide continued support and training to livestock management committees. Table 12 below provides some comparative data on the FH and SNV's costs to support the livestock market programme and the current annual turnover of the markets supported.


[48] This is the initial start up and running cost of 3 standard Livestock Care Centres (US$37,500 each) and 2 with out reach capacity (US$75,000 each): $112,500 + $150,000 = $262,500

Table 12 – Comparative Costs of Livestock Market Support Programmes

| Organisation | Annual livestock market programme costs | Annual turnover of Livestock Markets supported 2011 | Notes |
|---|---|---|---|
| **FH** | US$1.5m | US$2,252,847 | This includes support to wider livestock, water and livelihood programming and Nairobi staff and overheads. |
| **SNV** | US$5,500 per market supported (x21 market hubs) US$115,500 | US$2,737,370 (Sololo Market only[49]) | This only includes support to local organisations to train and support livestock marketing associations. |

It is difficult to identify the number of households benefiting from each market but it is clear money that passes through the livestock markets goes directly into the local economy and works to stimulate a whole range of related industries. The cost of providing support to livestock markets seems to vary widely with FHI being over 10 times more expensive than the locally supported SNV programme. However even the FH cost (which is clearly at the high end) divided by a catchment population of 100,000 (approximately one third of the population of greater Marsabit) would represent a per capita cost of US$15 per year. Support through cheaper local organizations would therefore be a fraction of this. If the annual income generated by the markets is also divided between each market's catchment populations there is clearly a net income from this type of intervention. The differential between a local and an international agency providing support is clearly worth a more detailed value for money assessment. It should also be noted that the vast majority of markets are operated by the private sector and require no subsidy.

*Livestock insurance schemes* – although these are not yet commercially viable they could become an increasingly viable option as pastoral productivity increases. Once such scheme is being piloted in Kenya and the model is being refined to make it a worthwhile business investment to private insurance companies. Pay outs are based on the Normalized Difference Vegetation Index (NDVI) monitored via satellite. NDVI is an indicator of the level of photosynthetic activity in the vegetation observed in a given location. As livestock in pastoral

**Index Based Livestock Insurance in Kenya – How it Works**

The Gudere family in Kargi purchased 10 tropical livestock units of IBLI insurance for the 2009 long rain/long dry season. At Ksh 12,000 (US$145) per livestock unit, Gudere's herd would be valued at US$1,450 (=145*10). As Kargi is located in Lower Marsabit, Gudere would pay US$47 (which is 3.25% of US$ 1,450) to cover his entire herd for the annual coverage period. Once Gudere has purchased insurance, he will now wait to see if he receives any compensation. At the end of September, we would obtain the 2010 long rain/long dry NDVI data for Laisamis Division which Kargi is in and feed those data into the response function, generating the predicted mortality index. Suppose the predicted mortality rate is 13%. Gudere would not receive any compensation. However, let's imagine that at the next possible payout period, in February 2010, the predicted mortality for Laisamis at that time is 25%. This 25% mortality index is then compared to the contractually stipulated strike point of 15%. In this example, the Gudere family would receive compensation for 10% (=25%-15%) of their covered herd of 10 livestock units. They would thus receive a payment of US$145 (= 10% of US$ 1,450 the insured herd value). All the Gudere's insured neighbors in Laisamis would receive compensation at the same predicted rate of 10% of their insured herds. Those who bought no insurance would receive no indemnity payment.

*Source: Index Based Livestock Insurance for Northern Kenya's Arid and Semi-*

[49] Total turnover based on data for one quarter (Aug – Oct) extrapolated for whole year.

production systems depend almost entirely on available forage for nutrition, NDVI serves as a strong indicator of the likelihood of herd loss. Currently the scheme is only viable with subsidy to a) make it affordable to customers who are unfamiliar and lack trust in the system and b) to attract private sector insurers. The costs of a larger second phase are being worked out. One of the biggest barriers is the transaction costs associated with taking premiums and making payments. Clearly the smart cards proposed for each household under HSNP would provide a cost effective payment approach.

*Roads* – Improving the physical links between livestock producing areas with the main consumer markets and export points (i.e. Nairobi, Mombassa and Kisumu) is critical in supporting market integration. The wider benefits and costs of roads are discussed again below.

**Assessing the Wider Costs and Benefits – Livestock**

Reducing livestock mortality is essential given the sector represents such a high proportion of all damage and losses incurred[50] during drought periods. The livestock mortality experienced in recent droughts has resulted in increasing numbers of pastoral 'drop-outs' i.e. households that can no longer make ends meet from raising livestock alone. These households form the most chronically food insecure group increasingly reliant on food aid and cash safety nets for survival year round. As livestock herds are reduced or eliminated, this in turn affects household milk (and meat) production and consumption. The loss of milk from the pastoral diet during dry periods is thought to be one of the biggest factors affecting the chronically high child malnutrition rates in pastoral areas[51]. If milk production is to be maintained and the livestock industry in the ASALs is to expand and grow, pastoralists not only need to keep animals alive through droughts but maintain good conditions year round. This is essential to provide a regular supply of quality animals to markets as well as milk and meat for local consumption. Private sector demand from markets and indemnity payments provided after a shock, via livestock insurance would both help stem the collapse of vulnerable-but-presently-non-poor households into the ranks of the poor following each drought (or related crisis). Such resilience building interventions may also reverse trends and enable some households to move back into pastoral livelihoods. Table 13 below provides a summary of the costs per head associated with livestock interventions in Kenya under the three scenarios outlined above. The table assumed the average household herd equates to 50 shoats and draws on the cost examples identified above.

[50] The Post Disaster Needs Assessment estimates livestock to account for 72% of the Ksh 968 billion damage and losses incurred during the 2008-2011 drought.

[51] Ref to Milk Matters study

**Table 13: Summary Comparison of Livestock interventions under the Three Scenarios**

| Scenario | Cost US$ per Head | | Rationale / Calculations |
|---|---|---|---|
| | Drought Year | Non-Drought year | |
| **Humanitarian response** | | | |
| Slaughter destocking | US$10 | - | 2 shoats purchased from each household @ Ksh2,000 ($24)each plus 25% agency admin and management = US$60/ 6 persons per household |
| Supplementary feeding | US$30 | - | Assumes ave household herd of 50 shoats. Ksh 600 per animal for three months@ 600 x 25 (half herd) = 15,000 / 6 household members |
| Vet Care | US$10 | US$5 | Assumes cost per animal of Ksh50 x 50 = Ksh 2,500 (US$30) In drought years additional round of vaccinations/ deworming required divided by 6 pax |
| **Total Humanitarian Package cost per person** | **US$50** | **US$5** | |
| **Early Response** | | | |
| Commercial Destocking | US$0.33 | - | Assume household destocks one third of herd early in drought period i.e. US$4[52] x 15 animals divided by 6 pax |
| Vet Care | US$10 | US$5 | Assumes cost per animal of Ksh50 x 50 = Ksh 2,500 (US$30)<br>In drought years additional round of vaccinations/ deworming required |
| Peace building support | US$ 0.16 | US$ 0.16 | Assumes this costs approximately US$1 per household each year / 6 pax |
| **Early response package total cost per person** | **US$ 10.49** | **US$ 5.16** | |
| **Resilience Building** | | | |
| Livestock market support | US$15 | | Annual cost based on FH example in Marsabit |
| Comprehensive vet care via private franchise | US$ 0.52 | | One-off cost of setting up Sidai-type franchises in a typical district($262,500) divided by average population of arid district (497,656) |
| Livestock insurance | US$7.80 | | Cost per household set at US$47 based on boxed example above. Divided by six pax |
| Peace building support | US$ 0.16 | | Assumes this costs approximately US$1 per household each year |
| **Resilience package – total cost per person** | **US$23.48** | | |

### *3.5.4 Other Interventions*

There is an endless array of interventions that can be undertaken in responding to humanitarian crisis and / or to build resilience. An indicative list is given below:

- Expanding / Diversification of Livelihood activities
  - Improved regulation of rangeland grazing rights
  - Soil and water conservation e.g. re-seeding / fodder production

[52] Based on average figure from Aklilu and Wekesa Report (2001) increased by 50% for inflation

- Livelihood diversification – leather goods, bee-keeping, poultry production, aloe / gum resin production, irrigated high value agriculture
- Rejuvenate / capacity build local institutions and committees to manage and supervise the above

- Expand basic and social services
  - Expanded coverage and completion of education
  - Creation of technical / vocational training centres etc
  - Comprehensive veterinarian services (either private or government)
  - Comprehensive human health services (expansion of role and coverage of CHWs, health insurance schemes etc)
  - Comprehensive access to improved water and sanitation services – in urban as well as rural areas
  - Community development support
- Expansion of wider scale infrastructure
  - Roads
  - Energy
  - Water
  - Telecommunications and internet
  - Financial services

It is not within the scope of this study to assess the respective costs or value for money of all the above. It is however worth highlighting the costs of some typical resilience building interventions that are not normally part of humanitarian or early response packages. In modelling costs over time it is important to include some that self-evidently reduce the vulnerability of drought prone populations and hence the caseload of people that will need humanitarian assistance over time. The following indicative interventions have been considered below:

- Livelihood diversification
- Education
- Roads

***Livelihood diversification*** – as the population of ASAL areas increases, greater numbers are becoming sedentary, either through loss of livestock to drought or other factors. Such groups no longer rely wholly or at all on livestock. Consequently there has been an increased focus on interventions that attempt to develop and expand alternative livelihood opportunities. This is valid objective given these groups also comprise some of the most vulnerable and chronically food insecure households. Ultimately successful livelihood diversification projects should provide households or communities with sufficient income to eliminate any need for food or cash in non-drought and drought years. It is appreciated this end state may be achieved only after several years i.e. households may need to stay on food or cash transfers for some time until the income from any new livelihood venture sustainably reaches livelihood protection levels. Examples of livelihood options are shown in table 14 below and split between livestock related and other.

**Table 14: Options for Livelihood diversification / expansion in ASALs**

| Livestock Related | Non-Livestock related |
|---|---|
| Milk trading / processing | Irrigation schemes for agricultural production |
| Meat processing / drying | Drip irrigation for market gardening |
| Hides and skins | Poultry / egg production |
| Leather good | Honey production |
| Fodder production | Gum Arabic and other resins |
| Supplementary feed production | Charcoal production (sustainable) |
| Agro-vet services | Petty trading |
| | Aloe vera production |

Table 15 overleaf gives a summary of livelihood diversification projects identified in the course of this study in the ASALs of Kenya for which cost data was easily available. Clearly this is in no way comprehensive and there is a strong case for establishing a database of such initiatives. This would enable the new Drought Management Authority (DMA) and others to monitor the coverage, scale and crucially the costs and benefits of different programmes. It would also provide valuable cost comparison data if the DMA were to offer grants for such activities from their Drought Contingency Fund.

### Table 15: Example Costs and Benefits of Livelihood Diversification Schemes in ASALs of Kenya

| Project Name | Description | Total Costs | Annual Income | Number of Beneficiaries | Cost of investment per Beneficiary |
|---|---|---|---|---|---|
| Tana River Irrigation scheme (ICRC) | Irrigation of 1,200 acres of land in Garissa District close to the Tana River and distribution of seeds and seedlings for agricultural production to 1,650 individuals | US$235,000 | Each farmer now reporting to earn Ksh 20,000 (US$242) per month | 1,650 direct 9,900 indirect | US$23 |
| Tarbaj Fodder production scheme (Ministry of Livestock Development) | Construction of water pan and sinking of borehole to expand fodder production. Seeds and training to communities in groups of 10 households to produce 4-5 fodder harvests per year. Water yield should be sufficient to expand crop production and double incomes in future years. | US$290,000 | Ksh 1,080,00 per annum initially rising to Ksh 2,160,00 (Ksh 3,600/ US$43 per household) | 600 individuals comprising 5,000 hh members | US$58 |
| Holale vegetable production, Moyale (Cordaid) | Construction of shallow wells and irrigation for high value crops – kale, tomato, spinach, paw-paws, onions for consumption and sale. Each group responsible for on half hectare of land | KSH2.9m (US$35,556) | Ksh 6-10,000 ($74-121) per household per month | 3 groups with 66 members each (nearly 400 individuals) | US$88 |
| Honey production marketing groups – Isiolo (Cordaid) | Training of communities in bee-keeping, back-stopping support by experts and purchase of hives and related accessories and construction of honey market place (one) and collection centers plus assorted equipment. | KSH 18 million (US$217,917) | Ksh 540,000 p.a. (US$6,537) (according to business plan[53]) | 20 groups of 350 households (2,100 people) | US$103 |
| Kainuk Food Security Project –(World Vision) | Comprehensive agricultural and livestock support programme to Kainuk District – irrigation, seeds, agricultural inputs and livestock vet care services | US$3,155,157 | Beneficiary income not monitored but improved crop yields and livestock condition evident | Estimated to target 60% of district pop i.e. 110,000 | US$28 |
| Kenya Dryland farming project – International NGO | Training and input support to introduce sustainable cropping systems for resource poor and food insecure farming families in Kitui and Mwingi districts. | KSH 158m (US$1.84m) | No Data | 7,000 vulnerable households (Indirectly 42,000 people) | US$43 |

[53] Income in first year was zero due to 2011 drought

A number of issues are worth considering based on the examples on the previous page:

- **Scaling up**

  Most projects work at the community level and few have more than 5,000 beneficiaries and many far fewer. To provide similar projects to say, 20% of the population of the arid districts (approximately the proportion that has been on food aid the last 10 years) would necessitate scaling up to reach approximately 800,000 people. Taking the examples overleaf (acknowledging these vary widely and represent a totally random sample) the average cost per head of a livelihood diversification project ranges from anything between US$23 – US$103. If we took a mid-way average of US$60 per head this would require a budget of US$48m to roll out similar programmes throughout the arid counties and probably similar for the semi-arid counties (hence a very rough estimated total of US$96m). The Government's (draft) Ending Drought Emergency Action plan has identified a budget of just over US$20m over three years for livelihood diversification. It should be noted the budget allocated to irrigation (primarily to support expanded and diversified agriculture) is significantly larger at over US$437m.

- **Long term income levels**

  The incomes reported from diversification projects vary widely. In fact it was extremely difficult to identify projects for this study that could readily supply any beneficiary income data. Several agencies admitted they had never done any income monitoring so just do not know. The Tana River example reports a very high income per household. Many others report the income in more general terms or overall so that it is unclear as to the net income for each household. At a recent validation workshop of Cordaid's impact evaluation of CMDRR projects in Kenya and Ethiopia, participants were asked what proportion of projects they supported were functioning sustainably after 5 years[54]. A figure of 30-40% was considered about fair. The success rate of livelihood diversification projects in the ASALs is not well documented but is important to monitor in assessing their value for money. Investing large amounts of 'seed' capital into communities where the long term success rate is less than 50% is unlikely to make financial sense. At the same time if the long term incomes generated are not sufficient to enable a household to move out of chronic food insecurity / poverty the initial investment may not be worthwhile.

- **Support for sustainability**

  There is broad agreement that the successful establishment of community based enterprises in very poor or marginal areas requires a certain level of support. It takes time to build the business and administrative skills of groups where literacy levels and commercial experience are low. Critically such groups often need support in marketing and accessing secure markets for their products. As with community water projects (outlined above) the support may be required indefinitely but most agree that, at a minimum, five years is reasonable. Again data on the cost and duration of this support has been extremely hard to find. The cost and duration of support offered varies depending on whether it was provided by a government department, an INGO or a more local organisation. Again until we can link the cost / duration of support with the long term financial (and other) benefits to a clearer number of beneficiaries, assessing what level of support provides best value for money is impossible.

  If an ASAL-wide database of livelihood projects were created many of these issues could be monitored on a long term basis. Current project evaluation cycles only enable initial results and costs to be monitored which may not be reflective of the longer term benefits or outcomes.

[54] This question referred to wider CMDRR programming that is likely to include water and rangeland management interventions in addition to livelihood diversification

***Education*** –Kenya has made great strides in expanding education levels and enrolment rates since the introduction of free primary education in 2003. However progress in the ASAL districts has been way behind the rest of the country. Primary net enrolment in the arid North Eastern Province in 2009 was 36 per cent, against a national average of 93 per cent. Fewer than 25 per cent of girls who enrol in this province actually complete their primary education whereas elsewhere in Kenya girls' completion rates are now above 75 per cent.

The various factors that affect pastoral populations' access to education are well documented. The ASAL areas are vast and distances between schools are very often too far (and insecure) for young children and girls to travel on a daily basis. Pastoral patterns of mobility do not correspond well with school terms so that children cannot attend year round. With such low secondary completion rates there are few local teachers. It is even harder to recruit and retain teachers from elsewhere to work in such hot and harsh environments. Consequently, even where schools function, quality is poor[55].

There is much evidence to show that education, especially of girls, is a key factor in improving family and child health and nutrition indicators. In addition to its many intrinsic benefits, education is one of the most important livelihood diversification strategies. In 2010 the Government of Kenya published its Nomadic Education Policy Framework. This recognises the specific needs and rights of nomadic communities to all levels of education. The policy provides for innovation and flexibility in the education of pastoralists acknowledging the role and importance of informal schools and alternative approaches. The Ending Drought Emergencies action plan has also prioritised increasing participation in all sectors of education and training in the ASALs. It includes a budget to establish the new National Commission on Nomadic Education in Kenya (NACONEK). The commission will lead and manage the construction of new schools, improvements to existing school infrastructure, support alternative models of education to nomadic families, adult education, the provision of bursaries for secondary education and recruitment of school-leavers into teacher training institutions. The total budget for three years has been set at US$60m. Given the inherent and vast gap in education provision between poorest arid districts in the ASALs and elsewhere in Kenya, this is likely to be woefully inadequate.

A comparison of a random sample of district development plans (2008 -2012)[56] shows that the number of schools, and critically the number of teachers in each district can differ vastly between arid and semi-arid areas. The plans showed that education provision in the semi-arid districts is not too far off the national average whereas in the vast arid districts is it significantly behind. Table 16 overleaf provides a comparison of several arid and semi-arid districts in terms of schools and teachers in each. It shows that even where populations are approximately the same the provision is widely different. For example Baringo District and Mandera West have similar populations however Baringo is approximately a quarter of the size but has 11 times as many schools and a staggering 27 times as many teachers. On average this random sample indicates that semi-arid districts still have an average of six to seven times more schools and teachers than the arid districts. The percentage of population in the districts on food aid over the last ten years is also shown on the same table.

[55] Schools in the arid districts regularly come last in league tables of attainment

[56] Ministry of State for Planning - District Development Plans (2008-2012); Produced in June 2009

Table 16: Difference in Numbers of Schools and Teachers in Sample of Arid and Semi-Arid Districts [57]

| | District Name | Population | Area Km$^2$ | # Primary Schools | # Secon-dary Schools | Total Schools | # Teachers (prim and sec) | # schools per 100km$^2$ | Ave %age of Pop on food aid last 10 years[58] |
|---|---|---|---|---|---|---|---|---|---|
| Arid | Moyale | 53,479 | 9,390 | 5 | 5 | 10 | 330 | 0.1 | 19.2 |
| | Wajir South | 72,218 | 21,424 | 25 | 3 | 28 | 116 | 0.1 | 26.9 |
| | Samburu central | 73,643 | 3,979 | 70 | 4 | 74 | 503 | 1.9 | 26.3 |
| | Isiolo | 77,318 | 15,881 | 51 | 9 | 60 | 470 | 0.4 | 27.3 |
| | East Pokot | 78,495 | 4,524 | 34 | 3 | 37 | 191 | 0.8 | 10.4* |
| | Wajir North | 82,986 | 10,958 | 20 | 3 | 23 | 165 | 0.2 | 26.9 |
| | Mandera West | 110,126 | 8,631 | 29 | 3 | 32 | 131 | 0.4 | 13.5 |
| | Garissa | 137,493 | 5,688 | 68 | 12 | 80 | 391 | 1.4 | 14.8 |
| | Wajir East | 200,195 | 14,471 | 44 | 7 | 51 | 377 | 0.4 | 26.9 |
| | **Average for sample** | **98,439** | **10,550** | **38.4** | **5.4** | **43.9** | **297.1** | **0.6** | - |
| Semi-Arid | Baringo | 119,233 | 2,426 | 332 | 40 | 372 | 3,649 | 15.3 | 10.4* |
| | Narok North | 163,170 | 4,754 | 171 | 16 | 187 | 1,385 | 3.9 | 6.9 |
| | Mbeere | 170,953 | 2,093 | 241 | 35 | 276 | 2,156 | 13.2 | 0.0 |
| | Narok south | 202,576 | 10,333 | 171 | 12 | 183 | 1,195 | 1.8 | 6.9 |
| | Makueni | 216,034 | 1,699 | 257 | 67 | 324 | 2,644 | 19.1 | 17.9 |
| | **Average for sample** | **174,393** | **4,261** | **234.4** | **34** | **268.4** | **2,205.8** | **10.7** | - |
| | **Multiple difference between averages** | | | **6.1** | **6.2** | **6.1** | **7.4** | **17.8** | |

[57] For the purposes of comparability all data is taken from the Government's District Development Plans 2008-2012 (except food aid figures). Consequently population data is based on the 1999 census and is out of date. Also some new school construction has taken place in recent years with CDF funds but not at the scale required.

[58] Figures from KFSSG – figures only available for greater districts/counties and hence do not reflect the differences in sub-districts. For example East Pokot district is in the Baringo Greater District therefore food aid figs are the same although it is likely far higher proportions have been on food aid than in other parts of the greater district.

This gap in provision represents an inherent and natural bias in the provision of public investment in the most underserved areas. Education provision in semi-arid areas is much closer to the national average whereas the arid districts lag way behind. Table 17 below has calculated the crude capital (school construction) and revenue (teachers' salaries) costs of bringing the arid districts in the sample to the same average provision as the semi-arid districts in the sample.

**Table 17: Costs of expanding education in arid districts to average levels in semi-arid districts**

| | **Average population** | **Average # Primary Schools** | **Ave Pop per Primary school** | **Average # Teachers** | **Ave Pop per Teacher** |
|---|---|---|---|---|---|
| Sample of Arid Districts | 98,439 | 38.4 | 2,781 | 297 | 414.8 |
| Sample of Semi-arid districts | 174,939 | 234.4 | 717 | 2,206 | 96.2 |
| **Reducing the Gap** | | | | | |
| Ave arid pop/ average pop per school in semi-arid areas | | 137.3 | Ave arid pop/ ave pop per teacher in semi-arid areas | | 1,023.3 |
| Less current average schools in arid district | | 38.4 | Less current average teachers in arid districts | | 297 |
| **Ave New Primary Schools required per district** | | **98.8** | **Average Additional teachers required per district** | | **726.2** |

***Additional Capital Expenditure required:***

Est'd cost of school construction Ksh33m[59] (US$ 400,000) x 98 =**Ksh3,234m (US$39,152,542)**
Average cost per head = **US$398**

***Additional Annual Revenue Expenditure required:***

Average annual teacher salary – Ksh 192,000[60] (US$2,300) x 726 = **Ksh139m (US$ 1.68m)**
Average annual cost per head = **US$17**

The construction of formal eight grade primary schools may not be the most appropriate solution for such dispersed communities. However given the number of facilities likely to be required to ensure there is some form of basic primary provision throughout such vast districts, there may need to be more smaller schools. In addition district education offices receive an annual allowance to cover supervision, maintenance and supplies of approximately Ksh 1,020 (US$12) per child in school. The provision of running costs on the basis of numbers of children in school, clearly discriminates against counties with large out-of-school populations and large areas to supervise. Again Baringo would gain disproportionately over Mandera.

Recurrent spending on teachers' salaries accounts for approximately 90% of all education sector spending. However the budgets in the Ending Drought Emergencies plan for expanding education provision do not mention teachers' salaries. It can be argued that expanding the number of teachers is equally if not more important than expanding the number of schools. However since the number of teachers' and their salaries is centrally controlled by the national Teachers' Service Commission, districts are not responsible for recruiting their own teachers or even paying them. It is not clear if this responsibility and these resources will be devolved to County level authorities at the next

[59] Based on unit cost for typical 8 class primary school and associated buildings, sanitation facilities etc – set by Ministry of Public Works

[60] Teachers Service Commission: Circular 12/2011 – figure used is slightly higher than average to account for hardship allowance of up to Ksh3,500 paid to some non-local teachers

election. Given the overall shortage of teachers in Kenya and their low pay is such a nationally politically sensitive issue the deficit of teachers in the ASALs receives limited attention.

**Calculating the Benefits of Education**

Clearly the costs of expanding quality education are significant but these need to be set against the benefits. The economic benefits of education are widely acknowledged but quantifying them in financial terms is more difficult.

Research on the education levels of pastoral households in Baringo in 1980 and 1999[61] found that increased household education was becoming a critical component of pastoral risk management strategies during drought. The research was based on interviews with pastoral households in three communities in Baringo in 1980 and again in 1999. At both times the communities were experiencing severe drought but in the intervening period there had been extensive investment in formal education[62] services in the area. Consequently the average number of household members who had completed primary education had risen from 3% to 18% and secondary from 0.3% to 7%. Over the same period the number of households who reported having an "income remitter with a salaried waged position" rose from approximately 9% to 26%. The contribution of livestock as a source of income reduced overall from 76% to 42%. The research also found that that financial and food security benefits were greatest for those household where someone had completed secondary education. Table 18 below shows the differentials:

**Table 18: Economic Impact of Secondary Education on Pastoral Households in Baringo**

| Indicator | Households **with** secondary education | Households **without** secondary education |
|---|---|---|
| % with member in salaried employment | 57% | 2% |
| % receiving assistance from members "living away" | 78% | 30% |
| Total Annual Cash income | Ksh 55,593 | Ksh 26,542 |
| % income derived from animal sales | 21% | 34% |
| % who claim 'good' food availability | 70% | 49% |
| % who use food aid | 23% | 66% |
| % with household members in 'good' health status | 91% | 80% |
| Average number of animals owned | 9.8 cattle, 41 shoats | 6.4 cattle, 30 shoats |
| % of animals lost in the drought | 67% | 65% |
| Annual cash savings | Ksh 5,634 | Ksh 999 |

Source: Little et al; ibid

This research helps quantify the financial benefits of education and demonstrates how it provides communities with an "internal safety net" that is drought resilient. The long term benefit of expanding this internal safety net is the reduction in the populations requiring external safety nets such as food aid or cash. This represents a direct cost saving to the GoK and donors. The wider

[61] Can Formal Education Reduce Risks for Drought-Prone Pastoralist?: A Case Study from Baringo District, Kenya; P. Little, A. Aboud and C. Lenachuru: Human Organisation; Summer 2009

[62] Baringo received disproportionately high investment during this time given it is the home district of the then President Daniel Arap Moi

economic benefits include the additional cash in the economy provided by more productive labour pool and the associated improvements in health and food security.
Another study[63] by ILRI on the Masaai in Kitengela near Nairobi also examined the different livelihood strategies different Masaai households were pursuing in the face of changes in land use patterns, the growth of Nairobi etc. It found that education of the household head was one of the three key determinants affecting overall household income. The other two being herd size and number of diversified activities carried out by the household. It found that each additional year of education of the household head increased net income by 2.8 per cent.

Further studies to assess the correlation between levels of education and household income are certainly required to further reinforce the cost benefit case for substantial increased investment in education for these underserved areas.

- ***Physical Infrastructure - Roads***

Physical infrastructure plays a key role in the growth and development of an economy. It is argued that since infrastructure is good for growth, in can in turn lead to poverty reduction. As in all other sectors, access to infrastructure such as roads, water, communications and electricity is lower in the ASALs than other more densely populated parts of Kenya. This further widens regional disparities. Given the size of most ASAL districts, the costs involved in building and maintaining roads is vast. As a result local funds such as the CDF and LATF[64] are considered too small to provide much help in these areas. Access to infrastructure catalyses growth and reduces poverty in several ways:

- It enables the diversification of household economic activities, which in turn leads to higher household incomes.
- Access to infrastructure facilities improves access to input and output markets, and creates opportunities for non-agricultural income-generating activities in the formal and informal sectors.
- Access to and quality of basic services like health and education are improved, which are essential for human development.
- Improved roads reduce travel times and associated transport costs thereby reducing effective prices of entering and leaving an area. This facilitates inward investment from the private sector outside the area.
- For the ASALs particularly, improved roads facilitate trade in perishable products e.g. milk and meat.
- The construction of roads (and other infrastructure) provides many years of employment in remote areas.
- Improved roads and other services facilitates the mobility of labour and improves the retention of staff from elsewhere to ASAL locations.

A recent World Bank report examined the links between infrastructural investment and changes in household income in Kenya[65]. Based on research between 2004 and 2007 it examined how far infrastructure increased income diversification, the extent to which diversification increased income and which infrastructure investments made most impact. It concluded that overall access to roads

[63] Chapter in Homewood K, Kristjanson P, Chenevix Trench P. 2009. '*Staying Maasai? Livelihoods, Conservation and Development in East African Rangelands*'. Springer Press, New York. Available at: www.springer.com/978-0-387-87491-3

[64] Constituency Development Fund and Local Authority Trust Funds – allocated to districts for locally prioritised (mostly) capital projects

[65] A Bumpy Ride to Prosperity – Infrastructure for Shared Growth: World Bank – Poverty Reduction and Economic Management Unit Africa Region; August 2011

with motor access were particularly important for economic growth and play an important role in enhancing the income potential of the rural poor. Specifically it found that expanding roads and electricity to trading centres was more likely to open up opportunities for non-farm income generating activities, than expanding household water or electrification. This is because this investment links all households to markets and services beyond their locality where they can sell their goods and services. The report suggests that when resources are limited this should be the priority for infrastructure development. The five-fold increase in the volume of sales in Merille Market in Marsabit (see livestock section above) experienced from 2010 onwards was in no small part attributable to the fact the new tarmac road being constructed to Ethiopia reached Merille in that year.

Since 2010, the GoK has doubled national spending on roads from Ksh 10 billion (US$ 120m) to Ksh 20 billion (US$ 240m) per year. This is a welcome step but still far from the US$ 1.5 billion estimated by the World Bank in 2010. The Government's current internal draft Eliminating Drought Emergencies plan has allocated just over US$1 billion for road construction in the ASALs. This is a substantial reduction on the US$ 2.75 billion estimated in the Ministry of Northern Kenya's, five year Mid-Term Investment plan. It is also nearly half the amount allocated for dam construction in the plan.

In both these plans, 100km of tarmac roads has been costed at approximately Ksh4 billion or US$48 million.

The construction of the tarmac road to Moyale on the border with Ethiopia is well underway and the socio-economic benefits to the surrounding pastoral population in Marsabit should be closely monitored and compared with other areas that are currently without any tarmac roads.

## 4 COST COMPARISON SCENARIOS FOR A TYPICAL KENYAN ASAL DISTRICT

The previous section attempted to identify the current actual costs (and where possible benefits) of different approaches in supporting drought affected populations in the ASALs of Kenya. The range of sectors and interventions examined were not comprehensive and clearly some cost estimates are drawn from harder data than others. However the financial cost of responding to drought is only one side of the story and needs to be considered along with the wider losses to households and communities. At the household level the cost of drought manifests itself in many ways, only some of which can be quantified. These include loss of livestock, milk and meat production, less time for other economic activities, poor health and nutrition or ultimately loss of life. The value of these losses can be hard to measure, but as the recent PDNA for Kenya shows they are significant. These losses can have long term repercussions, as even if a family survives an initial drought they may have undermined their livelihood so significantly it may take years to recover their livelihoods and asset base.

In order to illustrate the combined costs and losses of different approaches to interventions under each scenario (outlined in the main report) the study team has attempted to model each approach separately for "typical" pastoral livelihood zones in the study countries. The main report has attempted to quantify these costs for pastoral households using HEA analysis and the herd dynamic model developed by the Food Economy Group[66]. HEA is a livelihoods-based framework for analysing the way people obtain access to the things they need to survive and prosper. It was designed to help determine people's food and non-food needs in normal years and when affected by shocks such as drought, food inflation etc. In HEA outcome analysis, projected 'total income' – or the sum of all food and cash income households secure, is converted into a common unit or currency (either percentage of kilocalories consumed (%kcals) or cash) – and then compared against two thresholds – a survival threshold and a livelihoods protection threshold. These thresholds are defined on the basis of local patterns of expenditure. The HEA methodology used in the main report estimates the deficits (measured in metric tonnes (MT) of food required) and livestock losses for three drought scenarios (low, medium and high). The herd dynamic model makes estimates based on data to calculate changes in herd size, number of milking animals, milk yields, livestock mortality rates, rates of conception, and number of births each year for herds in each livelihood zone run under the model.

For Kenya the HEA modelling was run for one pastoral livelihood zone - Wajir Southern Grasslands in Northern Kenya. The outputs predict, for that typical pastoral population, the deficit measured in MT of food, and the loss of excess animals (e.g. those that would not have died under normal conditions), as a result of the nature of the drought and the interventions proposed. Because the model runs over five years, it shows how a drought in year one continues to have an impact on households for successive years. The methodology simulates three scenarios or storylines, in line with the humanitarian / early response described above:

- Standard (late) humanitarian response to drought, - known as Storyline A;
- Early response – assuming commercial destocking of 50% of excess animal deaths, referred to as Storyline B1; and
- Early response using a combination of commercial destocking and early interventions that can help to improve animal condition; referred to a Storyline B2.

[66] For more details see main report and the accompanying report prepared by the Food Economy Group (FEG)

Table 19 below summarises the characteristics of the typical arid pastoral district in the base or reference year.

**Table 19: Baseline Characteristics of Typical ASAL District**

| Typical ASAL District, Kenya - Description / Assumptions – Base Year | |
|---|---|
| **District Population:** | 450,000 (of which 367,000 rural pastoral population) |
| **Food Economy Zones:** | Assumes rural population are pastoral livelihood based on Wajir Southern Grasslands profile[67] |
| **Livestock Population:** | 1,500,000 (of which; shoats 1,275,000; cattle 200,000; camels; 75,000) |
| **Livestock Prices (Normal / Base year):** | Shoat – US$33/ Cattle – US$323 / Camel – US$513 |
| **Food Prices:** | Main staples are 25% higher than reference / normal year in drought year |
| **Water sources:** | 30% (112,500) of the rural population have no access to water sources for at least 3 months in drought years |
| **Current # of Primary schools** | 173 |
| **Additional # schools required to meet national average** | 412 |
| **Current # teachers** | 1,337 |
| **Additional # teacher required to meet national average** | 4,175 |
| **Km tarmac roads** | 0 – it is 100km to nearest major urban market outside of district |

The tables overleaf compares the actual costs of response drawn from the previous sections of this report, alongside the modelled costs and losses of each scenario drawn from the HEA modelling in the main report. In addition there is a table calculating the estimated cost of resilience measures for the same typical district. The long term cost implications are highlighted for each scenario including the total costs discounted over 20 years (taken from the main report) where relevant.

[67] Characteristics of Wajir Southern Grasslands mapped out in the Save the Children 2007 Assessment. This represents the most recent and relevant HEA data that exists for Kenya.

| Scenario A – Standard Humanitarian Response<br>Arid District with Rural pastoral population of 367,000 | | | | |
|---|---|---|---|---|
| **,Food / cash** | Actual | Non-drought year | In any year approximately 20% of rural pop (73,400) on food aid in non-drought years. Ration cost as above* | US$ 3,958,462 |
| | | Drought year | On average in a drought year in arid districts in Kenya 32% of rural population (117,440) assessed as in need of food aid for year*. Cost per person $53.93[68] | US$ 6,333,539 |
| | HEA Profiled | Non-drought year | HEA modelling estimates that approximately 54% of the rural population (198,190) in this livelihood zone face a deficit even in a drought year. Depending on wealth group this varies from $38-$56 per person (say average of $54 – the current cost of food aid per person per year) | US$10,702,260 |
| | | Drought year | HEA modelling shows 100% of population in this livelihood zone face a deficit of between $156-$200 per capita in a high magnitude drought year (take average of $178) | $54,539,261 (Yr1)<br>$140,863,828<br>(5 year total) |
| **Non-food aid requirements** | Actual | Non-drought year | Not calculated | - |
| | | Drought year | Historically these are between 25-33% of food aid costs | US$35,215,957 |
| | HEA Profiled | Non-drought year | Food deficit marked up by 20% to account for the cost of non-food aid. | Food aid with mark-up becomes US$176,079,785 |
| | | Drought year | | |
| **Losses** | Actual | Not known | | - |
| | HEA Profiled | Drought and non-drought year | Livestock losses are estimated at $81m in Wajir Grasslands for a high magnitude drought. This is equivalent to $221 per person, over five years – as losses sustain after the drought year. Assuming droughts occur at least every five year this gives an average of $54 per year | US$81,304,247 |
| **Outlook over 20 years** | The main report calculates that the total net cost of this approach over 20 years to be **US$606 million.** This assumes transfers are at the levels required by the HEA profiling but are inherently late and do not come with timely livestock interventions that avert the five year losses. In reality the fact that livelihood protection needs are not met in either drought nor non-drought years mean the number of non-viable or destitute pastoralists, and the deficit they face, are both likely to grow significantly over a 20 year period. Building resilience for these populations will be extremely hard as they will find it difficult, or impossible, to recover the livelihood losses from one drought to the next. Over time the overall resilience of the population is likely to decline. | | | |

*Based on current average trends in % in need of food assistance by short and long rains assessments and confirmed by KFSSG

[68] Current WFP of cost per person year – see earlier section

| Scenario B1 – Early Response with commercial destocking of 50% of excess adult animal death<br>Arid District with Rural pastoral population of 367,000 | | | | |
|---|---|---|---|---|
| **Food / cash** | HEA Profiled | Based on 1 drought year followed by 4 non-drought years | HEA modelling shows that the deficit faced by the population due to a destocking programme would reduce the deficit by approximately 50% in a high magnitude drought year – this still produces an average annual deficit far greater than normal actual food aid. | $70,498,355 (5 year total) $14,099,671 (annual average) |
| **Non-food aid requirements** | | | Estimated at 25% of food aid costs. | US$17,624,589 over 5 years |
| **Losses** | | | Livestock losses are reduced by 24% as some pastoralists de-stock before herd condition declines and/or animals die. Majority of losses are in year 1. | US$61,880,697 (5 year total) |
| **Scenario B2 – Early Response with commercial destocking of 50% of excess adult animal deaths and investments in improved animal condition** | | | | |
| **Food / cash** | HEA Profiled | Based on 1 Drought year followed by 4 non-drought years | HEA modelling shows that the deficit faced by the population due to timely destocking and investments in animal condition can reduce the deficit by approximately 62% over 5 years | $52,973,492 (5 year total) $10,594,698 (annual average) |
| **Non-food aid requirements** | | | Estimated at 25% of food aid costs. | US$13,243,373 over 5 years |
| **Losses** | | | Livestock losses are reduced by 77% as herd condition improves. | US$18,693,483 (5 year total) |
| **Outlook over 20 years** | Investment in destocking programmes and livestock quality, start paying for themselves immediately and significantly reduce total losses and costs in both drought and non-drought years. The discounted costs of scenarios B1 and B2 over 20 years are estimated to be between **$214 -$354 million.** Both significantly cheaper than scenario A. Given income and food (especially milk) from livestock is so important to a pastoral livelihood, investments in the livestock production system are essential to increasing the viability and resilience of such communities. The deficits facing households in these scenarios are still large and in reality not met by the level of humanitarian response normally mobilised. The proposed HSNP scale up could however meet gaps in most livelihood zones in non-drought years and in many even in drought years particularly if targeted appropriately using livelihood analysis and real time early warning data. | | | |

[69] It should be noted that ***if*** Phase 2 of the hunger safety net programme (HSNP) targeted all households below the absolute poverty line (i.e. approximately 85%) as has been suggested, with a safety net payment of Ksh 3,500 ($42) x 6.5 times per year – this would equate to approximately US$14,196,000 per annum for the example district given here (i.e. 52,000 households x $42 x 6.5).

| Scenario C<br>Early Response to droughts + Ongoing Resilience Building | | |
|---|---|---|
| **Cash / Food** | $66,216,865<br>(5 year total)<br>$13,243,373<br>(annual average) [70] | HEA modelling shows that the deficit faced by the population due to timely destocking and investments in animal condition reduce the deficit by approximately 67% over 5 years. |
| **Education** | Capital costs – US$8.25m per annum for 20 years.<br>Revenue costs<br>US$7.65 million p.a<br>(ultimately) | Assumes construction of 412 new schools @$400k each = $164.8m/20 years. Additional revenue costs for additional teachers costed at $17 per head per annum (based on calculations in Education section above) x 450,000 (total district population). Note revenue costs would rise in line with school construction. |
| **Livestock** | US$ 8,808,000 per annum<br>(reducing by half after year 5) | Cost of livestock support package at $24 per person = $8.8m each year (drought or non-drought) but assumes this would reduce to $4.4m after year five as livestock markets and animal health services become sustainably self-financing. Also livestock insurance should not require subsidy in longer term as intervention becomes commercially viable. |
| **WASH** | US$2,752,500 per annum | Assume 10 year programme to support 30% rural population to develop sustainable community based water management structures. Population without access to water 367,000 x 30% = 110,100 @ avg cost of US$25 per head per year for 10 years [71] |
| **Roads** | Capital investment<br>US$4.8 million p.a | Assume district needs 100km of tarmac road to connect main towns to bigger towns / market centres. US$48m per 100km / 10 = $4.8m |
| **Livelihood Diversification** | US$ 9 million / 10 years<br>= US$900,000 p.a | Assume budget allocated to 40% of rural population (i.e. peri-urban livelihood group) = 150,000 x average investment of US$60 per head (US$9m ) over 10 years |
| **Losses** | US$18,693,483 | As per scenario B2 i.e. livestock losses reduced by 77%. However losses are likely to reduce far more significantly over time as the impact of other resilience building interventions takes effect. Not possible to model these at this point. |
| **Outlook over 20 years** | Annual per capita costs are high as additional interventions are included in this scenario. The discounted cost of such an approach over 20 years has been estimated at **$464 million**[72]. This is more costly than scenario B2 over the | |

[70] Modelling done for main report has assumed a reduction in food aid costs over the 20 years as impact of other resilience building measures take effect

[71] Based on costs set out in Table 10 and outlined in WASH section above. This is different to assumption in the main report that focus solely on technical costs of water infrastructure.

| | |
|---|---|
| | same timeframe. However it is assumed expensive interventions such as education and roads will yield longer term benefits in expanding incomes and enabling stronger pastoral and other diversified livelihood strategies. Consequently after 20 years the caseload of vulnerable / food insecure households will have decreased or been eliminated reducing the cash/ food transfer requirement. |

[72] It should be noted that the 20 year modelling in the main report did not include all the resilience building measures outlined here. The 20 year modelling looked at the cost of building the resilience per the MDG estimate of $120 per person per year for 10 years, offset against the avoided cost of aid and losses, as well as a very conservative assumption that building resilience can return $1.1 of benefit for every dollar spent (which is the minimum return in the modelling for water/livestock/education, but could be much higher). See the main report for more details.

The tables above show that on a district and per capita basis Scenarios B1 and B2 (early or timely response) is cheaper that scenario A (the typical humanitarian response) which is inherently late and does not prevent losses. The main difference is that income and food generated by timely sale (B1) of quality animals in good condition (B2) reduces the need for and the cost of food / cash assistance. This improves resilience to that drought event and means pastoralists are likely to recover more quickly. The more comprehensive Scenario C (that combines early response with resilience building) is clearly more expensive than both of the others. This is because it includes the costs of wider development activities; such as road or school construction, that are not part of typical humanitarian responses.

Consequently the early / timely response is significantly more economic and cost effective than the traditional approach. However it is only also cost *effective* if the objective of the response is to address the impact of a specific or single drought event. If an effective humanitarian response is deemed to be one that achieves disaster risk reduction / resilience building outcomes then there is limited evidence that an early / timely response alone will achieve them. For example commercial destocking is far more cost efficient than slaughter de-stocking. However if efforts are only made to link pastoralist producers with commercial buyers when a drought is approaching, the fundamental vulnerability of producers to realise the market value of their stock is not addressed. Most humanitarian responses are a factor of the funds available and not the scale of the need. Commercial de-stocking or animal feed programmes usually only support a fraction of pastoralists in need.

A limitation of the analysis above is that it focuses solely on financial costs and losses (primarily livestock related as these are easiest to quantify). The benefits; financial and otherwise, of the other sectoral interventions outlined in the previous section e.g. WASH or conflict reduction are more difficult to quantify precisely. It is clear that if successfully implemented, resilience building interventions can yield significant benefits. Therefore if implementing a humanitarian response that ultimately builds the resilience of a population to future droughts / shocks is a primary objective, this could well justify the additional expense incurred. Unfortunately the extent to which roads and education, for example, build a population's resilience to repeated drought are not well understood or monitored. There is much scope for further monitoring how resilience building activities reduce vulnerability over time and hence save money as humanitarian caseloads reduce. This report is an initial broad attempt to examine this in Kenya. Much greater research is required in all sectors to undertake more robust modelling in this area. A possible approach is to identify areas or communities in the ASALs of Kenya that can be considered 'resilient' compared to similar highly drought affected populations. Comparing the levels of current and previous investment and the nature of support they have received in all sectors will be important in establishing the critical factors that build resilience.

# 4 Value for Money of Resilience Building interventions

Table 20 overleaf summarises the findings of the Kenya report in terms of the economy, efficiency and effectiveness of the various resilience building interventions considered. The costs per head by themselves tell us little and some very economical interventions may not be very efficient or effective. Consequently the table highlights factors identified in this report that need to be considered when assessing efficiency and effectiveness in building resilience. As mentioned above

the benefits of different interventions are a clear measure of their effectiveness and these cannot always be comprehensively quantified.

**Table 20: Factors affecting the Value for Money of Resilience Building Interventions Reviewed in the Report**

| Sector and Intervention | Kenya - Economy Cost per unit[73] | Factors affecting Efficiency (Cost per output) and Effectiveness (Cost per Outcome) of intervention |
|---|---|---|
| **Food / Cash** | | |
| Multi-year food / cash pipeline based on 'live' Early Warning / Food Security data | US$18 -57 per person based on HEA modelling in drought and non-drought years | • Comprehensive payment mechanisms can vastly increase the efficiency of such transfers (i.e. smart cards / e-vouchers) and the timeliness with which transfers can be delivered and scaled up and down.<br>• Ensuring that food and cash transfers are harmonised and fill a collectively assessed 'gap' and not duplicated is essential.<br>• Tailoring the amount of transfers to seasonality / external factors and the specific needs of differing livelihood groups should be more effective if transfers are provided on time<br>• Transfers improve households' resilience to a specific crisis but there is limited evidence to show that by themselves they build long-term resilience. |
| **Water and Sanitation** | | |
| Establishing resilient Community water based systems | US$8.40 – 41.80 per head (depending on size of community supported) | • Permanent, drought proof water supplies are highly effective in building ASAL communities' resilience<br>• Appropriate support to ensure communities have the capacity to manage and maintain systems sustainably is essential<br>• The optimal duration, cost and effectiveness of this support needs more research so that monitoring indicators and minimum standards can be established<br>• Government agencies should draw on the respective strengths of local and international NGOs / UN and government agencies to improve the efficiency and effectiveness with which community based support for water programmes can maximise other benefits e.g. community governance/ empowerment; health and nutrition; economic stimulation etc.<br>• Expansion of private sector water will also be important, especially in areas like Somali region in Ethiopia where most of the market is already captured by private actors. |
| **Livestock** | | |
| **Early Response package:**<br>• Commercial de-stocking<br>• Timely animal health campaigns<br>• Pre-drought peace building initiatives | US$10.49 | • Livestock industry is currently the highest yielding agricultural use of the ASALs. Ensuring livestock values are maintained and realised is a highly effective way to build the resilience of livestock dependent communities.<br>• Although the Early Response approach emerges as cheaper per head this is based on ad hoc rather than comprehensive coverage of commercial destocking.<br>• Long term, comprehensive coverage of functioning livestock markets throughout the ASALs will be more effective in realising the value of more animals. |

[73] All figures are taken from estimates in the Kenya report

| Sector and Intervention | Kenya - Economy Cost per unit[73] | Factors affecting Efficiency (Cost per output) and Effectiveness (Cost per Outcome) of intervention |
|---|---|---|
| **Longer term Resilience Package**<br>• Expanded coverage of functioning livestock markets/marketing<br>• On-going peace-building and conflict work<br>• Establishment of comprehensive animal health care facilities<br>• Livestock insurance schemes (where feasible) | US$23.48 per head | • Marginal pastoral producers require support to become more commercially orientated in selling / insuring and maintaining herds.<br>• Peace building support provides excellent value for money and most effective when combined with water and market interventions.<br>• Pastoralists are willing and able to pay for animal health care services so long as they can realise the value of animals. This is most efficiently provided by the private sector so long as an enabling environment is in place e.g. systematic provision of quality training (including facilities), quality controls on drug supply, supervision and ensuring private services are not undermined by free drugs and supplies.<br>• Harmonise private sector delivery, e.g. vet services, with public sector policy and delivery. |
| **Livelihood Diversification** | | |
| Livelihood strengthening and diversification projects | US$23-103 per head | • Efficiency and effectiveness depends on how far the livelihood intervention increased household income and productivity relative to the initial cost / investment.<br>• Unfortunately most programmes fail to monitor beneficiary incomes or how far any income improvement translates into food security/ resilience. If incomes generated are not sufficient to enable households to 'graduate' off regular or long term food / cash hand-outs or other emergency relief then their effectiveness is undermined.<br>• The timescale within which most programmes are implemented and monitored mean few know their long term sustainability / success rate<br>• Long term monitoring of all types of livelihood programmes (possibly by an external party) would assist in understanding the VFM of different interventions |
| **Education** | | |
| Expanded provision of schools and teachers in arid areas to national average | Capital costs per head US$ 398<br>Annual Revenue cost per head US$17 | • Strong correlation between household income and education levels.<br>• Areas with lowest school enrolment and completion rates are most highly food insecure and require greatest humanitarian response following drought.<br>• Construction of large numbers of formal schools is not necessarily most effective way to educate dispersed or partially mobile rural populations. Funding required could be more efficiently spent on alternative approaches e.g. community / outreach / mobile schools, |

| Sector and Intervention | Kenya - Economy Cost per unit[73] | Factors affecting Efficiency (Cost per output) and Effectiveness (Cost per Outcome) of intervention |
|---|---|---|
| | | boarding schools, bursaries to students to board elsewhere, radio education etc.<br>• The success of NACONEK[74] will depend on how much additional education funding is mobilised for sparsely populated areas and the efficiency with which different approaches to education expand enrolment and completion rates. |
| **Roads / Infrastructure** | | |
| Roads from high potential areas to market centres in ASALs | US$ 48 million per 100km | • Roads are initially expensive but can stimulate economic growth by facilitating market integration.<br>• Given the overall dearth in roads in ASALs – resilience building should form the basis of any prioritisation criteria for deciding which roads to build first.<br>• Evidence suggests that expanding roads and electricity to trading centres is more likely to expand non-farm income generating activities than expanding basic services (i.e. water and electricity) to every household |

[74] National Commission for Nomadic Education in Kenya

# 5 CONCLUSIONS AND RECOMMENDATIONS

## Conclusions

- **Early response is more cost effective than late humanitarian response**
  The research confirms the intuitive hypothesis that responding on time and before the full impact of drought is felt is cheaper and more effective. The model and assumptions used in this report, which were based on actual costs wherever possible yielded a cost per head approximately 50% lower in both drought and non-drought years.

- **Building resilience is initially expensive but saves money over time**
  The analysis shows that a package of building resilience measures is approximately 10-44% more expensive than current humanitarian approaches depending on whether it is a drought or non-drought year. This is because annual costs are based on the current situation where resilience building involves both humanitarian activities as well as a broader range of development activities rarely (if ever) included in a humanitarian response (either scenario A or B). However ultimately this is a more cost effective approach[75] as the positive impacts of the wider resilience building activities work to reduce the vulnerability of the affected population. This highlights the fact that the benefits of resilience building measures are rarely felt immediately, instead they produce results in the longer term as they fundamentally reduce the caseloads affected by drought. The study has only attempted to cost a selection of resilience building activities and clearly more could be added that would further increase the overall cost. The study did include two of the most expensive resilience measures; education and roads to illustrate the long term financial (and other) benefits of such high investment interventions.

- **Resilience is a broad term and not all resilience interventions represent value for money**
  The widespread use of the term 'resilience' in pastoral areas is relatively recent. It is, necessarily, a broad term and can encompass many interventions across all sectors. There is, however, much focus on resilience as an activity or intervention rather than an end state. This report shows that both within and across sectors some activities are more cost effective than others when it comes to building resilience. Different interventions may be more or less effective depending on the specific context. A key factor in assessing the effectiveness of different interventions is the lack of a collective or common understanding of what successful resilience looks like i.e. the end state. Consequently many actors are not monitoring the extent to which resilience has been achieved and indicators are weak or non-existent. For example there are gaps in assessing how far livelihood diversification programmes have increased the income or improved the food security of beneficiaries. This problem is due in part to the short term nature of programme funding which does not facilitate monitoring resilience which is a long term result.

- **Drought recovery takes longer (or may be impossible) when a community is not resilient**
  The impact of a drought is not only felt in the drought year but for several years after. The analysis of livestock interventions shows that animals sold for good commercial prices can provide the necessary income to maintain the remainder of the herd and the household throughout most drought periods. Unfortunately households that have too few or no animals to sell have very limited options to survive unaided through a drought period. The ASALs of Kenya

[75] This more effectively demonstrated in the main report which includes a series of long term cost models

are home to a significant vulnerable pastoral population that face a survival deficit every year. As a result 'humanitarian' interventions such as food aid and water tankering take place in non-drought years. This is because the livestock losses in previous droughts have left poor pastoralist households with no or too few animals to sell to generate sufficient income from livestock sales even through a normal dry season let alone a drought. The frequency with which droughts occur and the wider failure to support the productivity of the livestock industry in general mean populations are increasingly vulnerable. Not all humanitarian and development interventions are designed to address this on-going downward spiral into destitution. It can be argued that some even exacerbate the approach, for example slaughter destocking in drought rewards poor productivity.

- **Drought prone areas face a disproportionate lack of investment in resilience building interventions compared to other parts of Kenya**
  The vast majority of humanitarian aid to Kenya is directed to the ASALs. Although annual humanitarian aid is high and likely to remain so, it still forms the minority of overall overseas development assistance. This development funding which comprises key resilience building interventions such as infrastructure, economic development and education remains inherently focused on the high potential (or non-drought affected) areas of Kenya. A similar pattern is true for Government expenditure, which is dominated by revenue expenditures for key basic services such as health and education. Arid areas in particular are woefully underserved per capita in terms of basic services or infrastructure. Revenue budgets are often based on existing capital provision, consequently, an area with more schools and health centres will always get more money for teachers and nurses. The political barriers to significantly expanding revenue and capital budgets to sparsely populated and underserviced arid areas cannot be underestimated.

## Recommendations

"The separation of relief and development is both artificial and unhelpful. Not only are the recipients the same, but also the underlying causes that create the need are the same—the vulnerability of dryland communities. But what often takes place, are emergency interventions that undermine development (for example some food aid and water trucking interventions), and long term programming and investments that do not pay sufficient attention to the inevitability of drought."[76]

**a) Funding models must be changed to integrate relief and development in a coherent cycle.**
Early response needs to become the standard approach to drought response. The early warning and food security information systems already exist. The challenge is to ensure action takes place before not during, or worse still, after the crisis. This will require several shifts from the current practice. Firstly the creation of consensus and political will amongst the Government and donors to invest the necessary resources in early response is required, with the clear understanding that this is a no regrets option that will ultimately save money. On-going economic analysis in all sectors will need to demonstrate the cost effectiveness of such an approach. Secondly investment must be made in quality, credible early warning and food security monitoring systems that provide real time information upon which clear actions have been pre-agreed and funded. Waiting for the production of the long and short rains assessments before resources are mobilised and spent is too late. As far as possible early warning data should be collected and analysed in the ASAL areas with local

[76] REGLAP MAGAZINE, Disaster Risk Reduction in the Drylands of the Horn of Africa: Good practice examples from the ECHO DCM partners and Beyond, Edition Two, December 2011

authorities and structures having access to the resources required to act quickly. The proposed devolution to County based governments and the establishment of the Drought Management Authority with a significant contingency fund are positive steps in this direction.

**b) Clarify collective / contextual understanding of resilience (as an end state)**

Ultimately, if ASAL communities are to achieve resilience to drought (and other shocks), there needs to be a clearer understanding by all parties as to what this means. Even accepting that resilience is a dynamic process rather than a fixed end state, targets and indicators can, and must, be developed to monitor the impact of resilience building activities. One key end result should be the elimination of the millions identified annually by the KFSSG as food and water insecure in both drought and non-drought years.

**c) Adequate resources and capacity must be committed to building resilience.**

Short-term interventions, with no provision for long-term operations and maintenance, are unsustainable. Value for money can be justified for many resilience interventions, but these will rapidly become a waste of money if they are not part of a longer-term plan of support that is founded on participatory approaches.

d) **Spending on resilience in drought prone areas needs to increase significantly, both in the short and the long term.**

Building resilience is not cheap and will be expensive in the short term as it is not an either / or option alongside humanitarian / early response. Governments and donors need to recognise that a sustained and significant cash injection is required to address the inequalities in basic service provision and other development investment. At a minimum the inherent bias in development programming outside of drought prone areas need to be addressed so that funding is reprogrammed to the underserved areas.

**e) More thorough and systematic research is required to assess the effectiveness of resilience building interventions in all sectors**

Long term monitoring of resilience building interventions is required to establish which are most successful and cost effective. Given such monitoring must be undertaken over a multi-annual time scale it could be the responsibility of a central body, for example, the Drought Management Authority. Currently it is extremely difficult to establish the long-term success rates of the plethora of WASH, livelihood diversification and community disaster risk reduction programmes that have been implemented over several decades in the ASALs. Logging all projects on a central database for review in future years would enhance understanding of the type of interventions, or critical factors in their implementation, that worked to sustainably build resilience.

At the same time further research is required to quantify the financial and other benefits of wider resilience building interventions such as education and health care provision, roads, power and communications etc. Although there is general consensus that such interventions are good they are also expensive. As a result cash strapped governments need to know how to prioritise such expenditures and what is the optimum level of investment to generate self-sustaining levels of resilience. The resilience building benefits of cash transfer programmes is still yet to be conclusively made. Given the funding involved in such programmes it is important the opportunity costs of cash over other interventions are fully monitored.