HOUSEHOLD ECONOMY BASELINE ASSESSMENT (HEA)

Livelihood Profiles

Karamoja Region, Uganda

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LIST OF ACRONYMS

CAHWS	Community Animal Health Workers
CBPP	Contagious Bovine Pleuropneumonia
CPPP	Contagious Caprine Pleuropneumonia
DDG	Danish Demining Group
DLG	District Local Government
DSS	Decision Support Systems
ECF	East Coast Fever
FAO	Food and Agriculture Organization of the United Nations
FEG	Food Economy Group
FEWS NET	Famine Early Warning Systems Network
HEA	Household Economy Analysis
KALIP	Karamoja Livelihoods Program
LTM	Long Term Mean
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NAADS	National Agricultural Advisory Services
NGO	Non-Governmental Organization
OPM	Office of the Prime Minister
UBoS	Uganda Bureau of Statistics
UGX	Uganda shillings
USGS	United States Geological Survey
VSLA	Village Savings and Loans Association

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I. INTRODUCTION

A Background to the Assessment

This assessment was conducted in order to provide a solid base of livelihoods-related evidence to inform a 27-month (October 2013 – December 2015) FAO-implemented project in Karamoja sub-region titled "Strengthening Adaptive Capacity of Agro-Pastoral communities and the Local Government to Reduce Impacts of Climate Risk on Livelihoods in Karamoja, Uganda". The overall aim of this initiative is to strengthen the resilience of agro-pastoral communities and the local government and to reduce the impacts of climate hazards on households in Karamoja. The project's three intended outputs are:

- **Output 1**: Adaptation planning and response strengthened through improved learning: assessment, strengthen district-level planning capacity, action research, early warning and IPC;
- **Output 2**: Livestock disease surveillance, diagnostic capacity, vet services and animal/livestock nutrition strengthened;
- **Output 3**: Agro-pastoral production systems strengthened through support to DLG, APFS and improved access to water.

The baseline assessments detailed in the current report were conducted in support of **Output 1** and are intended to provide complete baseline coverage of the livelihood zones in Karamoja Region with new livelihood profiles and outcome analysis tools. The information collected during the current assessment is meant to update the information contained in the HEA baselines from 2010. The 2014 baselines correspond to the updated livelihood zone map of Karamoja which was produced by FAO and FEWS NET in 2013 and which resulted in five livelihood zones, including: *Western Mixed Crop Farming Livelihood Zone*, *Central Sorghum and Livestock Livelihood Zone*, *Mountain Slopes Maize and Cattle Livelihood Zone*, *Southeastern Cattle and Maize Livelihood Zone*, and *Northeastern Highland Apiculture Livelihood Zone*.

A further aim was to build the capacity of local government and relevant food security actors in food security and livelihood analysis. High quality on-going monitoring, seasonal analysis and early warning depend on the capacity of local officials to understand how to use the outputs and analytical tools associated with the HEA baselines and outcome analysis.

The specific objectives of this activity included the following:

- To build the capacity of assessment participants in food security and livelihoods analysis using the HEA analytical framework in Karamoja;
- To generate new livelihood profiles and baseline spreadsheets for the reviewed livelihood zones of Karamoja;
- To carry out comparative analysis of livelihoods in the five livelihood zones of Karamoja.

B Uses of the Livelihood Profiles

The livelihood profiles presented here offer an analysis of livelihoods and food security on a geographical basis. Karamoja has been divided into homogeneous zones defined according to a livelihoods framework. A description of five zones is provided, including an analysis of the position of different wealth groups within the zones. It is envisaged that this product will be useful on three levels, as follows.

B.1 An Introductory Guide to Food Security and Livelihood Patterns in the Five Livelihood Zones

The profiles should form a useful briefing for a newcomer to these areas who needs to get a grasp of food security conditions. Development planners can also benefit from using the livelihood profiles. One objective of development is to reduce people's vulnerability to hazards and to increase their capacity to cope. An important first step is to understand who is vulnerable, to which hazards, and why. Likewise, efforts to reduce poverty require an understanding of how the poorest households normally survive in different areas and the reasons for their poverty.

B.2 Early Warning and Food Security Monitoring

Most early warning and food security monitoring systems draw heavily from two information sources: (i) crop and/or livestock production data, and (ii) market price information. Given the predominance of production data, local food security is often equated with production outcomes. Hence, a chronic or temporary production shortfall is immediately translated into chronic or temporary food insecurity.

This is almost never the whole story. A full account of the household economy includes both what food people produce, and what cash people earn to purchase food and other essential items. Thus, data on casual employment or self-employment or charity from relatives or the sale of handicrafts may be equally important to the livelihood story as data on crop and livestock production. The HEA baseline information can therefore be used **to identify key indicators for monitoring**.

Using a baseline livelihood profile, we can explore household capacity to adapt to economic stress, especially failed crop or livestock production; and we can appreciate household activities at different periods in the yearly cycle. All of this feeds directly into our analysis of need, helping to answer key questions such as: which areas and what types of household are likely to cope should a hazard strike and which will need assistance? What types of intervention will be most appropriate, and when and for how long should they be implemented? All of this is done through modelling scenarios and understanding their potential impact on households.

Thus, for instance, one could point to the position of poor households in a given geographical area who are highly dependent on charcoal sales. If charcoal sales are outlawed (and the law is enforced), their income will be dramatically reduced: can they find alternative income elsewhere – and will they be competing with people from other zones in these activities?

B.3 Policy Development and Advocacy

Disaster management has been the main impetus to the spread of early warning systems. The rationale in early warning is to improve the efficiency in the scale and timing of emergency assistance. However, increasingly planners are looking at alternatives to food aid in early emergency intervention - and this often requires changes in policy and practice. A case in point is the stabilization of market prices for basic foods. Livelihoods analysis can expose the likely effects of such interventions on different households' capacity to survive a crisis. The analysis can also recommend the optimum timing for intervention.

Livelihood analysis can also be applied to other policy changes. For example, if government taxes on trading of a cash crop were reduced, or new charges were made for government veterinary drugs, what would be the impact on households? More generally, the household viewpoint offers a more secure footing for looking at the increasingly voluminous discussion of poverty alleviation and safety nets. HEA baselines can be used to measure the impact of response programmes or policy changes on household economies. It is particularly relevant to assess effectiveness and appropriateness. Of particular relevance for decision-making, it enables ranking of needs and comparison of populations.

C Key Concepts[1]

Risk, **hazard**, **vulnerability** and **need** have well-established meanings in the context of disaster management. They are, however, frequently misused in the context of food security. The meaning of these terms is perhaps best explained with an example (see below).

Defining Risk, Hazard, Vulnerability and Need

- Drought is a major **hazard** affecting crop and livestock production in many semi-arid areas.
- Poor households are more **vulnerable** to (i.e. less able to cope with) drought than better-off households; they have fewer reserves of food or cash to fall back on, and fewer options for generating additional income.
- Poor households living in drought-prone areas of the region are more **at risk** of a food shortage than other households because they are both exposed to and vulnerable to the drought hazard.
- Once a drought strikes, the poor are the most **in need** of food assistance.

To be at risk of food deficits you must both be exposed to a hazard and be vulnerable to that hazard, as in the case of poor households in the drought-prone areas in the above example. Because vulnerability is so closely linked to hazard, it follows that there is no general state of vulnerability; people can only be vulnerable *to something*. For example, farmers cultivating along a river margin may be vulnerable to flood (which is likely to wash away their crops), but may not be vulnerable to drought (since they can irrigate their crops using water from the river). Likewise, pastoralists may not be very vulnerable to drought provided they can move freely in search of water and grazing. They may, on the other hand, be highly vulnerable to conflict if that inhibits their movement to key water points and grazing areas.

Once a hazard has struck, it no longer makes sense to talk about vulnerable groups. Put simply, people are **vulnerable before the event** (since this refers to their ability to cope should a hazard strike). They are **in need after the event** (i.e. those actually affected by and unable to cope with a hazard). Going back to the drought example, the poor are vulnerable to drought before the rains fail, but once they have lost their crops or livestock they are in need of assistance. For the assessment and analysis of these matters, one of the most widely used livelihoods-based approaches is the Household Economy

[1] This section has been adapted from *Vulnerability and Dependency in Four Livelihood Zones in North Eastern Province, Kenya*, prepared by FEG for Save the Children UK, 2007.

Approach, first developed by Save the Children UK in the 1990s[2]. This is described further in the next section.

D The Household Economy Approach[3]

A ***livelihood*** is the sum of ways in which households make ends meet from year to year, and how they survive (or fail to survive) through difficult times. There is increasing interest in using livelihoods analysis as the 'lens' through which to view a number of subjects. These subjects range from emergency response to disaster mitigation to longer-term development. The interest rests upon two basic observations:

1) Information about a given area or community can only be properly interpreted if it is seen against the context of how people live.

2) Interventions can only be designed in ways appropriate to local circumstances if the planner knows about local livelihoods and whether or not a proposed intervention will build upon or undermine existing strategies.

The profiles in this report describe the major characteristics of five livelihood zones in Karamoja Sub-region, Uganda. The information for these profiles was gathered using the Household Economy Approach. The remainder of this section explains some of the terms used in HEA and in this profile.

Livelihood Zone: A livelihood zone is an area within which people share broadly the same patterns of access to food (i.e. they grow the same crops, keep the same types of livestock, etc.). They also share broadly the same access to markets. Patterns of livelihood clearly vary from one area to another. Local factors such as climate, soil, access to markets, etc all influence livelihood patterns. The first step in a Household Economy Analysis is therefore to prepare a **livelihood zone map**. This map delineates geographical areas within which people share basically the same patterns of access to food and have the same access to markets.

Wealth Breakdown: Where a household lives is one factor determining its options for obtaining food and generating income. Another factor is wealth, since this is the major factor determining the ability of a household to exploit the available options within a given zone. It is obvious, for example, that better off households owning larger farms will in general produce more crops and be more food secure than their poorer neighbours. Land is just one aspect of wealth, however, and wealth groups are typically defined in terms of their land holdings, livestock holdings, capital, education, skills, labour availability and/or social capital. Defining the different wealth groups in each zone is the second step in a Household Economy analysis, the output from which is a **wealth breakdown**[4]. For the purpose of this

[2] See 'The Household Economy Approach: A guide for programme planners and policy-makers', Holzmann, P. *et al*, Save the Children UK and the Food Economy Group (FEG) 2008. The guide is available at: http://www.savethechildren.org.uk/resources/online-library/household-economy-approach-guide-programme-planners-and-policy-makers.

[3] This section has been adapted from *Vulnerability and Dependency in Four Livelihood Zones in North Eastern Province, Kenya*, prepared by FEG for Save the Children UK, 2007.

[4] It is important to bear in mind for this analysis that we are thinking of wealth in relative (and local) terms. Statistical data may indicate that 80% or even 90% of the population in a particular area lives below the national poverty line, but this is measuring poverty on a national, absolute scale. In a livelihoods analysis we are interested in understanding the differences in the ways

assessment, a household was defined as people eating from the same pot *and also* sharing the same resources. The latter is key to understanding how the household economy functions, particularly in Karamojong communities where polygamy is common and where the male head usually controls the livestock herd, the main economic resource. The wealth breakdowns presented in the profiles presented in this report present asset information in some cases by *homestead* (meaning the man plus his wives) and in some cases by *household* (meaning the wife plus those living in her hut or huts). This is because some resources and activities (such as livestock herds and livestock management) are controlled by the man, and some (such as crop production) are more commonly controlled by the wife. Household sizes refer to the wife and those under her direct care, including her children and where relevant include live-in workers and extended family members. These numbers omit family members in the case that they are living away from the family.

Household Economy Baseline: Having grouped households according to where they live and their wealth, the next step is to generate quantified **household economy baseline** information for typical households in each group for a defined reference or baseline year. Food access is determined by investigating the sum of ways households obtain food – what food they grow, gather or receive as gifts, how much food they buy, how much cash income is earned in a year, and what other essential needs must be met with the income earned.

Household Response (or Coping) Strategies: Once this baseline is established, an analysis can be made of the likely impact of a shock or hazard in a bad year. This is done by assessing how food access will be affected by a shock, what other food sources can be added or expanded to make up initial shortages, and what final deficits emerge.[5]

Outcome Analysis: There is a basic principle underlying the Household Economy Approach, which states that: *an analysis of local livelihoods is essential for a proper understanding of the impact – at household level – of hazards such as drought or conflict or market dislocation*. Total crop failure may, for example, leave one group of households destitute because the failed crop is their only source of staple food. Another group, by contrast, may be able to cope because they have alternative food and income sources. These alternative sources – such as livestock to sell or relatives elsewhere who can assist – can make up the production shortfall. Thus, effective hazard impact assessments must be based on livelihood analysis, and livelihood analysis itself involves several steps.

The objective is to investigate the effects of a hazard on *future* access to food and income, so that decisions can be taken early on about the most appropriate types of intervention to implement. The rationale behind the approach is that a good understanding of how people have survived in the past provides a sound basis for projecting into the future. Three types of information are combined: (i) information on baseline access, (ii) information on hazard (i.e. factors affecting access to food/income, such as own production or market prices) and (iii) information on response strategies (i.e. the sources of food and income that people turn to when exposed to a hazard). The approach can be summarized as follows:

Baseline + ***Hazard*** + ***Response*** = ***Outcome***

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that people within a livelihood zone obtain access to food and cash income and the reasons for these – in which case it is not particularly useful to lump 80% or 90% of the population together into one group, especially if there are differences in terms of food and cash income access within that larger group.

[5] The term response strategy is preferred to coping strategy for two reasons. Firstly, the term coping strategy is often used to refer to regular components of everyday livelihood (e.g. firewood sale), which strictly speaking are only coping strategies when intensified in response to a hazard. Secondly, 'coping' can be taken to imply that the strategy in question is cost-free, which is not always the case.

The idea is that once the baselines have been compiled they can be used repeatedly for this type of outcome analysis over a number of years until significant changes in the underlying economy render them invalid. A good food economy baseline will generally be valid for between 5 and 10 years. What varies is the prevailing level of food security, but this is a function of variations in *hazard*, not variations in the baseline. Put another way, the level of crop or livestock production may vary from year to year (hazard), but the underlying pattern of production (the baseline) does not usually change very rapidly.

E Contents of the Livelihood Profiles[6]

The profiles are divided into a number of sections:

Zone Description offers a general description of local livelihood patterns (livestock rearing, crop production, off-farm income generation etc.).

Markets contains basic information on the marketing of local production and on any importation of staple food into the zone.

The **Reference Year** section explains the one-year period for which information has been gathered in each livelihood zone.

Seasonal Calendar sets out the timing of key activities during the year. This is useful in a variety of ways, e.g. to judge the likely impact of a hazard according to its timing during the year, or to assess whether a particular activity is being undertaken at the normal time in the current year.

This is followed by four sections that provide the core information on the 'Household Economy' of the zone.

The **Wealth Breakdown** section describes four main wealth groups ('very poor', 'poor', 'middle' and 'better-off'), explaining the differences between these groups and how this affects potential access to food and cash income.

The **Sources of Food** and **Sources of Cash** sections examine patterns of food and income access at each level of wealth, relating these to the characteristics of each group. An annual picture is presented, with food expressed as a percentage of 2100 kcals per person per day. The **Sources of Food** section also contains production data (by kg or litre) for the main crops and, where relevant, milk, to provide another set of information by which to understand households' production potential. The sources of cash income are presented in absolute Ugandan shillings earned per year. The **Expenditure Patterns** section is of interest in showing what proportion of their annual cash budget households at the different wealth levels spend on food, on household items, on production inputs, etc.

The section on **Hazards** provides information on the different types of hazard that affect the zone, differentiated by wealth group where this is appropriate.

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[6] This section has been adapted from *Vulnerability and Dependency in Four Livelihood Zones in North Eastern Province, Kenya*, prepared by FEG for Save the Children UK, 2007.

Response Strategies describe the various strategies available to different types of household in the zone, together with a judgement of the likely effectiveness of the strategies.
Early warning involves identifying and interpreting key events that indicate that a crisis may be developing.

The section **Key Parameters for Monitoring** suggests the key indicators to monitor in each livelihood zone, based upon an understanding of local livelihood patterns.

The final section, **Programme Implications**, outlines some ideas for longer-term programming.

F Methodology[7]

The profiles presented here have been compiled through a combination of fieldwork and reference to existing secondary data sources. The fieldwork to gather baseline household economy information was undertaken by trained field teams of staff from FAO, Danish Demining Group, Decision Support Systems, the Office of the Prime Minister, and officers from the Kotido, Moroto and Kaabong district local governments. Each team was led by a team leader experienced in HEA. Most of the field data was collected directly at village or settlement level from community key informants and focus groups through lengthy semi-structured interviews. A number of representative villages were visited in each livelihood zone, with more sites selected in the larger zones (12 in the *Central Sorghum and Livestock Zone*) and fewer in the smaller zones (6 in the *Northeastern Highland Apiculture Zone*). Interviews were also conducted with traders.

[7] For a more detailed description of the HEA field methodology, please refer to Chapter 3 of *The Practitioners' Guide to the Household Economy Approach*, Boudreau, T. *et al*, The Food Economy Group (FEG) and Save the Children UK, 2008. The guide is available at: http://www.feg-consulting.com/resource/practitioners-guide-to-hea.

II. OVERVIEW

A Introduction to Karamoja

Karamoja sub-region is located in northeastern Uganda and comprises the following seven districts: Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit, and Napak. It borders South Sudan to the north and Kenya to the east. Karamoja covers an area of 27,511 square kilometres and has a population of around 1,372,386[8]. It is mostly an arid expanse of savannah, grassland and bush, framed by Mt Morungole and Mt Moroto in the east, Mt Kadam in the south and Mt Napak in the west.[9] 'Karamojong' is a term used to refer to the inhabitants of the districts within Karamoja, but this collective term includes ethnic groups (or sub-tribes) of the Dodoth (in the north); the Jie (in the central areas); the Pokot (along the Kenyan border); and Bokora, Matheniko and Pian (in the south). Smaller ethnic groups include the Tepeth, Nyakwae, Ik, Ngipore and Ethur.[10]

Rainfall is limited and unpredictable in Karamoja, ranging from an annual average of 500-700 mm in the central lowland areas and 700 – 1,000 mm in the wetter western areas[11]. Rainfall distribution is more often than not inadequate for optimal crop production, and there is typically a lull in the middle of the rainy season; however, rainfall levels are almost never inadequate for pasture and browse. The traditional livelihood system in Karamoja, based on livestock production, takes full advantage of this pasture availability; historically (for centuries) this was a pastoral area, but crop production has gradually been making headway and recent assessments characterize most households in the region as agro-pastoralists.

According to standard indicators, Karamoja registers worst in the country in terms of development. Malnutrition in the region is the highest in Uganda, adult literacy rates remain at just 6%, and over 80% of Karamoja's population lives below the national poverty line. Its poor standing is due in part to a history of conflict and insecurity (inter- and intra-clan conflicts over cattle, arms proliferation, cross-border raiding, etc.) along with its lack of market infrastructure and a real paucity of social services, particularly in the education and health sectors. Some analysts point to Karamoja's semi-arid climate as a major constraint on its potential for development; but others argue that local livelihoods are well-adapted to this climate, and that the problem lies more in the inappropriate matching between government services/development support and local livelihoods.

B Livelihood Zoning

In 2009 FEWS NET conducted a livelihood zoning of Uganda resulting in the identification of six livelihood zones in Karamoja region. By 2012 concerns had begun to emerge about the continued validity of the zones following field observations by FAO, FEWS NET and other partners. Available information pointed to a general shift towards increased crop production in areas that had traditionally

[8] Uganda Bureau of Statistics, 2013 Population Projections

[9] http://www.karamoja.com/journey_into_karamoja.html

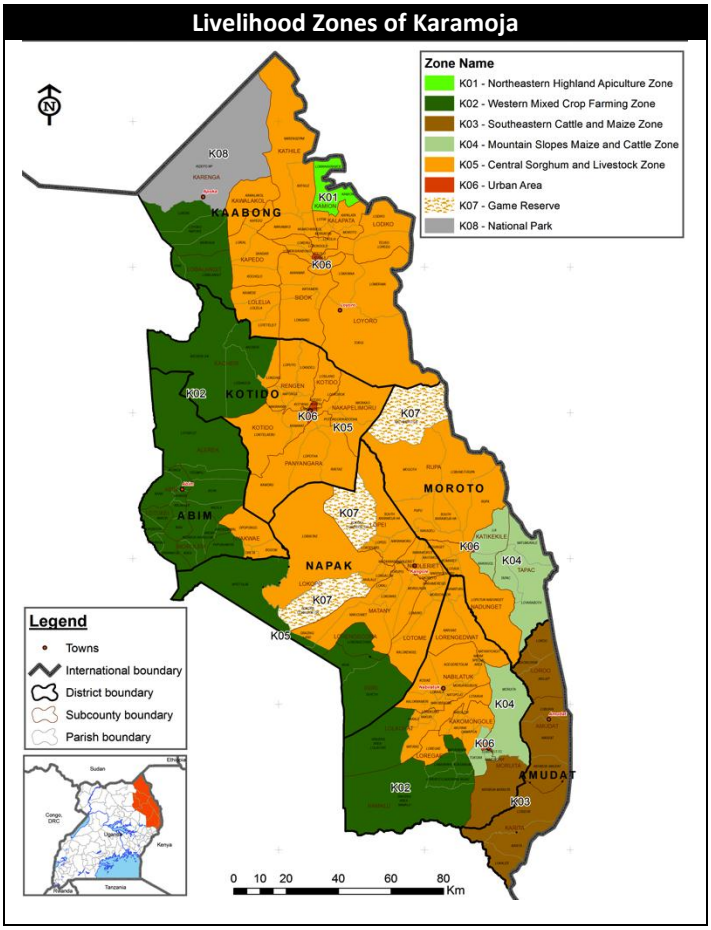
[10] Joe Powell, Karamoja: A Literature Review, March 2010

[11] Based on analysis of long term mean rainfall using data from USGS/FEWS NET.

been pastoral zones, and increased livestock holdings in previous agricultural zones. In November 2013 a regional workshop was held to update the livelihood zones in Karamoja.

The map to the right is the result of those discussions. Five broad rural livelihood zones were identified, as follows:

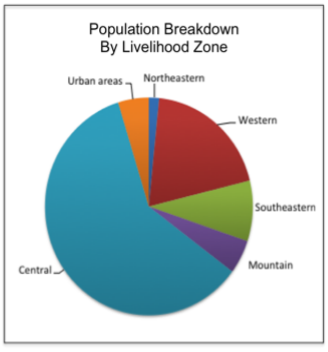
1. Northeastern Highland Apiculture
2. Western Mixed Crop Farming
3. Southeastern Cattle and Maize
4. Mountain Slopes Maize and Cattle
5. Central Sorghum and Livestock



The **Central Sorghum and Livestock** zone was enlarged (previously *Karamoja Livestock Sorghum Bulrush Millet Zone*) to encompass a former zone in the north (the *Northeastern Sorghum Simsim Maize Livestock Zone*) and a zone to the east (*Northeast Karamoja Pastoral Zone*); two former agricultural zones (*South Kitgum Pader Simsim Groundnut Sorghum Cattle Zone* and *Eastern Lowland Maize Beans Rice Zone*) were combined into one and slightly enlarged to form the **Western Mixed Crop Farming Zone**. The *Central and Southern Karamoja Pastoral Zone* was split into two, forming the current **Mountain Slopes Maize and Cattle Zone** and the **Southeastern Cattle and Maize Zone**. The **Northeastern Highland Apiculture Zone** is a new zone carved out of part of two previous northeastern zones.

The population of the five livelihood zones is presented to the right[12]. The pie chart provides an illustration of the relative breakdown of the population in Karamoja. The majority of the population lives in the *Central Sorghum and Livestock Zone*; the smallest zone in terms of population (and also size) is the

Livelihood Zone	Population
Northeastern Highland Apiculture Potato	21,938
Western Mixed Crop Farming	268,520
Southeastern Cattle and Maize	123,447
Mountain Slopes Maize and Cattle	68,985
Central Sorghum and Livestock	824,104
Urban areas	65,391
	1,372,386



12 Uganda Bureau of Statistics, 2013 Population Projections

Northeastern Highland Apiculture Zone.

C Summary and Comparison of Livelihood Zones

The following tables provide a brief summary of the characteristics of each livelihood zone. They are followed by a more detailed comparison of the zones.

Western Mixed Crop Farming Livelihood Zone		
Livestock	Cattle Goats Sheep Oxen	This zone is characterized by its relatively high reliance on crop production. Compared to other areas of Karamoja, rainfall is more plentiful and soils are productive. Households in this zone are generally able to meet their food needs without external assistance (taking into account both crop and livestock production). A number of crops are grown for consumption and sale including sorghum, maize, millet, cowpeas, pigeon peas, groundnuts, beans, sweet potatoes, cassava, sunflower and sesame (*simsim*). Middle and better-off households prepare their land using ox-ploughs while poorer wealth groups use hand hoes. This is a zone into which households may migrate from other areas of Karamoja in a bad year, indicating its relative advantage. There is a surprisingly high reliance on self-employment in this zone, with all but one wealth group (the middle) deriving the majority of cash income from this arena. These activities include sales of firewood, charcoal, bricks, building poles, bamboo, thatching grass, and stone aggregates. Better off households also brew, make bricks and conduct petty trade.
Income Sources	Self-employment Livestock sales Labour sales Crop sales Milk/meat sales	
Food crops	Sorghum Maize Beans Groundnuts	

Central Sorghum and Livestock Livelihood Zone		
Livestock	Cattle Goats Sheep Donkeys Chickens	The livelihoods in this zone are characterized as agro-pastoral, although, given the unreliable nature of crop production and the historical dependence on cattle, livestock has been a more fundamental economic driver than crops. However, in a year like the reference year, which was considered good, crops contributed over 70% of household food income to all wealth groups – a surprisingly high amount for an agro-pastoral area. Cattle, goats and sheep are the main livestock held by households; some poultry and donkeys are kept as well. Rain-fed agriculture is practiced in this livelihood zone and all households grow some crops in order to meet a portion of their food needs. This production, however, is never sufficient to cover all household requirements and even in years of good production (like the reference year) households need to purchase much of their staple grains. Apart from livestock and crop production, which serve as the foundation for rural livelihoods in the zone, households also engage in other economic activities including firewood, grass, pole and charcoal sales, unskilled agricultural labour and brewing.
Income Sources	Livestock sales Milk/meat sales Labour sales Self-employment Crop sales	
Food crops	Maize Sorghum Beans	

Mountain Slopes Maize and Cattle Zone

Mountain Slopes Maize and Cattle Zone		
Livestock	Cattle Goats Sheep	Livestock form the basis of the local economy, providing food (in the form of milk and meat), cash income and a way of storing wealth. Cattle have long formed the foundation of cultural, social and economic practices in this area, and in northern areas of the zone, where pastoralism has been the historic norm, the recent shift in attention towards crop production reflects a relatively new trend. Households raise cattle, goats and sheep and cultivate limited areas of maize, sorghum and beans. Livestock graze and browse freely and are fed crop residues. Mining for gold and marble occurs in select areas within the zone. Poorer households work for better off households to generate cash income, providing labour for land preparation, cultivation and harvesting. Bee keeping (in the eastern mountainous parts of the zone) and *qat* gathering on the slopes of Mt Kadam provide additional sources of cash. Self-employment - such as firewood collection and sales, charcoal sales, and grass and pole sales - supplements the income of poorer households in this zone.
Income Sources	Livestock sales Self-employment Labour sales Honey sales Crop sales	
Food crops	Maize Sorghum Beans Groundnuts Sunflower	

Northeastern Highland Apiculture Livelihood Zone		
Livestock	Cattle Goats Hens	Household economies here are based on agriculture and honey production with a small amount of livestock production. Households grow maize, sorghum, finger millet, beans, cowpeas, *simsim*, and sunflower. Of these, the most important crops for both consumption and sale are maize, sorghum and finger millet. Crop production potential in this zone is high, but is severely limited by the exclusive reliance on manual labour for cultivation. Agriculture is primarily rain fed with limited irrigation in isolated areas using water from the Usake River to grow vegetables all year round. Unique to this livelihood zone is that production totals are a fraction of those in similar cropping zones (e.g. the Western Mixed Crop zone) because middle and better-off households use only hand hoes for land preparation, which restricts the acreage planted. This is the poorest of the zones, with total income significantly lower than in neighbouring zones.
Income Sources	Self-employment Honey sales Labour sales Livestock sales Crop sales	
Food crops	Maize Sorghum Finger millet Beans Groundnuts Sesame	

Southeastern Cattle and Maize Livelihood Zone		
Livestock	Cattle Goats Sheep Camels (only in some areas)	In a good year, like the reference year, this zone generates more income than any of the other livelihood zones in Karamoja. This is fundamentally a pastoral zone where households plant crops as an investment that pays off in good years, but derive little from this investment in most years. Reliance on milk and livestock sales is higher here than in other zones. Cultivated areas tend to be relatively small, with even the better off growing on average no more than

Southeastern Cattle and Maize Livelihood Zone		
Income Sources	Livestock sales Milk/meat sales Crop sales	three acres of crops. Livestock are central to this zone's economy, providing milk, meat and cash to buy food. Cattle, goats and sheep are sold for cash income and also traded directly for grain. Camels are also raised in small numbers in parts of the zone. Other economic activities include honey production and sales of *qat*, which naturally grows on the slopes of Mt Kadam. Livestock numbers here are higher than in other zones in Karamoja, and milk yields tend to be higher as well. People use both Ugandan and Kenyan shillings here, as opposed to in neighbouring zones, highlighting the importance of cross-border trade for this livelihood zone and the dominance of the Kenyan economy. Whereas very poor and poor households in neighbouring zones such as the Mountain Slopes Maize and Cattle Zone rely more heavily on self-employment activities (gathering and selling firewood and charcoal, for example) and casual labour, in this zone, this type of income generating activity was not common in the reference year.
Food crops	Maize Beans	

C.1 Seasonal Calendar, Reference Year and Wealth Breakdown

The **seasonal calendar** is broadly similar in all five livelihood zones, with a single rainy season from March to October followed by an extended dry season. Cattle usually conceive towards the middle of the rainy season, when their condition is at its peak, and give birth after nine months, usually in the March to May period. Shoats usually conceive at the end of the rainy season and give birth after five months, just before the rainy season starts again. Milk production is generally high in the rainy seasons and low in the dry seasons. This general pattern can be disrupted by drought.

In three of the zones (*Southeastern Cattle and Maize*, *Mountain Slopes*, and *Central Sorghum and Livestock*) livestock typically migrate during the dry season in search of pasture and water. In the other two zones this type of migration does not occur.

The crop production season is pegged to the timing of the rains. The following general pattern prevails throughout all five zones, with minor variations in timing: land preparation starts in January in most zones so that by the time the rains begin in March fields are ready for planting. Planting starts in March and can continue into May depending on the crop and whether it is a short or long-cycle variety. Households begin consuming the harvest green in July in anticipation of the main harvest, which begins in most areas in August for maize and sorghum, carrying on through October.

The main type of local labour is agricultural, which is also available during the rainy season, or in the case of land preparation, just before the rainy season starts. There is some labour migration in the three more crop-oriented zones, namely the *Central Sorghum and Livestock Zone*, the *Northeastern Highland Apiculture Zone*, and the *Western Mixed Crop Farming Zone*. This occurs between January and April and gets extended in bad years.

The hunger season in all zones begins around January and extends through June, although the length and intensity varies by wealth group and also by year type. In the *Western Mixed Crop Farming Zone*, the hunger season starts later, in April, since households there harvest sorghum through January.

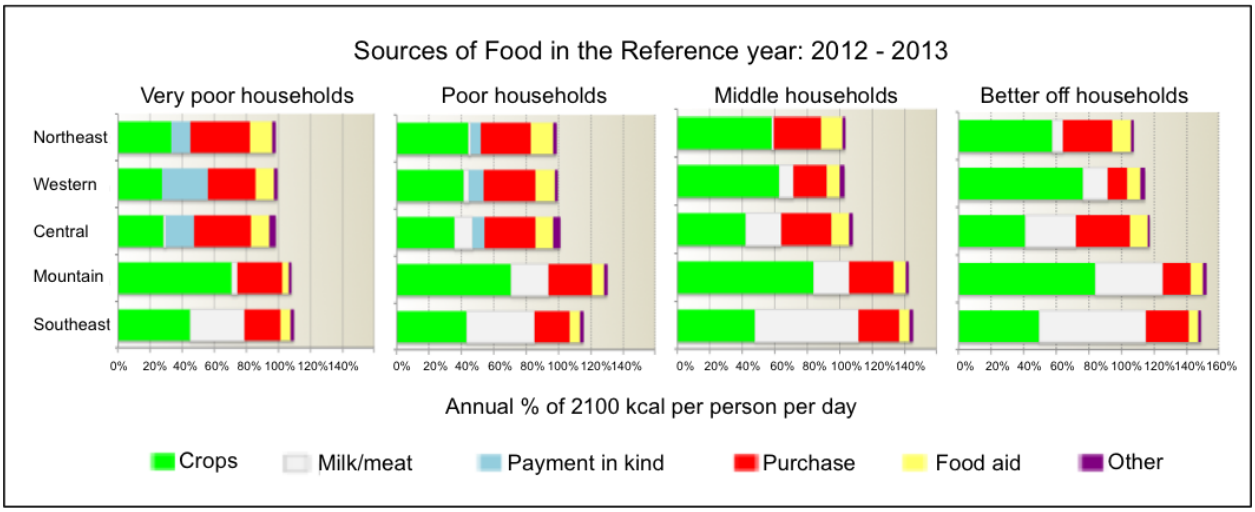
Each baseline assessment refers to a very specific time period called the **reference year**. In HEA, the reference year is a recent consumption year, starting with the month when own household production starts, usually marking the end of the main hunger season. The reference year in all livelihood zones in

Karamoja was July 2012 – June 2013. In three of the five zones (*Southeastern Cattle and Maize*, *Mountain Slopes*, and *Central Sorghum and Livestock*) this was considered a good year with above average production conditions. In the other two zones it was considered an average year, neither the best nor the worst year. These reference years, because they are average to good, provide a view into how households maximize their opportunities in average to good years and allow analysts and programme planners to consider the livelihood alternatives that households *themselves* emphasize most when not struggling to just get through a bad year.

Provided there are no fundamental and rapid shifts in the economy, the information in these HEA baseline profiles is expected to remain valid for approximately five years (i.e. until about 2018).

In two of the livelihood zones (*Southeastern Cattle and Maize* and *Mountain Slopes Maize and Cattle*), **wealth** is determined by the number of livestock a household owns. Other factors affecting wealth, such as land area cultivated and household size and composition, are considered secondary to livestock holdings. In the *Central Sorghum and Livestock Zone* it is both livestock and the number of acres cultivated that determines wealth, with oxen and plough ownership a primary driver of productivity. The other two zones, *Northeast Highland Apiculture* and *Western Mixed Crop*, identified the number of acres cultivated as the primary determinant of wealth, although in the *Northeast Highland Apiculture Zone* ownership of beehives is also an important factor. In these last two zones, livestock holdings are minimal. Household sizes generally increase with wealth, especially in the zones with significant livestock holdings, both because wealthier men have the option of marrying more than one wife and because additional people are required to manage larger herds.[13]

C.2 Food sources



A few things stand out in the above graphic, which compares the **sources of food** in the reference year for households in different wealth groups and in different livelihood zones. In all zones, households in all wealth groups relied on three primary sources of food to meet their annual requirements: their own

[13] For the purpose of this assessment, a household was defined as people eating from the same pot, which for practical purposes means the unit living with a single wife. A homestead, by contrast, is defined as a man plus all of his wives and children. Homestead sizes take into account multiple wives and children and where relevant include live-in workers and extended family members and omit family members in the case that they are living away from the family for education or employment purposes.

crops, milk/meat and purchase. Food aid (school feeding and food-for-work initiatives) and 'other' (mainly gifts) also contributed a small amount across the board. These were supplemented by payment in kind (food received in exchange for agricultural labour) in the three livelihood zones where agriculture plays a more central role (*Northeastern Highland Apiculture*, *Western Mixed Crop* and *Central Sorghum and Livestock*).

This is clearly a representation of a good or average year, with crops contributing a substantial amount for all households, even for poorer households, who often fail to obtain measurable gains from their crops in agro-pastoral areas. Crops were an especially important source of food for households in *Mountain Slopes Maize and Cattle Zone*, accounting for over 70% of food income for even very poor households.

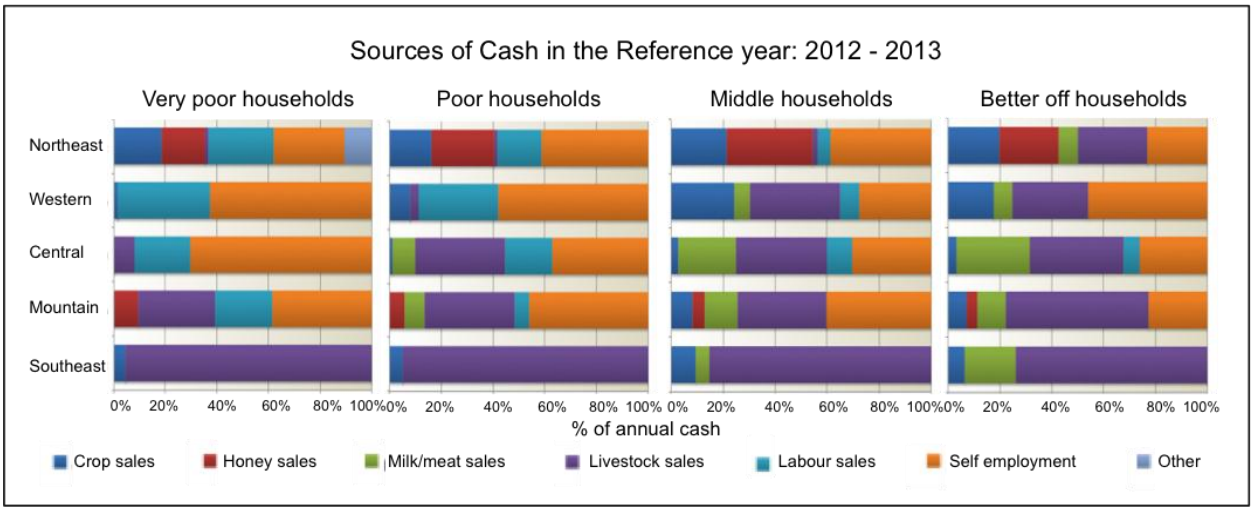
Milk (and to a smaller degree meat) are especially important in the *Southeastern Cattle and Maize Zone*, providing over 20% of annual calories for very poor households and *over 60% of calories* for better off households. This heavy consumption of milk is the result, in part, of the poor marketing infrastructure. In good years like the reference year, milk that isn't consumed is wasted because there are no reliable means of selling it.

Food aid (mostly in the form of school feeding) was a source of food in all five livelihood zones in the reference year.

In all livelihood zones, market purchases (shown in red) tended to comprise staple food (primarily maize and sorghum), both in terms of the amount of money spent and in terms of kilocalorie contributions. Other commonly purchased foods included beans, oil, and sugar. One would expect this red bar to expand significantly in bad years, with households increasing reliance on the market to make up for losses in crop and livestock production.

C.3 Sources of cash

The graphics below compare the **sources of cash income** in the reference year for households in different wealth groups and in different livelihood zones. The first graphs compare the proportions of income from different sources, while the second graphs compare absolute levels of income from different sources.

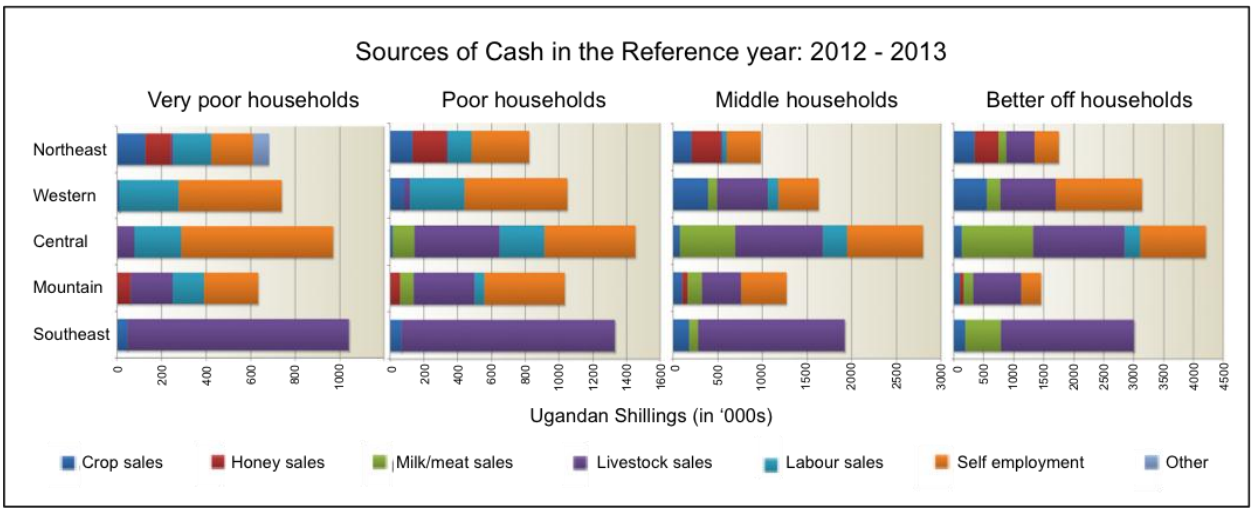


Perhaps the most surprising thing about these graphs is the high degree of reliance on self-employment activities in all but the *Southeastern Cattle and Maize Zone*. It is especially notable in the *Western Mixed*

Crop Livelihood Zone, where it makes up well over 50% of cash income for the two bottom wealth groups, and over 40% for even the better off; and in the *Central Sorghum and Livestock Zone*, where it makes up over 60% of annual cash income for very poor households. For poorer households, self-employment activities include firewood, charcoal, grass and pole sales. Better off and middle households brew beer, make and sell bricks, and to some extent also collect and sell natural resources (poles and grass). Given the amount of cash income generated by poorer households from self-employment, there is cause for concern about the damage that so much firewood collection and charcoal burning is having on an already-fragile environment.

Livestock sales are overwhelmingly the most important source of cash for all households in the *Southeastern Cattle and Maize Zone*. Households in this zone have the biggest herds, and they benefit from being close to Kenya where the demand for livestock is high. Livestock sales are also important for most households in both the *Mountain Slopes Maize and Cattle* and the *Central Sorghum and Livestock* zones.

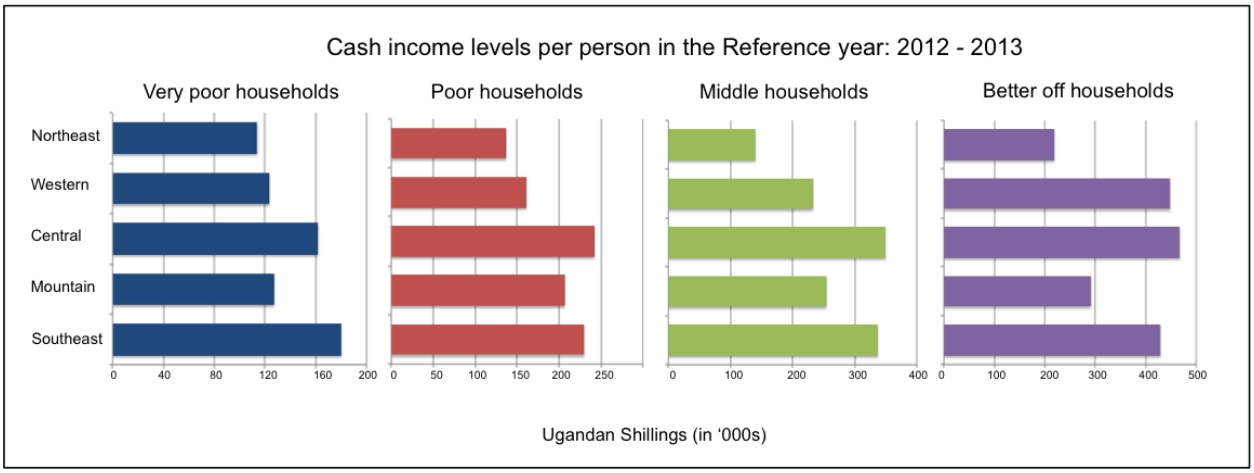
Labour sales are most important for very poor and poor households, especially in the more crop-oriented zones, featuring most prominently in the *Western Mixed Crop Livelihood Zone*. The percentage of income derived from labour sales for better off households in the *Central Sorghum and Livestock* zone represents money sent in the form of remittances from relatives.



The graphs above compare sources of cash income for households in different wealth groups presented in Ugandan Shillings. Absolute levels of income increase as one moves up the wealth scale. So, for instance, the top of the x-axis scale for very poor households is 1,200,000 UGX and the top of the x-axis scale for better off household is 4,500,000. One interesting point that emerges from these graphs is that although very poor households earn the most cash income in the *Southeastern Cattle and Maize Livelihood Zone*, mostly because they own and benefit from selling cattle, the other wealth groups in this zone take second place to the *Central Sorghum and Livestock Zone*, and this gap widens with each move up the wealth spectrum. Households in the *Central Sorghum and Livestock Zone* have a diverse set of income sources and in the relatively good reference year, the ability of middle and better off households to maximize each of these components allows it to generate significantly more income than households in the other zones, whose options appear to be more limited.

Having said that, when we look at cash income levels per person, the differences in income between the three top wealth groups in the *Southeastern Cattle and Maize* zone and the *Central Sorghum and Livestock* zone disappear somewhat. This is because household sizes in the *Central Sorghum and Livestock Zone* are considerably bigger at the upper ranges of wealth than in comparable groups of the

Southeastern Cattle and Maize Zone. When the greater per-household wealth in the *Central Sorghum and Livestock Zone* is distributed across a larger household, the per-person benefit is reduced.



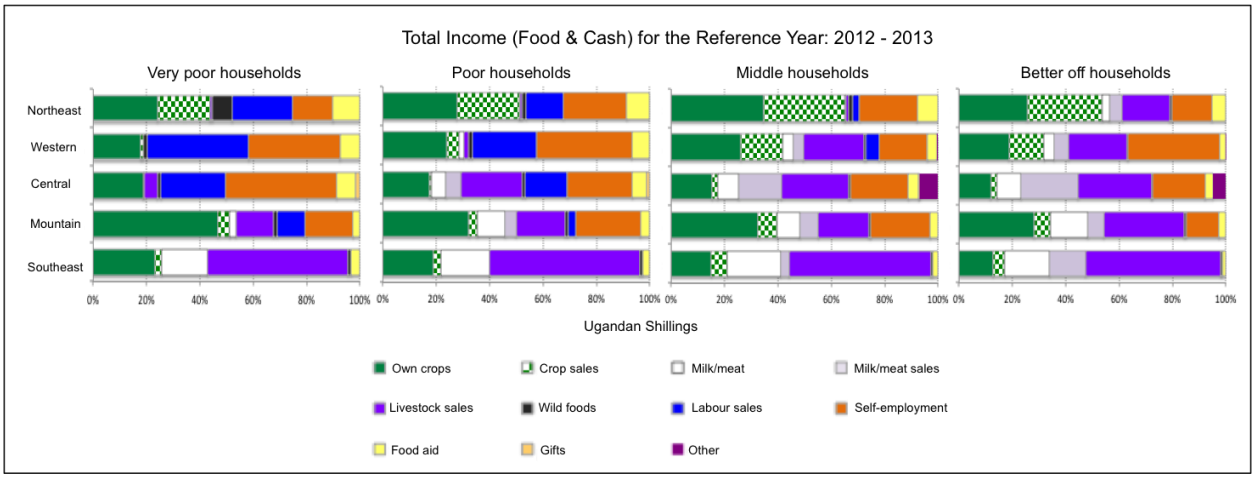
C.4 Total income (food + cash)

The graphs in the previous section provided a comparison of food income and cash income separately. In this section we look at total income (food plus cash), which is a more complete representation of 'real' income than cash income alone, especially in areas where people produce on their own a significant proportion of their food. In the first set of graphs, total income is presented in a way that allows you to see the relative importance of each food and cash income source in relation to the annual total. In the second graphs total income *levels* are presented for each wealth group allowing for a comparison of the average zone's total income across all five livelihood zones.

In this region, which has always been characterized as primarily a livestock-based economy, the increasing reliance on crop production, both for own consumption and sale, is made clear in the graphs below. This is especially the case in *the Northeastern Highlands Apiculture Livelihood Zone* and the *Mountain Slopes Maize and Cattle Livelihood Zone*, where over a third of poor household total income derives from crop production. Having said that, it is important to remember that these graphs show us the story for an average to good year, not a bad year. It is precisely in these better years when the investment in crop production pays off, allowing households to forego selling livestock that they would otherwise need to sell in a bad year in order to finance food purchases.

Even in a year of good crop production, livestock continue to be of primary importance for better off households in three of the zones (*Southeast Cattle and Maize*, *Mountain Slopes Maize and Cattle* and *Central Sorghum and Livestock*), both as a source of milk and meat and as a 'bank' that households tap into to obtain cash income for critical expenditures.

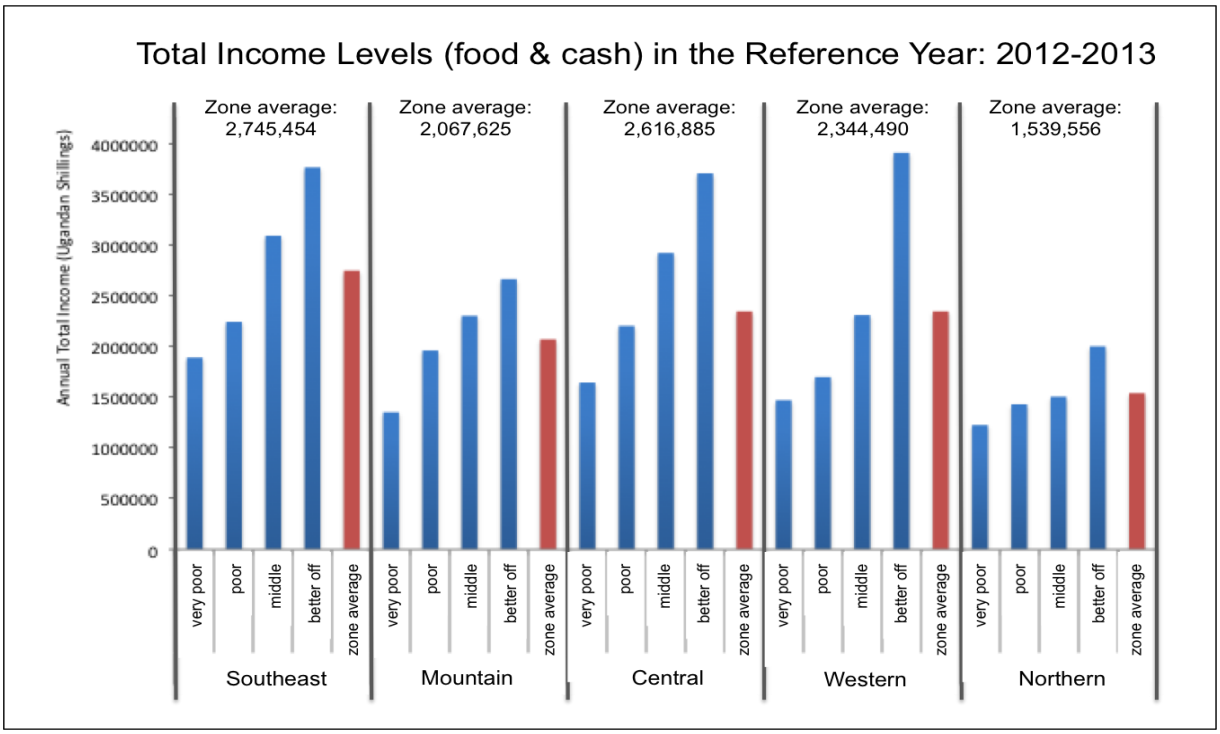
Again, these graphs illustrate the surprising reliance on self-employment in four of the zones, especially in the *Western Mixed Crop Farming* zone and for poorer households in the *Central Sorghum and Livestock Zone*. This fact that this source of income is essential even in relatively good years leads one to question to what extent it can be expanded in bad years when more people pursue these activities more intensively in order to make up for losses on the production side. And it raises some alarm bells about the on-going damage to the environment caused by some of these activities.



The total income levels graph below show how much income in Ugandan Shillings, combining the value of both food and cash (converting food to cash by using the price of the cheapest staple). Two things are worth commenting on.

First, the *Southeastern Cattle and Maize Livelihood Zone* on average generated the most total income during the reference year and the *Northeastern Highland Apiculture Livelihood Zone* is, by far, the poorest of the five zones, with an average total income only a little more than half that of the *Southeastern Cattle and Maize* zone.

Second, although better off households in the *Western Mixed Crop* zone are on a par with better off households from the *Southeastern Cattle and Maize* zone, the other wealth groups in the *Western* zone lag far behind, highlighting the skewed distribution of wealth in this zone.

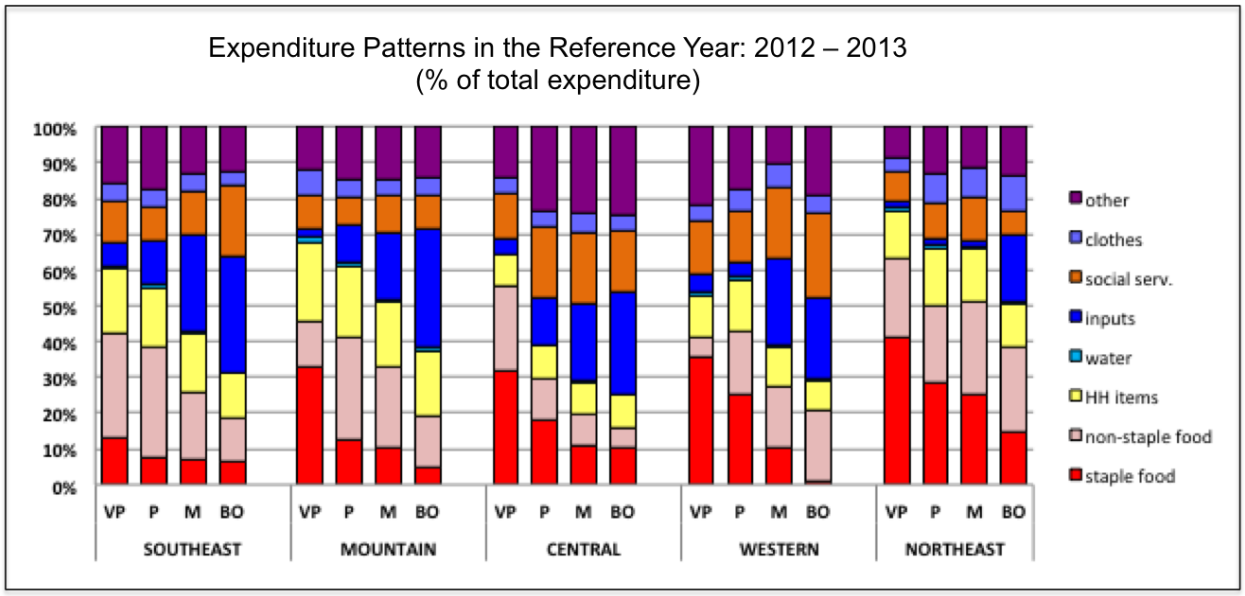


C.5 Expenditure patterns

The graphic below compares **expenditure patterns** in the reference year for households in different wealth groups and in different livelihood zones. As expected, the proportion of cash income spent on purchasing food is highest for the poorest wealth groups, declining as wealth goes up. Very poor households in the *Northeastern Highland Apiculture Zone* have the highest proportion of cash devoted to food purchase, with over 60% of expenditure on staple and non-staple foods.

The opposite trend is apparent with inputs; better off households devote a larger proportion of their income to buying inputs (such as livestock drugs, livestock for re-stocking, seeds and tools) than poorer households. This is both because poorer households do not have enough cash to spend on this category and because they don't have as many livestock or as much under land cultivation as better off households.

Another thing worth noting is the relatively large amount spent on household items (in yellow) and social services (in orange) such as health and education. Small weekly outlays on things like salt, kerosene and soap can add up to a substantial amount by the end of the year. The amount that very poor households in the *Southeastern Cattle and Maize Zone* spent on household items in the reference year was more than they spent on staple foods. Much of the social services expenditure is on schooling, which all households see as a critical pathway for their children in the future. Better off households spend money on inputs to insure their livelihoods next year; they spend money on their children's schooling to improve their livelihood prospects in the future.



C.6 Hazards and response strategies

Periodic shortages of rain and drought are hazards in all the zones. As rain-fed agriculture becomes a more central component of the household economy, the direct effects of rainfall shortages are increasingly affecting household income. Drought occurs typically once every three years, but even in years when rainfall is plentiful, its distribution may fail to meet the growth requirements of the crops that are sown. When drought occurs, its main effects are to reduce crop yields. In severe droughts (which are rare) it can also reduce the availability of pasture, browse and water, leading to reductions in milk output, loss of livestock body condition (leading to reduced livestock prices), reduced rates of conception and increased livestock mortality.

Livestock diseases were also cited as a common hazard, negatively affecting the productivity of all types of livestock. Specifically tick borne diseases, worms and foot rot affect all livestock. Serious epidemics typically occur once every five years with severe repercussions, causing potentially large losses of herds. *Contagious bovine pleuropneumonia* (CBPP), *East Cost Fever* (ECF), *brucellosis*, *anaplasmosis*, Heart Water, Lumpy Skin Disease, *contagious caprine pleuropneumonia* (CPPP), *helminthiosis*, and ticks are all prevalent.

Human diseases: Malaria is a particular problem in this zone, negatively affecting labour availability at household level and causing severe illness and death for many children and elderly. This is particularly detrimental to poorer households, given that they rely more heavily on selling their own labour (which is their main capital).

Crop pests and disease can significantly reduce crop production. Common pests include northern leaf blight, smut and stalk borer that affect maize and sorghum, groundnut rosette, bean fly, aphids, maize streak virus, and honey dew in short-cycle sorghum.

Insecurity has historically been a major hazard in Karamoja, with cattle raids a common occurrence. Since successful livestock production in arid areas is highly dependent on mobility, conflict and border closures can seriously reduce livestock productivity. Insecurity has been significantly reduced, although it is still experienced is some pockets.

Common household **response strategies** to deal with hazards include the following.

Switching expenditure – Reduced expenditure on non-essential items such as clothes, and on expensive foods such as rice, wheat flour, beans, sugar and oil, is a strategy pursued by all wealth groups in bad years, so that they can purchase cheaper staple foods like sorghum.

Increased bush product collection and sale – The sale of firewood, charcoal and construction materials is intensified in bad years. The environmental implications of this strategy are likely to be destructive.

Increased livestock sales – Households from all wealth groups sell additional livestock in bad years. Livestock sales serve the dual purpose of increasing income to cover basic food and non-food expenses and of destocking to reduce the pressure on pasture and browse and to reduce the expenses required to maintain the herd (both in terms of livestock drugs and feed). However, the extent to which this strategy of increased livestock sales can be pursued without damaging future livelihoods is quite limited. Middle and better off households are in a better position to exploit this strategy.

Further livestock migration – If there is a shortage of pasture, browse and water, herders with their livestock migrate further than normal to locations outside their usual migration areas.

Labour migration – Members of very poor, poor and, to some extent, middle households travel to the main urban centres to look for casual work and gifts from relatives. They also travel to other livelihood zones (especially the Western Mixed Crop Zone) in search of agricultural work opportunities or out of the zone to neighbouring districts of Pader, Kitgum, Lira and Soroti.

Wild food consumption – Households will increase the consumption of wild foods, although the value of this strategy depends on the type of wild food consumed (with tubers and grains being of higher calorie value than leaves and berries) and whether or not it is also affected by the hazard (in the case of drought). Some will also hunt more game, where this is possible.

Increased remittances - Relatives increase the frequency and amounts of remittances sent to family members.

D Implications for Programming

The final section of each livelihood zone profile outlines ideas for programming that were generated at the end of the fieldwork by the field teams.

The suggestions below are not exhaustive and are not based on feasibility studies. It is of critical importance that any potential development intervention be 'risk-proofed' to the extent possible before being implemented. This can be done using the HEA baselines in conjunction with dedicated scenario analysis that takes into account the potential extra household expenditure associated with each new development project, projected income gains, and multi-year hazard projections. Projects intended to provide help can end up harming households by putting them at greater risk of food and livelihood insecurity if the impacts of the project (in the context of on-going hazards) on household income and expenditure are not fully understood beforehand. The following ideas, therefore, are offered only as a springboard for further discussion and investigation.

Since livestock remain the backbone of the economy of the region, and one of the few economically viable ways to exploit semi- arid lands, it is essential to continue to improve the support to this sector. Although it may no longer be possible for the entire human population in Karamoja to derive their livelihoods from pastoralism, it remains an important and viable option for a large portion of the population. At the same time, since large numbers of households have inadequate herd sizes to sustain their livelihoods and since the livestock population growth rate has not kept up with the human population growth rate, it is important that practical and sustainable alternatives are found.

Livestock interventions: Livestock constitute the mainstay of local livelihoods and provide the main source of income (food and cash taken together) for the majority of the population in the *Southeastern Cattle and Maize*, *Mountain Slopes Maize and Cattle*, and *Central Sorghum and Livestock Livelihood Zones*. It is important to continue and to improve support to this sector, especially in relation to ***veterinary drugs and services*** to address the chronic problem of livestock disease. The current system is inadequate leading to a high prevalence of diseases and has made it difficult to keep other types of livestock such as poultry and pigs due to Newcastle disease and African swine fever, respectively. ***Water*** is another vital sector to support. Hand-dug wells provide the main source of water for both the livestock and human population for much of the year in the pastoral/livestock-based livelihood zones; these do not provide a reliable source of supply and a number of areas in the livelihood zones suffer chronic problems of water shortage. **Provision of *tse tse* fly traps** is especially critical for communities close to wildlife protected areas in Napak, Nakapirpirit and Kaabong districts. Some types of wildlife are hosts to *tse tse* flies which are a potential health hazard as they cause *trypanosomiasis* (*nagana*) in livestock and sleeping sickness in humans.

Agricultural production: Interventions related to crop production including timely support with seeds (drought tolerant), provision of basic agricultural tools, oxen and ox-ploughs were highlighted in all zones. It was suggested that basic training on agronomy and improved agricultural extension services be provided to farmers. Better off and middle households in the *Northeastern Highland Apiculture Zone* can be supported to increase acreage under cultivation by providing them with access to and training on animal traction. These interventions can be combined with an improvement in the delivery of extension services, which are seriously inadequate. **Fencing** to protect fields from livestock and wild animals could be considered. Assistance with **pest control**, **seed selection techniques**, and training in **crop husbandry** were all suggested. In the *Western Mixed Crop Farming Zone* there are various low cost irrigation

systems that households can use to improve crop production especially of vegetables. Respondents want transfer of such technology to enable them to increase their income from off-season production of vegetables for the market.

Improved milk processing and marketing: There is a *lot* of extra milk produced in the *Southeastern Cattle and Maize Livelihood Zone*. Lack of suitable **milk processing, storage facilities and transport** means most of the surplus milk is either consumed locally or wasted. Additional income could be generated from milk sales in this zone with investment into appropriate processing, storage and marketing facilities.

Roads, market infrastructure and general market function: Improvements in marketing infrastructure would help increase the prices local households could obtain for their livestock and for all other local commodities sold, such as honey and *qat* and it would decrease the price of items they buy (both food and non-food items). Steps need to be taken to ***improve roads, market infrastructure*** and ***market function*** generally. This will not be easy to achieve and is likely to be relatively expensive in view of the sparse population and long distances between settlements in the county.

Restocking: After years of insecurity, during which cattle raids and livestock were common, many households have been left with diminished herds. Livestock diseases have also significantly reduced herd sizes for all wealth groups. This was stressed as a priority in many villages.

Water and sanitation: Access to water in some areas is a problem. In some zones, humans and livestock share the same sources of water in both wet and dry seasons, creating concerns about hygiene and the lack of available clean water, especially in the dry season. Investment in the construction of water sources including dams, pans and boreholes was called for. Most households lack toilet facilities and use the bush. There have been outbreaks of Hepatitis E resulting from fecal contamination. Development agencies could introduce and encourage the use of pit latrines.

Social services: Improved health care facilities are necessary. In some areas health centres are available but lack enough qualified personnel and drugs. Adding a maternity ward to existing health units and fencing health centres to provide security would be an important way to reduce infant mortality. There is also need for **educational support** to all wealth groups in the zone. Respondents highlighted the need to increase the number of teachers in schools, providing lighting and including boarding facilities in nearby schools as pupils and students walk long distances to get to school.

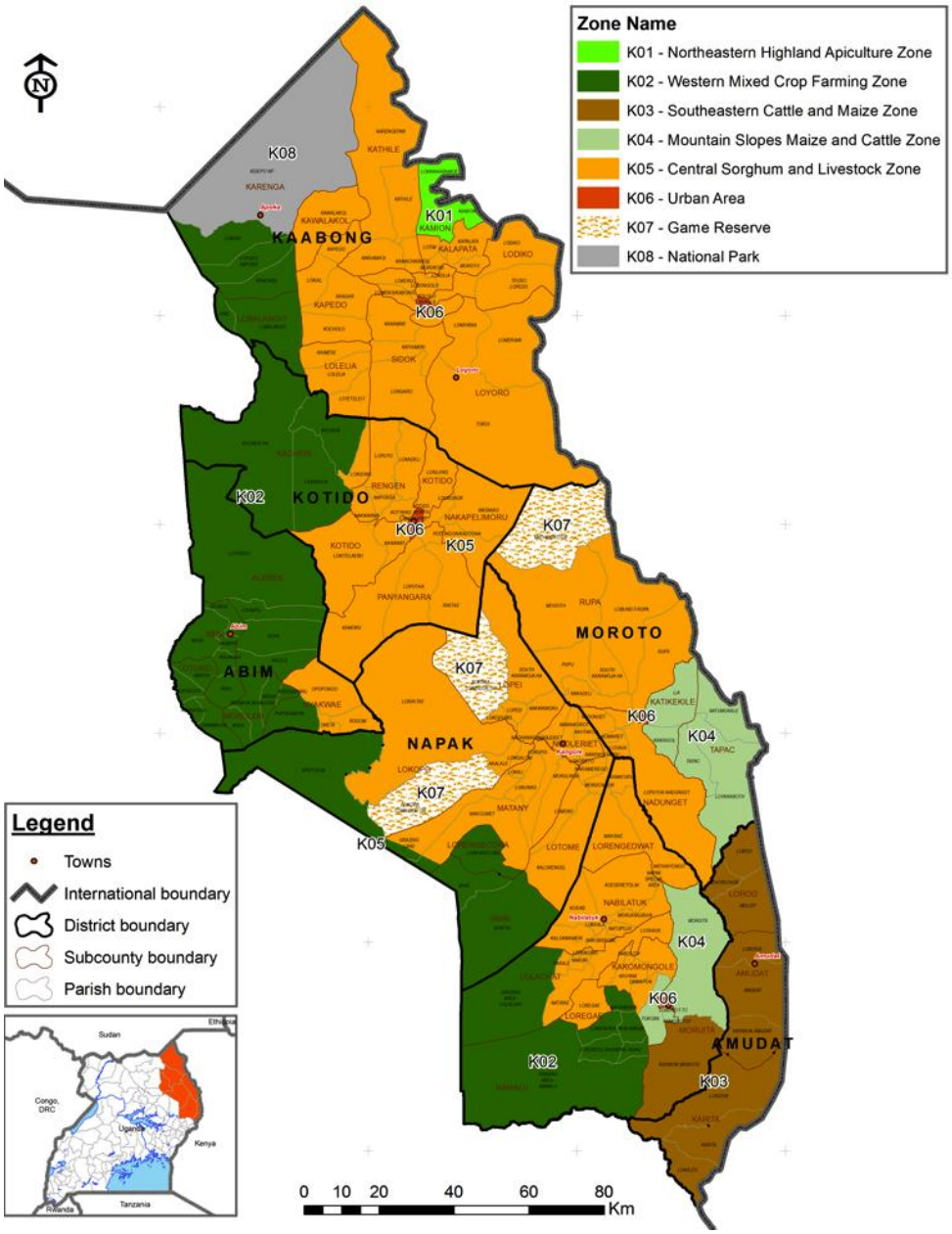
Support to honey production: Bee keeping is an important income source in some zones, and especially the *Northeastern Highland Apiculture Zone*. Communities rely on traditional beehives, which have very low levels of productivity. Investment in modern beehives, better harvest methods using protective gear, and development of the honey value chain would translate into increased household incomes and improved welfare.

Alternative Livelihood Support: Poorer households obtain much of their income from firewood and charcoal sales which has a detrimental effect on the local environment. The government, development agencies and the private sector need to introduce new skills to the local population to enable them to engage in alternative non-damaging income generating activities. Interviewees expressed the need for income diversification through training in alternative income generating activities. Although specific activities were not identified, there was mention of setting up youth or women's groups to engage in small businesses. This could be combined with setting up VSLAs and training in business and financial management that respondents also identified as important.

Aloe sales: The collection and sale of *Aloe spp.* is a viable income option for the very poor and the poor populations in the *Southeastern Cattle and Maize Livelihood Zone*. Currently, households have limited knowledge of the value of aloe and the prices at which it is sold at the destination market. NGOs should explore the value chain of aloe and implement projects related to quality control and the potential for market development and growth.

Vocational training: Within all livelihood zones, there exists an ample labour force. Organizations could focus on the needs of private sector employers and assist in building capacity and developing vocational skills. In addition to skills development, NGOs could engage the private sector and facilitate on-the-job training and/or job placement opportunities.

III. THE LIVELIHOOD ZONE PROFILES

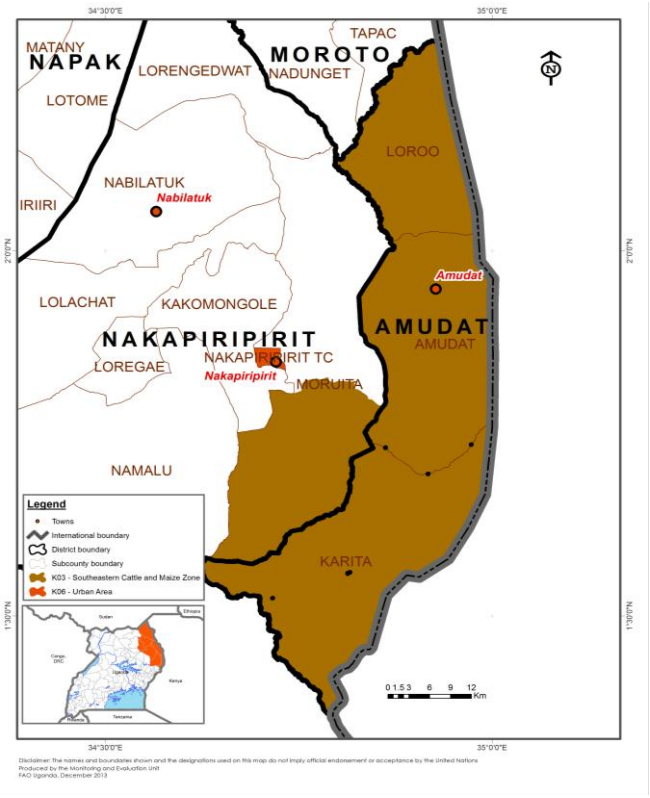


Karamoja Region Livelihood Baseline Profile

A Southeastern Cattle and Maize Livelihood Zone

Zone Description

The *Southeastern Cattle and Maize Livelihood Zone*[14] is located in the southeastern part of Karamoja Region, bordering Kenya to the east, and includes all of Amudat District and part of Nakapiripirit District. Bordering the zone to the west is Mt. Kadam. The Kanyangareng River traverses the zone and flows in an easterly direction towards Kenya. To the north is the *Mountain Slopes Maize and Cattle Livelihood Zone*, and to the south, one finds the Elgon mountain range. Amudat is the major town in this zone. The zone's population is estimated at 123,447[15]. The main resident tribe is the Pokot.



The zone is made up of semi-arid lowland and undulating plains intersected with seasonal rivers. It has a long dry season and erratic rainfall. Most of the vegetation covering this zone is characterized as bush land, covered in shrubs composed of various acacia species and other thorny tree varieties. *Acacia Senegal* is the dominant species of acacia found in this zone and indeed the whole of Karamoja. Other species found here include *Acacia nilotica*, *Acacia seyal*, *Acacia sieberiana* and *Acacia gerrardii*.

Wild game is found in the bush thickets, especially *dik dik and* guinea fowl, and is hunted by the local population at will. Desert dates and tamarind are the main wild fruits consumed in this zone. Aloe vera from wild species is also available but not widely exploited.

Agro-pastoralism is the dominant livelihood system in this zone, with the balance tipped towards livestock

[14] Fieldwork for the current profile was undertaken in January and February of 2014. The information presented refers to the July 2012 to June 2013 consumption year, which was a good year. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for approximately five years (i.e. until 2018). All prices referred to in the document are for the reference year.

[15] Uganda Bureau of Statistics Population Projections, 2013.

rather than crops in most years. In essence this is a pastoral zone where households plant crops as an investment that pays off in good years, but without the expectation of high returns every year. Reliance on milk and livestock sales in this zone is higher here than in typical agro-pastoral areas, and cattle's central role in the cultural practices also attest to its pastoral tendency. Livestock are kept around settled homesteads in the wet season and moved to seasonal grazing areas during the dry season. There is one growing season, from March to September, during which maize, sorghum and beans are planted in the riverine areas. Cultivated areas tend to be relatively small, with even better off households growing no more than three acres of crops. The soils, mostly *s*andy loams (*plinthosols*) that dry fast when exposed to moderate heat, are generally quite fertile. Annual rainfall typically ranges from 600 to 900 mm. This rainfall replenishes the grazing areas and water sources on which livestock (cattle, goats, sheep and some camels) depend.

Livestock are central to the economy, providing milk, meat and cash to buy food. Cattle, goats and sheep are sold for cash income and also traded directly for grain. Camels are also raised in small numbers in parts of the zone. Animals are raised using a free-range system on communal grazing areas, with grass, browse and very limited crop residues. There is no history of households in this zone purchasing livestock feed. Rivers and streams, deep and shallow wells, and seasonal ponds are the main sources of water for livestock in the wet season. Dry season water is obtained from wells and permanent streams. Other economic activities in this zone include honey production and sales of *qat*, which grows naturally on the slopes of Mt Kadam.

A number of factors distinguish the *Southeastern Cattle and Maize Zone* from others in Karamoja. Livestock numbers here are higher than in any of the other zones, and total income (food and cash together) is also the highest. Milk yields and crop yields also tend to be higher than in the neighbouring *Mountain Slopes Maize and Cattle Zone*. People use both Ugandan and Kenyan shillings here, as opposed to in neighbouring zones, highlighting the importance of cross-border trade here and the dominance of the Kenyan economy. Whereas very poor and poor households in neighbouring zones such as the *Mountain Slopes Maize and Cattle Zone* rely more heavily on self-employment activities (gathering and selling firewood and charcoal, for example) and casual labour, in the *Southeastern Cattle and Maize Zone* this type of income generating activity was not common in the reference year.

Markets

Dotted with scattered settlements and far from urban centres, market access is limited. All roads are dirt (*murram*), albeit in fair condition. In the wet season the main trunk roads tend to be accessible. These radiate out from Amudat towards Nakapiripirit and Loroo, Kitale, and Karita. However, with the rains, the Amudat to Katabok road becomes unreliable. The main trading activity is bulking of maize for sale in Kenya and livestock trading by a limited number of traders, mostly based in Amudat town.

Kenya is a major source of demand for maize and livestock from this zone, and the neighbouring districts of Sebei and Bugisu sub-regions also act as trading partners. South Sudan is the end destination for many of the zone's sheep and goats. From October to December households sell maize to traders in local markets (Amudat, Loroo, Karita) who then sell to wholesalers in Amudat town, where the maize is then shipped on to Kapenguria in Kenya. Beans are sold locally in September and October, ending up in Amudat town.

Cattle are sold to traders through a number of different routes: Cattle sold at the Amudat livestock market are moved to be traded in Mbale and the neighbouring countries of Kenya and South Sudan. Cattle traders also buy cattle from outside the zone to be re-sold in Amudat market. The main source of cattle outside the zone is Teso subregion, especially Kamuge market in Pallisa District, Kasilo market in Serere District,

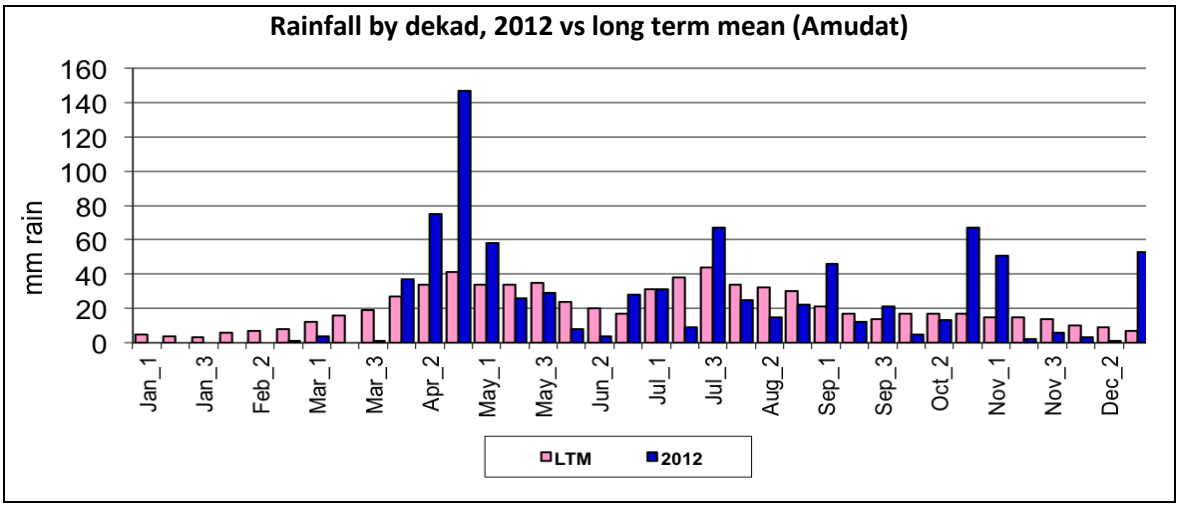
Ochorimongin market in Katakwi District, Arapai market in Soroti District and Ochero market in Kaberamaido District. The highest volume of cattle trade occurs from August to December, when cattle are still in good condition following the wet season; lowest sales occur from January to June, as cattle tend to lose their condition (and their corresponding value) during the dry season. Shoats are sold to traders in Amudat town, from where animals are sold on to either Mbale or South Sudan. This trade takes place most intensely from October to December, with lowest sales occurring from March to May.

There is also a regular trade in *qat* (*miraa*) which is harvested from the slopes of Mt. Kadam, located in Nakapiripirit district on the border of the zone. Honey is also collected and sold.

Timeline and Reference Year

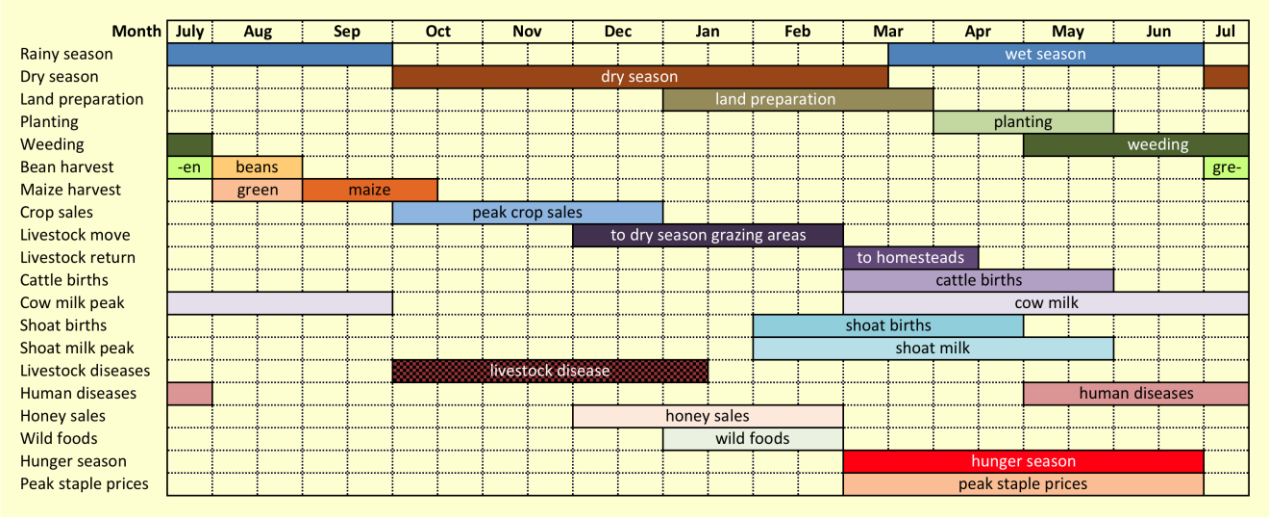
The baseline assessment refers to a very specific time period called the reference year. In the Southeastern Cattle and Maize Zone the reference year, which covered the period from July 2012 to June 2013, was an above average season for household food security. After several crisis years, with low rainfall, drought, livestock and crop disease, and with insecurity plaguing the previous three years, the reference year provides a view in to how households take advantage of the opportunities presented by optimal seasonal rains, low livestock disease and relative security. The table below provides an overview of the food security conditions from 2009 through 2013 as reported by household representatives in the villages where the HEA baseline work was conducted. In the table, the 2012 production year is the reference year, and as reflected in the rainfall data presented in the graph below the table, this was a year with above average rainfall in many months of the growing season (April to September).

Year	Rank	General overview
2013	**3**	Mid-season dry spell
2012	**4**	Optimal seasonal rains, good crop yields and low livestock disease
2011	**2**	High incidence of livestock disease and low rainfall
2010	**1**	Crop diseases (honey dew and maize smut) and insecurity
2009	**2**	Severe drought along with insecurity
5 = an excellent season for household food security (e.g. due to good rains, good prices, good crop yields, etc)		
4 = a good season or above average season for household food security		
3 = an average season in terms of household food security		
2 = a below average season for household food security		
1 = a poor season (e.g. due to drought, flooding, livestock disease, pest attack) for household food security		

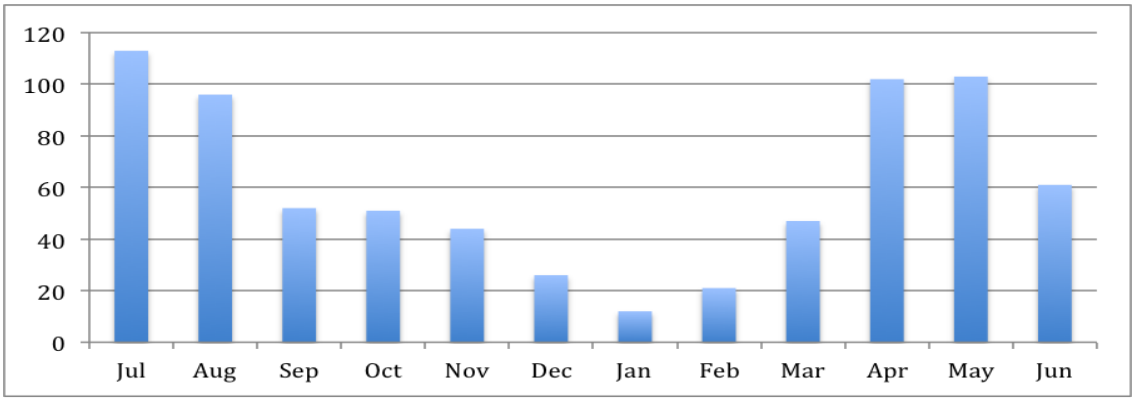


The graph above shows that reference year rainfall (2012 season's rains) in Amudat was well above average in a number of the critical growing months.

Seasonal Calendar for Reference Year



Average monthly rainfall, long term mean (mm) Source: USGS/ FEWS NET



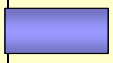
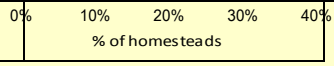
The seasonal calendar above shows how access to food and cash income changes for households over the year. The main rainy season is from March through September with a mild dry spell normally experienced in June. Dry season temperatures range from 30-35^{0}C while wet season temperatures are generally below 30^{0}C.

People begin to prepare their land for planting in the last two and a half months of the dry season. Most households use hand hoes, although tractors are increasingly employed in the southern parts of the zone, especially in Karita sub-county. Ox ploughs are not common here as it is not culturally appropriate to use oxen for labour, but there are efforts underway to change this attitude by supplying oxen, ploughs and training. Middle and better-off households pay poorer households in-kind with food for them to help prepare their larger tracts of land. Maize and beans are the main crops grown, and these are normally intercropped. Planting begins in April, with beans harvested in August and maize harvested in September.

Livestock are kept around settled homesteads in the wet season but in the dry season, men and older boys move them to dry season grazing areas. These include Achoricor, Nagoliet and Namosing in Loroo sub-county; and Okilim, Kaichom and Lokoma in Karita sub-county. Livestock in the central parts of the zone move to Moruita subcounty in Nakapiripirit District. Cows usually give birth back in the homestead, where the resulting milk output is used for both the calves and for human consumption; the cows that give birth in March continue to milk through at least September. Shoats give birth a bit earlier than cattle, starting to kid or lamb in February. Goat milk is consumed, especially by children; but sheep milk is only consumed by those from the household that are tending the herds in the rangelands.

Honey is collected and sold in the dry season, particularly in December, January and February. *Qat*, on the other hand, is collected and sold in the wet season.

Wealth Breakdown

	Percentage of homesteads (man plus wives)	Wealth Groups Characteristics: HH size (per wife)	Number of wives	Land area cultivated (acres) per wife	Large stock holdings per homestead	Shoats per homestead
Very poor		6	1	1	7.5	13
Poor		6	1.5	1	18 cattle	22
Middle		6	3.5	1.5	45.5 cattle; 7 camels	89
Better off		7	5	2	100 cattle; 35 camels	150
						

Note: All results are the mid-point of a range.

The table above summarizes the basic characteristics of different wealth groups. Cattle ownership is the main determinant and symbol of wealth in this zone. The bar charts on the left represent the percentage of *homesteads*, meaning the man plus his wives, (as opposed to *population* – see more on this below) that fall into each of the wealth categories. In this livelihood zone men can have more than one wife. The number of wives is correlated with wealth, because a man can only acquire additional wives by paying the wife's family with cattle, and can only maintain multiple households with a large herd. Household sizes for wealthier families also tend to be slightly larger, accommodating extra relatives or additional children. The household sizes in the chart above refer to the household managed by the wife; so each wife may have 6 children in her own hut or huts, but be part of a larger homestead with multiple wives. Land area cultivated is also per wife, as women tend to manage this aspect of work. The livestock information refers to the homestead, so a better off man with 5 wives may have as many as 100 cattle and 150 shoats, whereas a poor man with one wife has only around 8 cattle and 13 shoats.

Everyone grows the same crops - primarily maize and beans - but the poorer you are, the less you cultivate. Even so, the differences in area cultivated are not very big. Crops are essentially grown to reduce the need for selling cattle to buy grain, thereby allowing households to reinvest in productive livestock in good years when crops yield a meaningful return. As shown in the timeline table in the previous section, these good years are not common occurrences, with only one of the past five years considered above average for crop production. Even in these good years, it is necessary for households to purchase grain to supplement their own production.

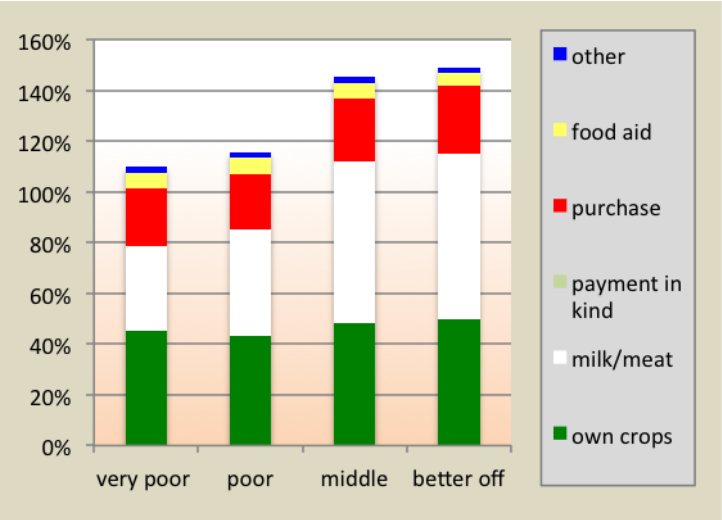
	Wealth Breakdown	
	% homesteads	**% pop**
Very poor	34%	14%
Poor	27%	17%
Middle	25%	35%
Better off	14%	34%
Note: Results are the mid-point of a range		

As mentioned above, the bar charts in the table show the percentage of *homesteads* (man plus his wives) that make up the population in this livelihood zone. The percentage of homesteads falling into the better off category is relatively small (approximately 14%), and very poor homesteads make up the largest proportion at around 34%.

However, given that the number of wives and children increases as we move up the wealth spectrum, the percentage of the *population* that falls into each wealth group is quite different, with almost 70% of the population falling into the middle and better off categories, and only around 30% of the population in the bottom two groups.

Sources of Food

The graph to the right presents the sources of food for households in different wealth groups in the *Southeastern Cattle and Maize Zone* for the period July 2012 through June 2013. July represents the start of the consumption year because it is when households start consuming the green harvest. In the graph, food is presented as a percentage of 2100 kcal per person per day for the 12-month period.



In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.

The reference year in this zone was a good year for crop production. Even so, households are not able to cover all of their annual food requirements with their own production. The range of difference between own crops' contribution to very poor and better off households was not large (45% for very poor and 50% for better off). This is reflected in the production figures detailed in the table beneath the chart.

CROP PRODUCTION	Very poor	Poor	Middle	Better off
Maize (kg)	530	540	740	760
Beans (kg)	55	90	100	160
Note: All results are the mid-point of a range				

However, this production is significantly higher than in the regularly occurring drought years, when households may only be able to harvest green crops, eating from their own production for less than a month. The level of crop production in the reference year allows households to invest cash otherwise spent on food into livelihood assets, and in some cases, recover from losses sustained in previous drought years.

More than half of annual food for middle and better off households comes from milk and meat, and even very poor households obtain over a third from this source. Milk, which is in plentiful supply in years like this (see milk production table below), is consumed fresh, curdled (sour milk) and in the form of ghee, allowing households to store this perishable good. Poor market infrastructure precludes households from selling milk, an untapped source of cash income.

The remainder of annual food is obtained through purchase, food aid and gifts ('other'). But as shown in the graphs, middle and better off households purchase food not to fill a calorie gap, but to diversify their food basket, and especially to acquire sugar, a major contribution to the daily tea. For very poor and poor households, maize and beans are the main foods purchased, usually in the months before the new harvest comes in (March through June). The food aid component shown in the graph represents the amount of food obtained from school feeding programmes.

MILK PRODUCTION	Very poor	Poor	Middle	Better off

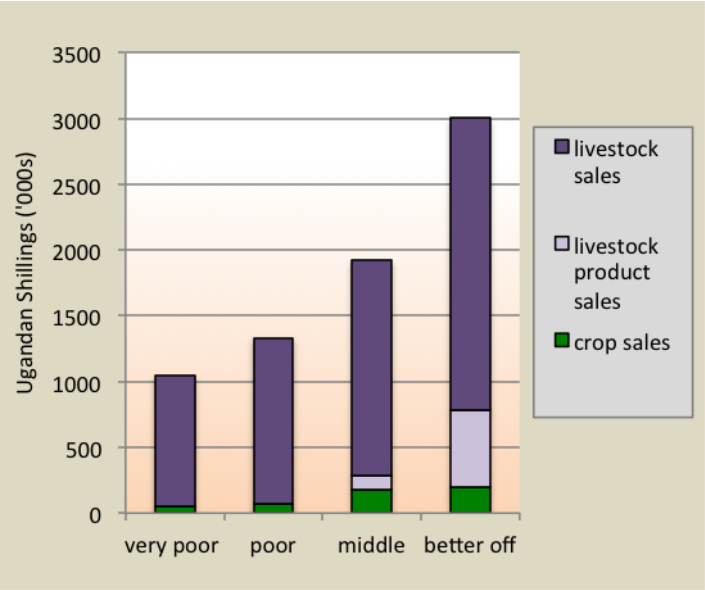
Cow milk (annual)	**NOTE: All results are the mid-point of a range**			
Number of milking animals	3	4	4	6
High-yield lactation period (days)	105	105	105	105
High-yield daily milk per animal (litres)	4	4	4	4
High-yield sub-total production (litres)	1260	1680	1680	2520
Low-yield lactation period (days)	60	60	60	60
Low-yield daily milk per animal (litres)	2	2	2	2
Low-yield sub-total production (litres)	360	480	480	720
TOTAL COW MILK PRODUCTION (litres)	**1620**	**2160**	**2160**	**3240**
Shoat milk (annual)				
Number of milking animals	3	4	6	6
Lactation period (days)	45	45	45	45
Daily milk per animal (litres)	0.7	0.7	0.7	0.7
TOTAL GOAT MILK PRODUCTION (litres)	**95**	**126**	**189**	**189**
Camel milk (annual)				
Number of milking animals	0	0	0.5	0.5
High-yield lactation period (days)	--	--	250	250
High-yield daily milk per animal (litres)	--	--	10	10
High-yield sub-total production (litres)			1250	1250
Low-yield lactation period (days)	---	---	90	90
Low-yield daily milk per animal (litres)	---	---	5	5
Low-yield sub-total production (litres)	0	0	225	225
TOTAL CAMEL MILK PRODUCTION (litres)	**0**	**0**	**1475**	**1475**

Sources of Cash Income

The graph to the right presents cash income sources by wealth group for the reference year July 2012 through June 2013.

Livestock sales are overwhelmingly the main source of cash income for all wealth groups. Cattle, goats and sheep are sold by better off households; cattle, goats and chickens are sold by poorer groups. In a good year like the reference year, mostly mature bulls (4-5 years old) are sold to maintain the herd's balance towards lactating and productive cows.

The other components of cash income are sales of livestock products (milk and meat) and crops (maize and beans). Better-off households can charge more for their crops than poorer households because they are able to store their crops and sell during peak demand periods, whereas poorer households sell right after harvest because they tend to need cash right away. Better-off households also get more for their livestock than poorer groups because they are usually able sell larger animals in better condition.



The graph provides a breakdown of total annual cash income in Ugandan Shillings according to income source.

INCOME SUMMARY TABLE				
Wealth group	**Very poor**	**Poor**	**Middle**	**Better off**
Annual income per household [16]	1,079,050	1,380,500	2,021,000	3,004,900
Annual income per person	179,842	230,083	336,833	429,271

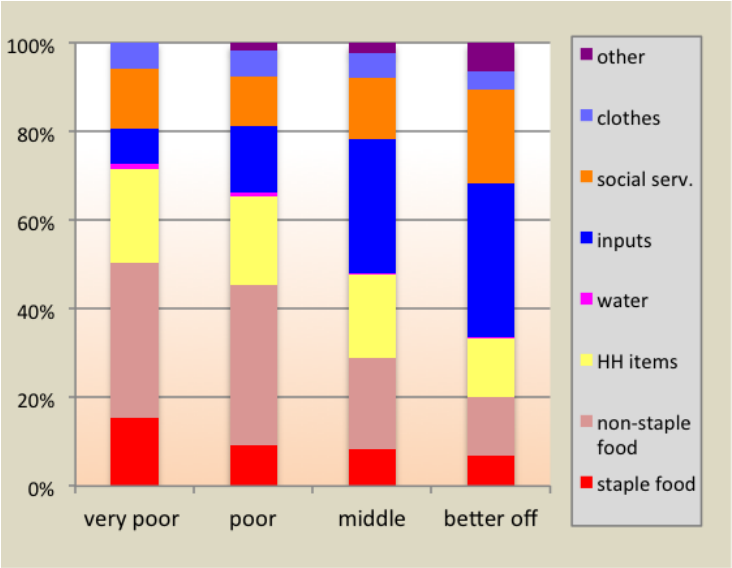
Trading in *khat* is a major activity in some parts of the zone. Traders from Amudat town buy from the villagers that collect it along the slopes of Mt. Kadam. *Khat* or *Qat* gathering is one of the main self-employment activities on the western sides of the zone (slopes of Mt.Kadam). Another economic activity is honey production and sales, although most of the honey seems to be collected from the wild rather than from organized bee keeping.

[16]The average exchange rate from July 2012 – June 2013 was US$1 = UGX 2500.

Expenditure Patterns

The graph to the right presents expenditure patterns for the reference year July 2012 through June 2013. While total expenditure increases with wealth, the expenditure breakdown in this graph demonstrates the relative amount of money devoted to different categories.

The proportion of expenditure on food is higher for very poor and poor households than it is for middle and better off households. This does not mean that very poor households buy more food in absolute terms; in fact, better off and middle households buy more in absolute terms, but poorer households need to spend more of their total available income on food, having less money to begin with.



The graph provides a breakdown of total annual cash expenditure according to category of expenditure.

Also notable is the proportion of cash income that better off households devote to inputs (veterinary medicines, agricultural tools, livestock purchases) and social services (including education), comprising over 50% of better off household expenditure. In a good year like the reference year, middle and better off households devote money that would otherwise need to be spent buying food to buying livestock. On average, middle households and better off households spent around 10% and 20%, respectively, of their cash income on new livestock purchases in the reference year. In a bad year, when own crops fail, this kind of expenditure is not possible. Very poor and poor households cannot afford to spend money on re-stocking in any year.

Hazards

The three major chronic hazards in this livelihood zone are livestock diseases, drought and human diseases.

Livestock disease is a common hazard, negatively affecting the productivity of all types of livestock. Specifically tick-borne diseases, worms and foot rot affect all livestock. Serious epidemics typically occur once every five years, but with severe repercussions, causing potentially large losses of herds. *Contagious bovine pleuropneumonia* (CBPP), *East Cost Fever* (ECF), *brucellosis*, *anaplasmosis*, Heart Water, Lumpy Skin Disease, *contagious caprine pleuropneumonia* (CPPP), *helminthiosis*, and ticks are all prevalent. Para-vets and community animal health workers (CAHWs) provide treatments, but these are not guaranteed nor are they regular. Vaccinations are given by MAAIF and FAO for all the listed diseases, but coverage is inadequate.

Drought occurs once every three years, affecting mainly crops, but not usually grazing. Wild animals can damage crops every year. Flash floods also happen once every three years or so. The main crop pests are aphids, monkeys and porcupines.

Human diseases negatively affect labour availability at household level. Malaria is a particular problem in this part of the country.

Response Strategies

In a bad year, households try to meet their food needs by **switching their expenditure** from non-essential items to critical food and non-food items. They also try to increase income by **expanding existing options** and in some cases turning to non-reference year options. In the *Southeastern Cattle and Maize Livelihood Zone*, both better off and poor households **increase the sale of livestock** in the face of hazards, **collect more wild foods** and **migrate with livestock** to neighbouring districts and zones in search of water and pasture.

Key Parameters for Monitoring

The key parameters listed in the table below are things that make a substantial contribution to household food and income sources in the *Southeastern Cattle and Maize Livelihood Zone*. These things should be monitored to indicate potential losses or gains to local household economies, either through on-going monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the expenditure side, including maize and beans.

Item	Key Parameter – Quantity	Key Parameter – Price
Crops	• Maize • Beans	• Maize (producer price) • Beans (producer price)
Livestock production	• Camel milk yields • Cow milk yields • Cattle (changes in herd size) • Shoats (changes in herd size)	• Camel milk price • Cow milk price • Cattle price • Goat price • Sheep price • Milk sales
Expenditure		• Staple food (maize and beans)

Programme Implications

The longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. All of these suggestions are meant to be the basis for further discussion and would require detailed feasibility studies.

Investments in livestock health services: Livestock rearing is the basis for this livelihood zone's economy. All wealth groups interviewed stressed the importance of improving access to and availability of veterinary drugs and services. The current provision of veterinary assistance is both unreliable and too sparse in

coverage. Because livestock diseases directly reduce the income that households here can garner, improving and ensuring livestock health translates into improved livelihood security.

Marketing infrastructure and small-scale processing of milk: Improvements in marketing infrastructure would help increase the prices local households could obtain for their livestock. There is also the potential to convert much of the milk produced locally into products for sale (i.e., cheese, butter, ghee) with the development of appropriate small-scale processing facilities.

Agricultural inputs: Poor, middle and better-off households all listed agricultural inputs as the second most important area for potential livelihood investment. Improved seeds, tools and provision of tractors were all mentioned as investments that could provide additional income to local households.

School facilities: Most households highlighted the importance of ensuring their children had a safe and productive place to attend school, and the lack of current facilities provides a vast opportunity for improvement.

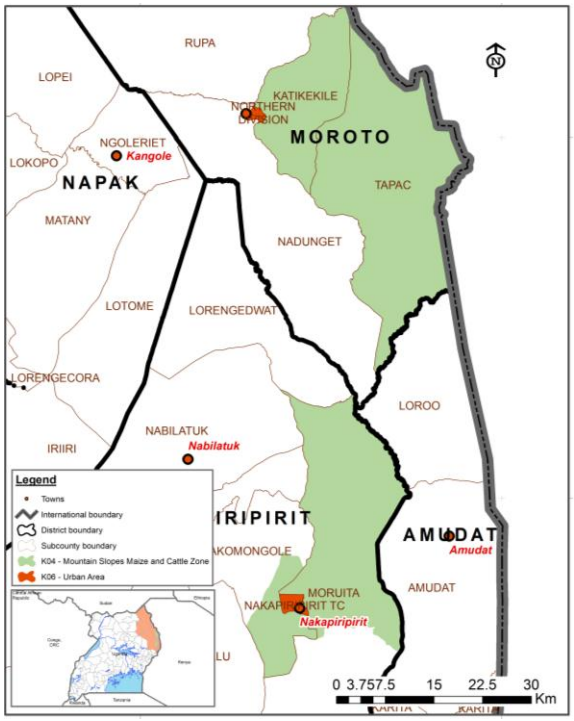
Investment in human health services: Very poor households emphasized the need to invest in human health services, which are woefully inadequate in this zone.

Improving availability of clean water for humans and livestock: Humans and livestock share the same sources of water in both wet and dry seasons, creating concerns about hygiene and the lack of available clean water, especially in the dry season.

B Mountain Slopes Maize and Cattle Livelihood Zone

Zone Description

The *Mountain Slopes Maize and Cattle Livelihood Zone*[17] is found in the southeastern quadrant of Karamoja Region, encompassing parts of Moroto and Nakapiripirit Districts. The zone is dominated by a long mountain range consisting of Mt. Moroto and Mt. Kadam and is intersected by other smaller hills laced with streams and valleys. Sandy clay alluvial soils (*luvisols*) are found in the valleys and plains. The Komatheniko, Tapac and Loyaraboth rivers are features of this zone, carrying water from mountaintops to valleys at high speeds. Rainfall ranges from 500-700 mm per year in the mountainous parts of the zone on the eastern side of Moroto District (Tapac, Loyoraboth, Katikekile); the southern parts of the zone (largely in Nakapiripirit) receive much higher annual rainfall from 800-1000 mm. The population for this livelihood zone is 68,985[18].



Bush scrub forms the main ground cover, dotted by various *acacia* species and other hardy plants like cactus, tamarind, *balanites*, aloe vera and sisal. Some fig trees have established themselves along riverbeds.

Marble and gold deposits can be found in the ground, and *qat* (or *khat*) plants, which grow on the slopes of Mount Kadam, are harvested regularly for sale.

Livestock form the basis of the local economy, providing food (in the form of milk and meat), cash income and a way of storing wealth. Cattle have long formed the foundation of cultural, social and economic practices in this area, and in northern areas of the zone, where pastoralism has been the historic norm, the emphasis on agriculture reflects a relatively recent trend.

Households raise cattle, goats and sheep and cultivate limited areas of maize, sorghum and beans. Livestock graze and browse freely and are fed crop residues. There is no history of purchasing supplemental fodder in

[17] Field work for the current profile was undertaken in January and February of 2014. The information presented in this profile refers to the reference year, which started July 2012 and ended June 2013. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for approximately five years (i.e. until 2017/2018). All prices referred to in the document are for the reference year.

[18] Uganda Bureau of Statistics, 2013 Population Projection

this zone. During the dry season most livestock are taken to dry season grazing areas by the men and boys, leaving women and small children at the homestead with a small number of goats and sheep. Water for both humans and livestock is sourced from permanent rivers, seasonal streams, shallow and deep wells and seasonal pools.

Mining for gold and marble occurs in select areas within the zone: Moruita subcounty of Nakapiripirit and Katikekile subcounty of Moroto District (gold) and Tapac and Katikekile subcounties of Moroto District (for marble used in cement production). Poorer households work for better off households to generate cash income, providing labour for land preparation, cultivation and harvesting. Bee keeping (in the eastern mountainous parts of the zone) and *qat* gathering on the slopes of Mt Kadam provide additional sources of cash. Self-employment - such as firewood collection and sales, charcoal sales, and grass and pole sales - supplements the income of poorer households.

Cultivation takes place mainly by hand along the mountain slopes with a few ox-ploughs used in the southern parts of the zone. FAO and its partners (through the KALIP program) have distributed more than a thousand ploughs throughout Karamoja in 2012 and 2013, aiming to support households uptake of this cultivation practice, but the terrain is mountainous and does not always lend itself to ox ploughing. This is typically a deficit zone in terms of crop production, however the reference year was a good one, and combined with livestock products and the purchasing power afforded by their livestock, households more than covered their minimum food energy requirements.

Markets

The two main towns of Moroto and Nakapiripirit are the main collection points for goods coming into and flowing out of this zone, with Mbale and the Kenyan market linking this area to the wider market economy. Cattle, goats and sheep are the main commodities sold out of the zone, as well as limited supplies of maize and sorghum after the harvest. Maize and sorghum are purchased by local households from February to June after stocks from the local harvest are depleted. Livestock sales also peak during this time (March to June) to finance the purchase of grains.

Exported maize and sorghum are sold by local farmers to either Moroto town or Nakapiripirit market during the September to December post-harvest period, with maize coming on the market earlier than sorghum. The trade routes for cattle, sheep and goats are from Naitakwae (Nadunget) to Soroti and Mbale or from Namalu to Soroti and Mbale. From Mbale livestock are sold on to other areas within Uganda as well as across the border into Kenya. Much of this trade takes place from March to June. Imported maize and sorghum are sourced during the February to June 'hunger season' from Mbale via Namalu market and then on to local markets or from Soroti via Moroto town.

Poor road conditions coupled with the mountainous terrain and limited transport options make market access difficult in much of the zone. Moroto is connected by two main roads to the Kenyan market, one that heads south towards Mbale and branches off east to Kitale; the other that runs northeast through Nakiloro to Lodwar. Nakapiripirit is connected to Amudat town by road and to Moroto. These are all-weather laterite (or *murram*) roads that become difficult to traverse in the wet season. Smaller community access roads are more like dirt paths and even less accessible in the wet season. Much of the zone is rocky and mountainous, especially in the eastern parts; bridges are in fair condition but some become impassable during the rainy season because of fast-flowing waters. Market access is especially poor in Tapac, Loyaraboth and Katikekile sub-counties (located in Moroto District) because of the hilly terrain.

Labour markets are local, with most of the demand (approx. 80%) coming from better off and middle

households within a village who hire poorer households seasonally to prepare land, cultivate and harvest their crops. A smaller percentage (approx. 20%) of labour demand comes from local towns for things like construction and domestic help. There is no migration of labour to areas outside the zone nor do people migrate into the zone from other areas.

Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Mountain Slopes Maize and Cattle Zone* the reference year covered the period from July 2012 to June 2013. During community leader interviews, key informants were asked to rank the last five years in terms of seasonal performance with '1' indicating a poor season and '5' an excellent season. As shown in the table below, the average ranking for production in the production year of 2012 (which corresponds to crop production during the reference year) was '4', indicating a good or above average season. After several crisis years, with low rainfall, drought, livestock and crop disease, and insecurity in the previous three years, the reference year provides a view in to how households take advantage of the opportunities presented by optimal seasonal rains, low livestock disease and no conflict. The table below provides an overview of the food security conditions from 2009 through 2013 as reported by household representatives in the villages where the HEA baseline work was conducted. In the table, 2012 is the reference year.

Year	Rank	Event – TIMELINE
2013	**2**	Prolonged mid-season dry spell which affected crops at critical growth stage
2012	**4**	Optimum rainfall for crops, low incidence of crop disease, no conflict
2011	**2 - 3**	Average rainfall and average crop harvests
2010	**1**	Sufficient rainfall but sorghum crop damaged by crop disease. Insecurity as well.
2009	**2**	Prolonged drought and wilting of crops.

5 = an excellent season for household food security (e.g. due to good rains, good prices, good crop yields, etc)

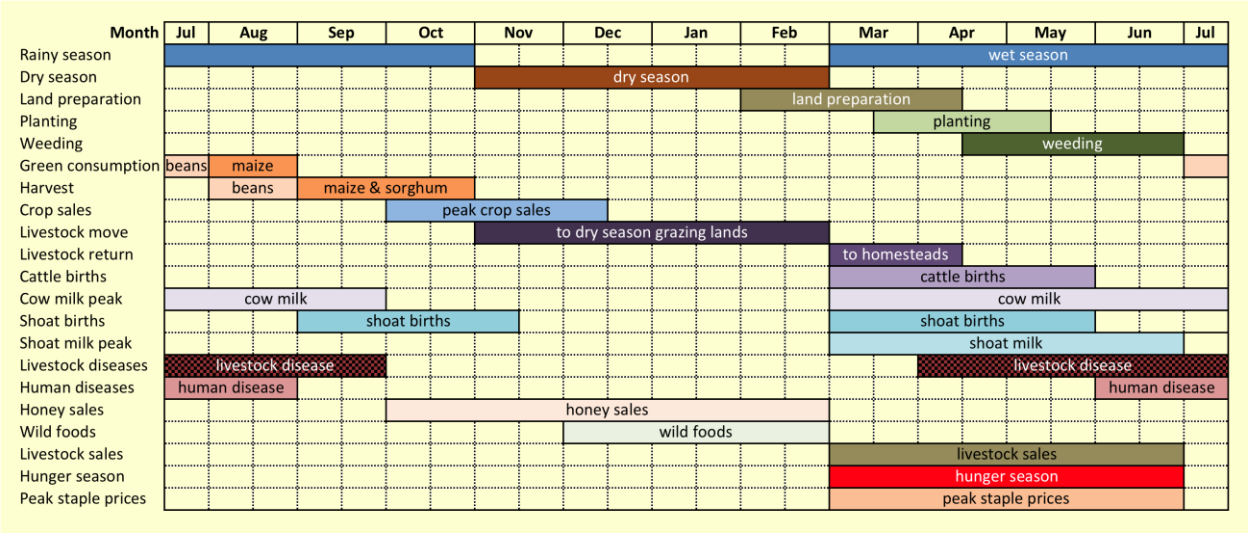
4 = a good season or above average season for household food security

3 = an average season in terms of household food security

2 = a below average season for household food security

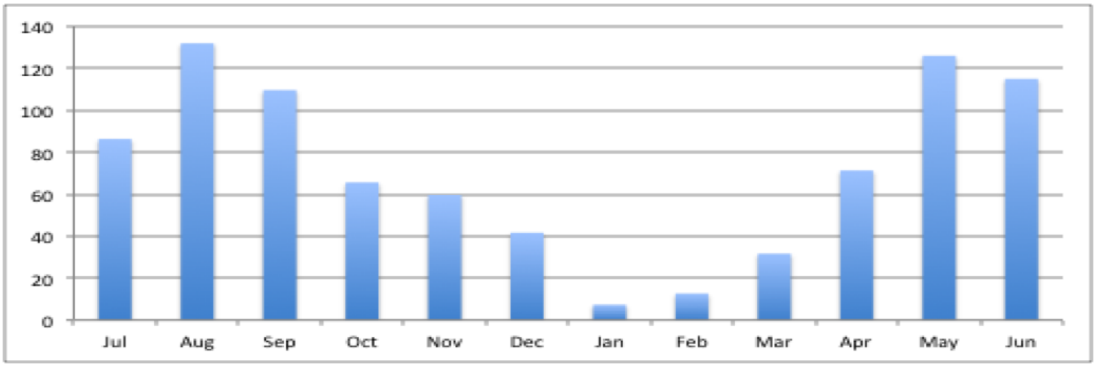
1 = a poor season (e.g. due to drought, flooding, livestock disease, pest attack) for household food security

Seasonal Calendar for Reference Year



Average monthly rainfall, long term mean (mm)

Source: USGS/ FEWS NET



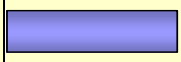
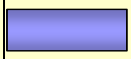
This livelihood zone has one rainy season starting in March and lasting through October. People begin preparing their land for cultivation towards the end of the dry season in February, continuing preparation into March and April. Planting takes place after the rains start, usually half way through March, and carries on part way through May. Maize, sorghum, beans and sunflower are planted. Maize is intercropped with beans and sorghum is intercropped with sunflower. These are all short-season varieties harvested starting in July (for beans) and September/October (maize and sorghum). Some of the beans and maize are eaten green in July and August marking an end to the hunger season.

As the dry season begins in November/December, men and older boys take the livestock to seasonal grazing areas, leaving behind just a few small ruminants with the women and children who stay at the homestead. The early dry season also coincides with peak honey sales and wild food consumption. The hunger season, or period in the year when stocks from the harvest have run out, requiring additional staple food purchases, starts in March and lasts until the end of June. In years of poor crop production this difficult time can lengthen substantially, starting as early as December.

Milk production is an important component of food income for households in this area. Cattle and goats both provide milk, although cows provide the overwhelming majority of it, their yields being so much higher than goats. This milk is available during the wet season, from March through September. Some stored milk, in the form of ghee, is available at other times of year as well.

Livestock and human diseases are most prevalent during the wet season, with malaria being a particularly big threat, occurring at a time when agricultural labour requirements are also at their highest.

Wealth Breakdown

	Percentage of homesteads	Wealth Groups Characteristics: HH size (per wife)	Number of wives	Land area cultivated (acres) per wife	Large stock holdings per homestead	Shoats per homestead
Very poor	 27%	5	1	1.5	1 cattle	7
Poor	 27%	5	1.5	1.5	9 cattle	18
Middle	 27%	5	3	2	18 cattle	36
Better off	 19%	5	4	2	44 cattle	96
	0% 10% 20% 30% % of homesteads					

Note: All results in the table above are the mid-point of a range.

The table above summarizes the basic characteristics of different wealth groups. The bar charts on the left represent the percentage of *homesteads*, meaning the man plus his wives (as opposed to *population* – see more on this below) that fall into each of the wealth categories. In this livelihood zone men can have more than one wife. The number of wives is correlated with wealth, because a man can only acquire additional wives by paying the wife's family with cattle and he needs larger herds to provide for more wives. The household sizes in the chart above also refer to the homestead; so each wife may have around 5 children in her own hut but be part of a larger homestead with multiple wives. The livestock numbers refer to the homestead so a better off man with 4 wives may have as many as 44 cattle and 96 shoats, whereas a poor man with one wife typically has only 1 cow and 7 shoats. The livestock numbers in this area are significantly lower than in the *Southeastern Cattle and Maize Livelihood Zone*, where better off households have more than twice the number of cattle and shoats.

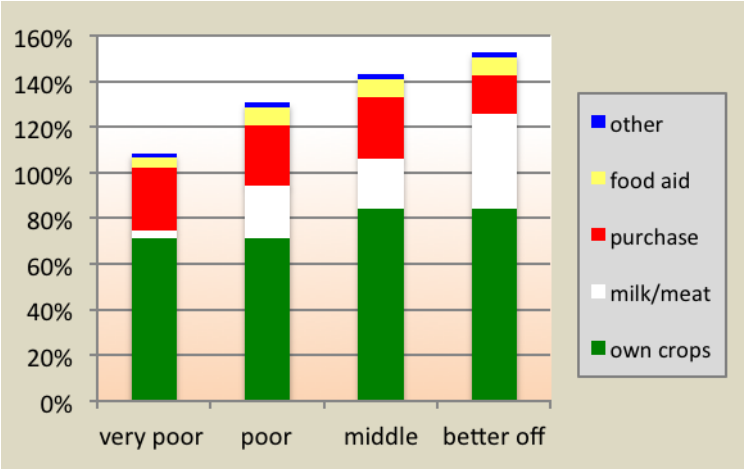
Cattle ownership is the main determinant and symbol of wealth in this zone. Everyone grows the same crops and the differences in area cultivated are not very big. Even the better-off households do not cultivate more than two acres. Crops tend to be the responsibility of women (each wife has her own plot) and are essentially grown to reduce the need for selling cattle to buy grain, thereby allowing households to reinvest in productive livestock in good years when crops yield a meaningful return. As shown in the timeline table in the previous sections, these good years are not common occurrences, with only one of the past five years considered above average for crop production. Even in these good years, it is necessary for households to purchase grain to supplement their own production.

As mentioned above, the bar charts in the table show the percentage of *homesteads* (man plus his wives) that make up the population in this livelihood zone. The percentage of homesteads falling into the poorer categories is larger (approximately 54% *of homesteads* are in the 'very poor' and 'poor' groups combined), and the better off homesteads make up less than 20% of the zone. However, given that the number of wives and children increases as we move up the wealth spectrum, the percentage of the *population* that falls into each wealth group is quite different, with around 70% of the population falling into the middle and better-off categories and around 30% of the population in the very poor and poor wealth groups.

	Wealth Breakdown	
	% homesteads	**% pop**
Very poor	27%	12%
Poor	27%	18%
Middle	27%	36%
Better off	19%	34%
Note: Results are the mid-point of a range		

Sources of Food

The graph to the right presents the sources of food for households in different wealth groups in the *Mountain Slopes Maize and Cattle Livelihood Zone* for the period July 2012 – June 2013. July represents the start of the consumption year because it is when households begin to consume green crops such as maize and beans. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.



In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.

Crop production was good during the reference year, with all households able to obtain between 70-84% of their minimum calorie requirements from a combination of green crops, maize, sorghum and beans. Actual production figures per household are provided in the table to the right.

The remainder of food needs is obtained through market purchases, milk and meat, school feeding and gifts.

CROP PRODUCTION	Very poor	Poor	Middle	Better off
Maize (kg)	440	440	580	580
Sorghum (kg)	250	250	400	400
Beans (kg)	60	60	100	100

MILK PRODUCTION	**Very poor**	**Poor**	**Middle**	**Better off**
Cow milk (annual)				
Number of milking animals	0.3	2	2	3.5
High-yield lactation period (days)	105	105	105	105
High-yield daily milk per animal (litres)	4	4	4	4
High-yield sub-total production (litres)	126	840	840	1470
Low-yield lactation period (days)	45	45	45	45
Low-yield daily milk per animal (litres)	1.5	1.5	1.5	1.5
Low-yield sub-total production (litres)	20	135	135	236
TOTAL COW MILK PRODUCTION (litres)	**146**	**975**	**975**	**1,706**
Goat milk				
Number of milking animals	2	4	4	7
Lactation period (days)	45	45	45	45
Daily milk per animal (litres)	.5	.5	.5	.5
TOTAL GOAT MILK PRODUCTION (litres)	**45**	**90**	**90**	**1**

Milk is a significant component of the household food basket for the top three wealth groups. The table

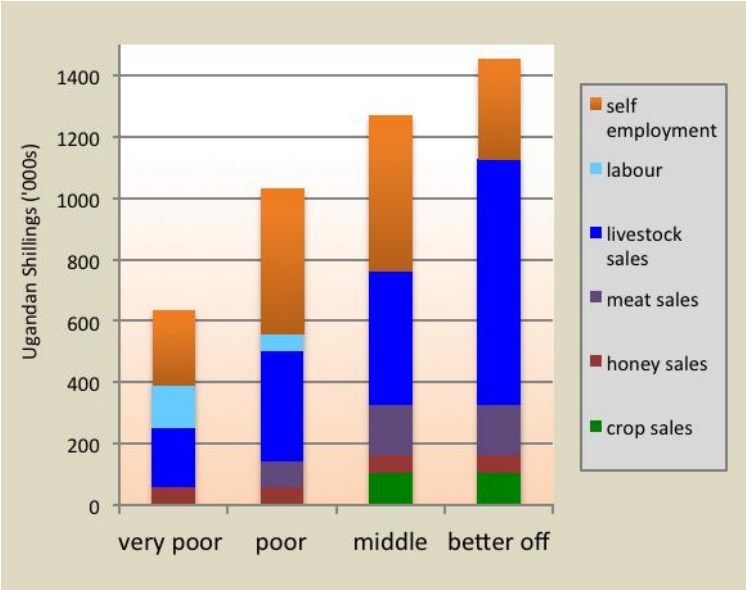
above details milk production in the reference year. Cows and goats both provide milk for household consumption, but the contribution from cows far outweighs that from goats (more than 90% from cow milk; less than 10% from goat milk for the top three groups) although for very poor households with just one or in some cases no cattle, goat milk is relatively more important. Households purchase grain every year during the wet-season months before the harvest (March through June) and this year was no exception; but this year, because of the good crop production from 2012 far less food than normal needed to be bought. Typically money from livestock sales is used to fund these food purchases.

Sources of Cash Income

The graph presents cash income sources by wealth group for the reference year July 2013 – June 2012.

Households in this zone engage in a wide range of income earning activities to meet their annual cash needs. The most important two sources of cash income for poor, middle and better off households are livestock sales and self-employment. All households sell cattle and goats, while very poor, poor and middle households sell chickens as well.

Self-employment includes a range of activities, including, for the two poorer groups: firewood sales, charcoal sales, grass sales and pole sales, with charcoal and firewood sales being the most important of these.



The graph provides a breakdown of total annual cash income in Ugandan Shillings according to income source.

Middle and better off households also brew beer for sale as well as selling poles and, for middle households firewood and charcoal. In addition, very poor and poor households work in the fields of middle and better off households, earning cash during cultivation and harvest periods. Finally, all households sell honey as well, which contributes incrementally to annual income.

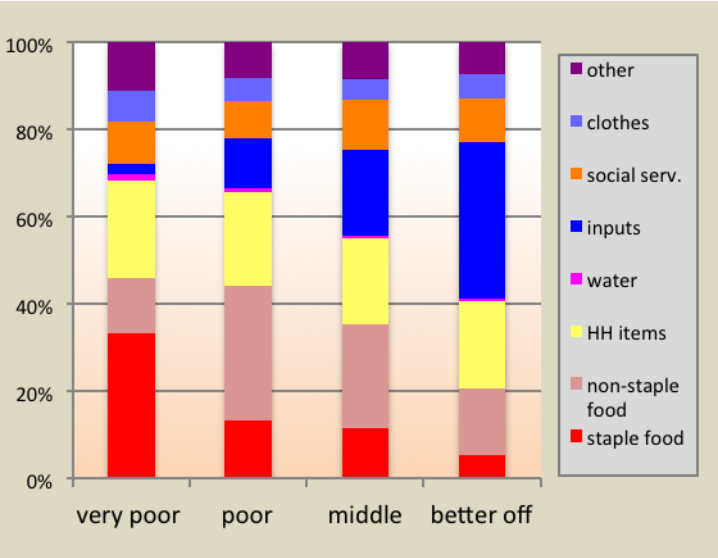
INCOME SUMMARY TABLE				
Wealth group	**Very poor**	**Poor**	**Middle**	**Better off**
Annual income per household (wife)[19]	634,700	1,034,436	1,270,400	1,456,200
Annual income per person	126,940	206,887	254,080	291,240

[19] The average exchange rate for July 2012 – June 2013 was USD1 = UGX 2500

Expenditure Patterns

The graph presents expenditure patterns for the reference year July 2013 – June 2012. While total expenditure increases with wealth, the expenditure breakdown in this graph demonstrates the relative amounts of money spent by different wealth groups on different categories of goods and services.

The proportion of expenditure on staple food for very poor households is highest among the wealth groups, but at 33% this is relatively speaking quite low and is a reflection in part of good production during the reference year as well as fairly good income-earning conditions as well (e.g. no conflict or market closures). Better off households only spent 5% of their total income on staple foods, again a reflection of the good year.



The graph provides a breakdown of total annual cash expenditure according to category of expenditure.

One thing that is notable is the relatively high proportion of income spent on household items. These include salt, soap and grinding – small weekly outlays that add up significantly over the year.

Expenditure on inputs increases as a proportion of income with wealth. The richer you are, the more you spend on seeds, labour and veterinary drugs, allowing you to maintain larger, healthier herds, and sell more animals at a higher price. Social services includes school and health costs which also tend to increase with wealth.

Hazards

The *Mountain Slopes Maize and Cattle Livelihood Zone* is subject to a number of hazards, some of which undermine food security every year while others threaten food security periodically. The main hazards affecting the zone are:

Periodic shortage of rain and drought: Unreliable rainfall is a chronic problem in this zone. Its direct effects are being increasingly felt as rain-fed agriculture becomes a more central component of the household economy. Drought occurs typically once every three years, but even in years when rainfall is plentiful, its timing may not meet the growth requirements of the crops that are sown. When drought occurs, its main effects are to reduce crop yields. In severe droughts it can also reduce the availability of pasture, browse and water, leading to reductions in milk output, loss of livestock body condition (leading to reduced livestock prices), reduced rates of conception and increased livestock mortality.

Livestock diseases: This is a common hazard, negatively affecting the productivity of all types of livestock. Specifically tick-borne diseases, worms and foot rot affect all livestock. Serious epidemics typically occur once every five years with severe repercussions, causing potentially large losses of herds. *Contagious bovine pleuropneumonia* (CBPP), *East Cost Fever* (ECF), *brucellosis*, *anaplasmosis*, Heart Water, Lumpy Skin Disease,

contagious caprine pleuropneumonia (CPPP), *helminthiosis*, and ticks are all prevalent.

Human diseases: Malaria is a particular problem in this zone, negatively affecting labour availability at household level and causing severe illness and death for many children and elderly. Health facilities are inadequate to meet the needs.

Response Strategies

In a bad year households try to meet their minimum food needs by switching expenditure from non-essential items (such as clothing) to critical staple foods. They also try to increase income by expanding existing options. In the Mountain Slopes Maize and Cattle Livelihood Zone, the following three response strategies are the ones most commonly pursued in a bad year.

Increased livestock sales – Households from all wealth groups sell additional livestock in bad years. Livestock sales serve the dual purpose of increasing income to cover basic food and non-food expenses and of destocking to reduce the pressure on pasture and browse and to reduce the expenses required to maintain the herd (both in terms of livestock drugs and feed). However, the extent to which this strategy of increased livestock sales can be pursued without damaging future livelihoods is quite limited. Middle and better off households are in a better position to exploit this strategy.

Further livestock migration – All types of livestock are moved to alternative grazing areas during serious drought years. These tend to be in neighbouring districts or livelihood zones. Serious problems emerge when the drought is widespread and either these areas do not provide relief, or the number of cattle moved to these emergency pastures exceeds the capacity of these areas to provide sustenance. The concentration of livestock from different areas in these areas also increases the risk of disease outbreaks. Unusual migration to areas outside the normal range of drought movement increases risk of conflict sparked by competition over scarce resources.

Increased collection of wild food and honey for sale – For poor households this is an important strategy. However, for some wild foods, production is rainfall dependent, which means that in drought years production declines, limiting the effectiveness of this strategy. Also, increased competition for wild foods reduces the amount any one household is likely to be able to gather in a drought year.

Key Parameters for Monitoring

The key parameters listed in the table below are things that make a substantial contribution to household food and income sources in the *Mountain Slopes Maize and Cattle Livelihood Zone*. These things should be monitored to indicate potential losses or gains to local household economies, either through ongoing monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the expenditure side, including maize, sorghum and beans.

Item	Key Parameter – Quantity	Key Parameter – Price
Crops	• Maize • Sorghum • Beans	• Maize (producer prices) • Groundnut (producer prices) • Honey (producer prices)

	• Groundnuts • Honey	
Livestock production	• Cow milk yields • Cattle herd sizes • Goat herd sizes	• Meat prices • Cattle prices • Goat prices
Other food and cash income	• Firewood availability • Charcoal availability • Brewing	• Firewood prices • Charcoal prices • Beer prices

Programme Implications

The longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. All of these suggestions require further detailed feasibility and cost-benefit analyses before implementation.

Investment in livestock health services: Livestock constitute the mainstay of local livelihoods and provide the main source of income (food and cash taken together) for the majority of the population in the Mountain Slopes Maize and Cattle Livelihood Zone. All wealth groups interviewed stressed the importance of improving access to and availability of veterinary drugs and services. The current provision of veterinary assistance is both unreliable and too sparse in coverage. Because livestock diseases directly reduce the income that households here can garner, improving and ensuring livestock health translates into improved livelihood security.

Investments in agricultural inputs: All wealth groups interviewed stressed the importance of improving agricultural inputs and techniques. Improved seed varieties, agricultural tools and provision of and training in animal traction were repeatedly mentioned.

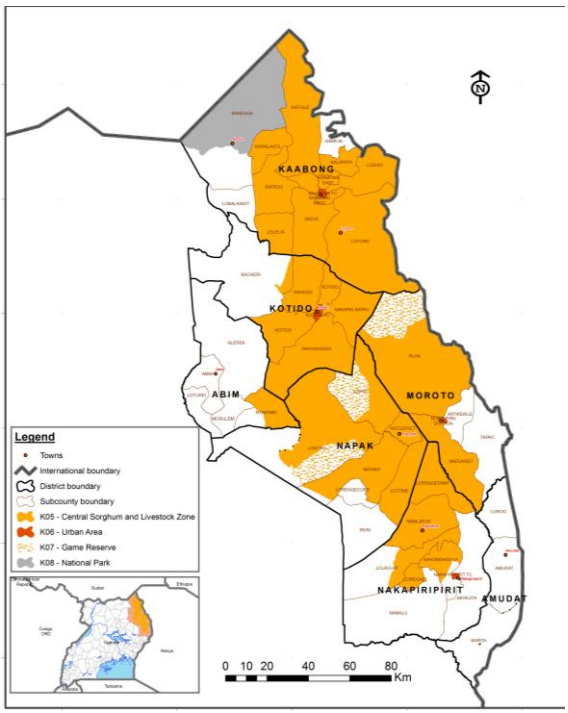
Marketing infrastructure and feeder road rehabilitation: Improvements in marketing infrastructure would help increase the prices local households could obtain for their livestock and for all other local commodities sold, such as honey and *qat* and it would decrease the price of items they buy (both food and non-food items).

Restocking of livestock: Households in this zone still have not managed to re-stock from years of raiding and insecurity. While security conditions in the zone have improved substantially with government intervention, households are still struggling to bring herd sizes up to previous numbers. Assistance in this area was highlighted as a priority by village representatives.

C Central Sorghum and Livestock Livelihood Zone

Zone Description

The *Central Sorghum and Livestock Livelihood Zone*[20] covers a vast region of central Karamoja, stretching from the middle of Nakapiripirit District in the south through major parts of the central districts of Napak, Moroto and Kotido and extending to the northernmost reaches of Kaabong District. The only district left out by this zone is Amudat, which is entirely encompassed by the *Southeastern Cattle and Maize Livelihood Zone*. Dotted with scattered settlements, this is a sparsely populated area with approximately 35-40 people per km^2. The Matheniko, Bokora, Jie, Pian, Tepeth and Dodoth are all resident in this livelihood zone, which has an estimated population of 824,104[21].



Located at 1400 metres above sea level, this zone is a vast undulating plain covered with grasslands and shrubs and dotted with *acacia*, desert date, tamarind and fig trees. Soils are generally fertile and are predominantly sandy loams (*ekitela*) with some black clay soils (*aroo*). Hillier areas with seasonal rivers and gullies are found in the southern and northern parts of the zone whereas the central parts are true lowlands.

Several large seasonal rivers traverse the zone, including: Lolachat, Nabilatuk in Nakapiripirit; the Omaniman River in Moroto and Nakapiripirit (a main dry season watering point); Lopei, Nadunget, Dopeth and Komuria in Kaabong and Kotido districts. Other natural resources found within the zone include wild foods and alluvial gold deposits in Nakapiripirit, Moroto and Kaabong.

There is one rainy season in this livelihood zone, typically starting in earnest in mid-March and extending through September with a dry spell between June and July. The season, which extends from October through February is characterized by windy and dusty conditions. Average precipitation is between 500 - 800 mm per year.

The livelihoods in this zone are characterized as agro-pastoral, although, given the unreliable nature of crop production and the historical dependence on cattle, livestock is a more fundamental economic driver than

[20] Fieldwork for the current profile was undertaken in January and February of 2014. The information presented in this profile refers to the reference year, which started July 2012 and ended June 2013. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for approximately five years (i.e. until 2017/2018). All prices referred to in the document are for the reference year.

[21] Uganda Bureau of Statistics, 2013 Population Projection

crops. Cattle, goats and sheep are the main livestock held by households; some poultry and donkeys kept as well. Very poor and poor households rely more heavily on shoats[22] and chickens because they do not have the means to own and maintain cattle and donkeys. Middle and better off households own the majority of cattle, supplementing their herds with shoats and donkeys. Cattle and shoats provide milk for household consumption. Cattle, shoats and chickens are sold to generate the majority of household cash income. Natural reproduction is the main way that households replace oxen and milking animals, supplemented when possible by purchases from the market. Outside the small towns, livestock are rarely slaughtered in this zone except during sacrificial offerings and peace gatherings. Meat consumed at household level is mainly from animals that die naturally. Donkeys are used to transport goods in areas where road travel is often challenging.

Livestock graze freely on grass, browse and crop residues with men and boys in charge of their welfare. During the dry season as grazing and watering options diminish around the homestead, cattle are typically taken to dry season grazing areas such as Lolachat, Moruita, Loroo, Lokopo, Rupa, Kacheri, Kalapata, Kapedo and Karenga in search of pasture and water. During the reference year (July 2012 - June 2013), men did not need to take the livestock far from homesteads because rainfall allowed for extended access to water, grass, browse and crop residues. Despite the abolishment of the protected kraal system in 2009, most households with large herds still keep them in unofficial kraals near military detaches to protect them from raiding. Local informants claim that herd sizes are significantly smaller than in past years due to frequent raids (which occurred in the past, but have declined recently) and livestock diseases.

Rain-fed agriculture is the norm in this livelihood zone and all households grow crops in order to meet a portion of their food needs. This production, however, is never sufficient to cover all the household's requirements and even in years of good production (like the reference year) households need to purchase much of their staple grains. Better-off households use oxen for ploughing, allowing them to cultivate more land than poorer households, who use hand hoes. Land preparation and weeding are labour intensive and better-off households pay poorer household members to do much of this work for them. Sorghum, maize, millet, beans, cowpeas, sunflower, groundnuts and sesame (*simsim*) are cultivated, mainly for home consumption, but all wealth groups sell a small portion of their harvest in good years to generate seasonal cash income. Crop production in this zone is unreliable for a number of reasons, including regular failures of rainfall at critical development periods, pests and crop diseases (such as sorghum midge and stalk borer), untimely seed deliveries and limited use of pesticides.

Apart from livestock and crop production, which serve as the foundation for rural livelihoods in the zone, households also engage in other economic activities including firewood, grass, pole and charcoal sales, unskilled agricultural labour and brewing. Human and animals share the same sources of water, including seasonal rivers, boreholes, water ponds and dams. The zone is known to experience regular and widespread conflict over water and pasture, resulting in the loss of lives and livestock, restrictions on human and livestock movement, loss of access to markets and loss of access to grazing fields and cultivation lands. In the reference year, all wealth groups received food aid in the form of food for work (FFW).

Markets

Market accessibility is fair in this zone, served by well-structured weekly markets for livestock and other

[22] Shoats = goats plus sheep

commodities and with main markets located in, or close to, trading centres in the district headquarters. In Nakapiripirit District markets are located in Nakapiripirit town, Nabilatuk, Namalu and Lolachat. Napak District has markets located in Kangole, Matany, Iriiri and Lopei. Moroto District has markets located in Moroto town, Katanga and Musas. Kotido District has markets located in Kotido town, Kanawat, Lokitelaebu and Losakucha. Kaabong District has markets in Kaabong town and Kapedo. Linked by laterite (*murram*) roads to other zones, accessibility is poor in the wet season, when many roads become difficult to traverse. In the dry season, the roads are in average conditions and the zone fully accessible.

Cattle, sheep and goats are the main livestock sold both in and out of the zone. Livestock sales take place throughout the year, peaking from December to March (dry season) and continuing into June. During the dry season people from other zones buy oxen in preparation for land cultivation. This is also when children are preparing to go back to school in February and it coincides with the hunger period so households have to sell more livestock to pay for school fees as well as to purchase food. Livestock sales drop off from July through November.

The main crops in the market are sorghum, maize and beans. These are typically imported into the zone to supplement local production since this zone does not produce enough to meet local needs, especially in bad yeas and in the hunger season (January – June). Households in the zone sell a small portion of their own crops after harvest in good years and purchase food when their own stocks run out. It is possible to buy staple food (sorghum and maize) throughout the year but January through June are the months when most households, especially the poor, have run out of their own harvests and heavily depend on food purchase from the markets. Staple food is imported from Mbale, Soroti, Kapchorwa, Lira, Pader, Kitgum and Abim.

Local labour opportunities are available in the rural areas but are limited to unskilled casual agricultural labour which starts in the month of January with land preparation activities and peaks from March to June with planting and weeding activities. A proportion of the population also migrates to local towns such as Nakapiripirit, Kotido, Kaabong, Moroto and Matany in search of employment. A very small segment of the population migrates every year to other zones such as Namalu, Iriiri, Abim, Lira, Mbale, Soroti, Jinja and Kampala in search of employment. In bad years this labour migration expands as much of the population is forced to seek income outside the zone.

Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Central Sorghum and Livestock Livelihood Zone* the reference year started with the harvest of July 2012 through to the beginning of the next harvest in June 2013. During community leader interviews, key informants were asked to rank the last five years in terms of seasonal performance with '1' indicating a poor season and '5' an excellent season. As shown in the table below, the average ranking for production in the production year of 2012 (which corresponds to crop production during the reference year) was '4', indicating a good or above average season. This was due to sufficient and well-distributed rains and also the support households received from the government and development agencies in terms of seed, ox-ploughs and tractor ploughing in some areas. In addition, there was no conflict during the reference year, except for a few isolated cases of livestock theft in some pockets of the zone. Cattle and shoat births were normal in the reference year, supported by sufficient pasture and water, notwithstanding pockets of livestock disease. Cattle death numbers were normal and shoat deaths rates were medium to low in the reference year.

Year	Rank	Event – TIMELINE
2013	**3**	Livestock diseases, water logging, hail stones

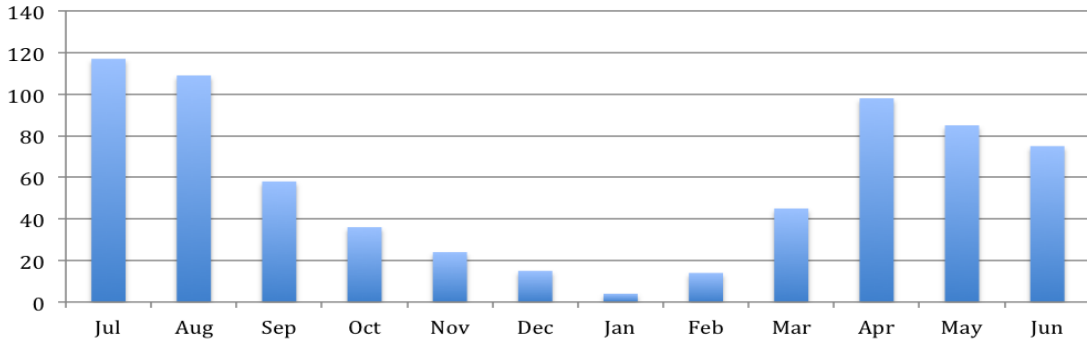
2012	**4**	Evenly distributed rainfall, average crop production
2011	**2-3**	Normal rainfall, honey dew, animal and human diseases
2010	**2**	Floods, crop and livestock diseases, disarmament exercise
2009	**1**	Drought, livestock diseases and insecurity

5 = an excellent season for household food security (e.g. due to good rains, good prices, good crop yields, etc)
4 = a good season or above average season for household food security
3 = an average season in terms of household food security
2 = a below average season for household food security
1 = a poor season (e.g. due to drought, flooding, livestock disease, pest attack) for household food security

Seasonal Calendar for Reference Year

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Rainy season	High		Low						High			Low
Cattle: Conceptions												
Births	Low		High			Low				High		Low
Milk	High		Med						Low	High		
Shoats: Conceptions												
Births												
Milk	High			Low			High					Low
Livestock Sales	Low					High						
Livestock diseases	High		Low						Low	High		Med
Crop production	Green	Harvest					Land prep		Planting		Weeding	
Food purchase	Low						HIgh					
Hunger season												
Labour migration												
Human disease	High		Low							High		Low
Festivals												

The graph to the right shows average monthly rainfall, Long Term Mean (mm) Source: USGS/ FEWS NET



The *Central Sorghum and Livestock Livelihood Zone* is uni-modal with one long rainy season (*akiporo*) from March to September followed by a dry season from October to February (*akamu*). The graph above presents average monthly rainfall (long term mean) for this zone, highlighting the tailing off of rains after September and the resumption of rains in March with a small dip in June, reflecting the fact dry spells often occur in June.

Most cattle and goats are conceived during the rainy season; cows give birth around nine and a half months later and shoats kid or lamb five to six months later. During the reference year milk production was high because abundant pasture and water were available while animals were milking. Livestock diseases also tend to be highest during the rainy season. Livestock are sold throughout the year but sales peak from December to June as explained in the markets section.

Land preparation starts as early as January so that fields are ready for planting in March when the rains begin. Short cycle crops cultivated included pulses, sunflower, groundnuts and sesame (*simsim*). Pulses planted in May are ready in July; sunflower is planted in September and ready in November; groundnuts and *simsim* planted in April are ready for consumption in June. Long-cycle crops, including sorghum, maize and millet, are planted between March and April. Green consumption starts in July marking the end of the hunger period although the real harvest begins in August and lasts until October since different crops are ready for harvest at different times.

The hunger period during the reference year extended from January to June; during these months staple food purchases are highest, food prices peak and there is local labour migration in search of jobs.

Wealth Breakdown

		Wealth Groups Characteristics				
	% of households (per wife)	HH size (per wife)	Number of wives	Acres cult. (per wife)	Large stock holdings and ploughs (per homestead)	Small stock holdings (per homestead)
Very poor	29%	6	1	1	0	2 goats, 1.5 sheep, 0-5 hens
Poor	33%	6	1	1.5	2.5 cattle, 1 ox, 0.5 plough	7 goats, 4 sheep, 7 hens
Middle	24%	8	2	3	38 cattle, 2 oxen, 1 donkey, 1 plough	23 goats, 10 sheep, 20 hens
Better off	14%	9	4	4	56 cattle, 3 oxen, 2 donkeys, 1.5 ploughs	80 goats, 72 sheep, 64 hens
	0% 10% 20% 30% 40% % of households					

Note: All results are the mid-point of a range.

The table above summarizes the basic characteristics of different wealth groups. The bar charts on the left represent the percentage of *households*, meaning the wife and those eating from the same pot in her hut or huts, (as opposed to *population* – see more on this below) that fall into each wealth category. In this livelihood zone men can have more than one wife. The household sizes in the chart above refer to the household maintained by each wife; so, for instance, a wife in a better off homestead (meaning the man plus his wives) so, for instance, a wife in a better off homestead may have 9 members living in her hut or huts, but be part of a larger homestead with 4 wives. The area cultivated is per wife, since women tend to be in charge of this area of work. The asset information (i.e. livestock and ploughs owned) refers to the homestead, so a better off man with 4 wives typically owns around 56 cattle, 80 goats, 72 sheep, 3 oxen, 2 donkeys and 1 – 3 ploughs.

Livestock and land ownership are the main determinants of wealth in the Central Sorghum and Livestock Livelihood Zone. Better off households have more livestock, and especially large stock, compared to very poor households who own only few goats, sheep and some poultry. Middle and better-off households also own at least 1-2 donkeys while very poor and poor have none. Poorer households lack sufficient money to invest in purchasing livestock and to buy the necessary veterinary drugs and inputs to maintain them. Cattle raiding and diseases have diminished herd sizes in this zone along with a series of bad years in which households needed to sell more livestock than normal to buy food. (See Timeline in previous section.)

Both wealth groups grow similar crops but harvest different quantities since they own and cultivate different land sizes. The amount of land cultivated by a household is determined in part by ownership of oxen and ox-ploughs, in part by household labour, and in part by the ability to hire outside labour to work on your land. The better off and middle households cultivate more land since they own oxen and ox-ploughs, have bigger households and also have resources to hire labour. Although poorer households might have an ox, they have more limited household labour and inadequate means to hire others. Very poor households have neither oxen, nor resources to hire, and limited household labour. Because better off households cultivate more land, they are able to cash in on this in good years when their extra production allows them to sell some of their harvest; more importantly, good year production means they can eat for longer from their own harvests, minimizing the number of livestock they need to sell to purchase food. This provides a necessary buffer time for restocking diminished herds. Very poor households cultivate smaller areas of land, which means they tend to run out of their harvests sooner and need to start purchasing food earlier than better off households.

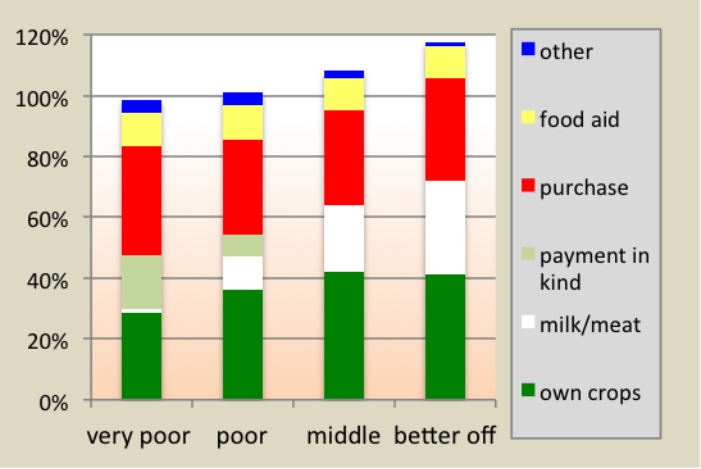
As mentioned above, the bar charts in the table show the percentage of households that make up the population in this livelihood zone. Around 62% of households fall into the very poor and poor groups combined. Middle and better off households combined make up around 38% of the zone. Given that the number of people living in each household increases slightly with wealth, the percentage of the *population* that falls into each wealth group is slightly different, as detailed in the table to the right (54% in bottom two groups, 46% in top two groups).

	Wealth Breakdown	
	% households	% pop
Very poor	29%	25%
Poor	33%	29%
Middle	24%	28%
Better off	14%	18%
Note: Results are the mid-point of a range		

Sources of Food

The graph to the right presents the sources of food for households in different wealth groups in the livelihood zone for the period July 2012 – June 2013. July represents the start of the consumption year because it is when people begin to consume crop green and marks the end of the hunger period. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.

All households in this zone rely on a combination of own crops, milk and meat, wild foods (included in 'other'), purchases and food aid. In addition, very poor and poor households receive food in the form of payment for labour ('payment in kind') and gifts.



In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.

In the reference year, own crops made up a

significant proportion of the household food basket for all groups, and certainly more than in most years; however even better off households still needed to obtain an additional 60% of their food from sources other than their own crop production. The most important crops for household consumption were sorghum, maize, millet and to a smaller extent beans. The table to the right details production amounts for the main crops in the reference year by wealth group.

CROP PRODUCTION	Very poor	Poor	Middle	Better off
Maize (kg)	50	100	190	215
Sorghum (kg)	160	250	350	400
Beans (kg)	15	20	30	40
Note: All results are the mid-point of a range				

Milk (and much less prominently, meat) makes up a good portion of food income for middle and better off households, whereas it plays a much smaller role for very poor and poor groups. The table to the right shows just how much milk is produced by households in different wealth groups. The major contributor is cow milk; without any cattle, very poor households are left to rely on the minimal contribution of their small herd of shoats.

MILK PRODUCTION	Very poor	Poor	Middle	Better off
Cow milk (annual)	**NOTE: All results are the mid-point of a range**			
Number of milking animals	0	1	3	4
High-yield lactation period (days)	---	150	150	150
High-yield daily milk per animal (litres)	0	3	3	4
High-yield sub-total production (litres)	0	450	1350	2400
Low-yield lactation period (days)	---	90	90	90
Low-yield daily milk per animal (litres)	0	1	1.5	1.5
Low-yield sub-total production (litres)	0	90	405	540
TOTAL COW MILK PRODUCTION (litres)	**0**	**540**	**1,755**	**2,940**
Shoat milk				
Number of milking animals	2	5.5	10.5	20
Lactation period (days)	45	45	45	45
Daily milk per animal (litres)	.5	.5	.5	.5
TOTAL GOAT MILK PRODUCTION (litres)	**45**	**124**	**236**	**450**

Purchase makes up over 30% of annual food income for all wealth groups, even in a good year like the reference year. It was the second source of food for the very poor and poor wealth groups after crop production. This is because the two wealth groups cultivate smaller sizes of land producing less and have to supplement crop production with purchase. The most commonly purchased staples are sorghum, maize and beans.

Payment in kind contributed significantly to very poor household food income, covering 18% of their annual food needs. Payment in kind is normally in terms of an *edee* (3.5kg) of sorghum per day for casual work done. They also benefitted from gifts of food from better-off neighbours and relatives. The majority of middle and better off households do not engage in labour or receive gifts of food.

In the reference year relief food in the form of Food for Work (FFW) and school feeding for children was uniformly provided across all wealth groups contributing around 11% of the total food needs.

Wild foods including wild berries, tamarind, *ngakalio* (seeds); *balanite* (*ekorete*), (wild vegetables), *edual*, *achokei*, *ekigal*, *ebisinai* (leaves); *ngiru*, *ngichokei* (fruits); and game are consumed by all wealth groups but contributed only around 1-2% of the total food needs households. In a bad year the contribution would be higher for all wealth groups.

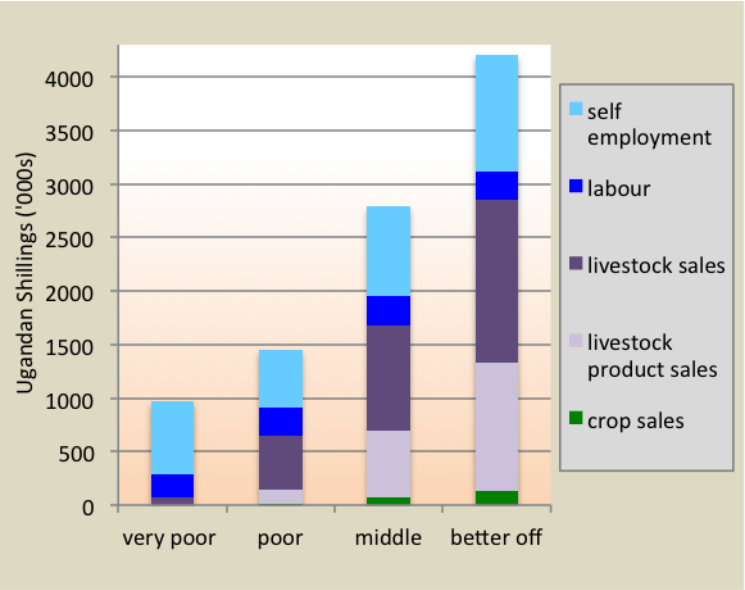
Sources of Cash Income

The graph presents cash income sources by wealth group for the reference year July 2012 – June 2013.

The main income source for better off and middle households is livestock sales. Cattle and shoats are the main livestock sold. Some chickens are also sold but contribute a small percentage to the total income from livestock.

The top two wealth groups also derive significant income from the sale of livestock products including milk and meat. In the reference year, they sold cow's milk both locally and also in the urban areas thus fetching a higher price compared to poor households who only sold their milk locally in the villages.

In good years, crop sales usually provide income for all wealth groups. However in the reference year, which was characterized as a 'good year', this was not the case. The bottom two groups got little to none while the middle and better-off groups who typically derive substantial income from crop sales had very little. This is because most households decided to use most of their harvests for own consumption. The poor group sold only a small proportion of sorghum. Middle and better off households sold small proportions of sorghum, maize, millet and *simsim*.



The graph provides a breakdown of total annual cash income in Ugandan Shillings according to income source.

INCOME SUMMARY TABLE				
Wealth group	**Very poor**	**Poor**	**Middle**	**Better off**
Annual income per household (wife) [23]	970,750	1,452,375	2,796,750	4,206,225
Annual income per person	161,792	242,063	349,594	467,358
Note: All results are the mid-point of a range				

Brewing (included in 'self-employment) was another important source of income for the better-off and middle wealth groups. For the very poor and poor groups, self-employment provided the main source of income. Firewood, charcoal, grass and pole sales are the main self-employment activities for these households.

Agricultural labour was another important source of income for the poorer groups. On average a person is paid 2000 UGX per day for any type of agricultural labour performed. Most of the income earned for agricultural labour is for land preparation. For instance, in the reference year around 75% of labour income for very poor households came from land preparation, with the remaining 25% from harvest labour.

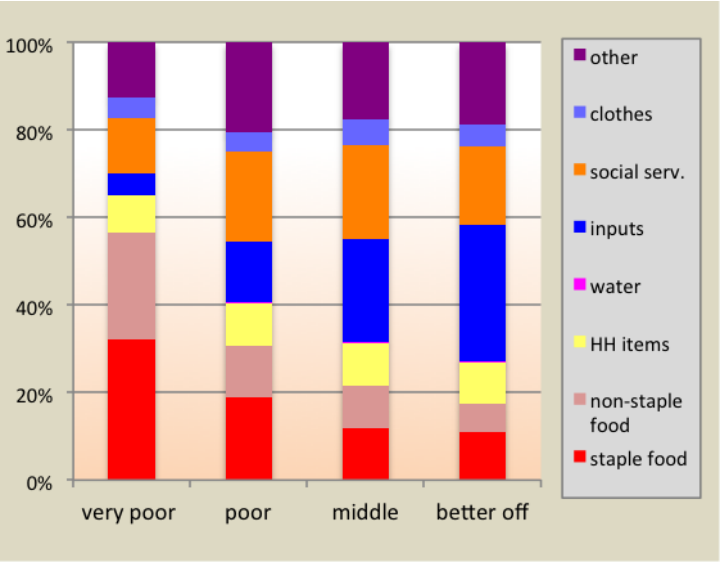
[23] The average exchange rate from July 2012 – June 2013 was US$1 = Ush. 2500

Expenditure Patterns

The graph presents expenditure patterns for the reference year July 2012 – June 2013. While total expenditure increases with wealth, the expenditure breakdown by percent in this graph demonstrates the relative amount of income spent on different categories.

The proportion of expenditure on food in the reference year decreased with wealth group with very poor households spending over 65% of their income on staple and non-staple food and better off households only spending about 15%. The main staples purchased are sorghum, maize and beans.

Expenditure on household items and clothes are proportionally similar across the wealth groups. The main household items purchased include salt, soap and grinding.



The graph provides a breakdown of total annual cash expenditure according to category of expenditure.

Households generally do not buy water in rural areas, however all wealth groups with the exception of the very poor contribute at least 3,000 UGX per year towards the repair of boreholes. All wealth groups spent cash on inputs but better-off households spend by far the most on this area. Inputs include livestock drugs, seeds and basic tools such as machetes and hoes for poorer wealth groups and ox-ploughs for middle and better-off wealth groups. All households except the very poor also purchased livestock to restock diminished herds and this is included in the 'inputs' category.

'Social services' includes money spent on education and medicine. Better off households spent as much money on education in the reference year as on re-stocking which provides some indication of the enormous value placed on education. Having a big herd ensures survival today, but having educated children ensures survival in the future.

The 'other' category represents silver fish, transport, festivals, phone charging/credit, village savings and loan associations (VSLAs) contribution.

Hazards

The *Central Sorghum and Livestock Zone* is vulnerable to drought, livestock diseases and insecurity.

Drought results in reduced pasture/browse and water for livestock. Prolonged dry spells occur almost every year and significantly affect crop production.

Common diseases affecting livestock include tick-borne diseases (cattle and shoats), worms (cattle and shoats), pneumonia (contagious caprine pleuroneumonia - CCPP; contagious bovine pleuroneumonia - CBPP), *peste des petit* ruminants (PPR), affecting goats, and bacterial infections. Poultry was greatly affected in the reference year by what the communities referred to as 'cholera' – which actually is Newcastle disease – which seems to recur in cycles from year to year with little control by communities themselves and veterinary services.

Crops are also affected by pests and diseases including birds, sorghum midge, stalk borer affecting both sorghum and maize and honey dew. These hazards results in reduced crop production forcing households to purchase more food from the markets (for which livestock need to be sold).

Insecurity in the zone is mostly in terms of cattle raids and cattle thefts. Cattle raiding was much higher in the past, and although much reduced it is still experienced is some pockets.

Other hazards common in the zone include water logging and wind.

Response Strategies

Households engage in a number of strategies in an attempt to cope with hazards. These include:

Reducing and/or switching expenditure - In bad years, households reduce expenditure on non-essentials such as clothing, utensils and beer in order to buy food. Most households will only buy sorghum, which is cheaper than other grains, such as maize.

Increased labour migration - During 'bad years' and also during the 'hunger season' (between January-June), members from the very poor, poor and some from the middle wealth groups increasingly migrate to both rural and urban areas within and outside the livelihood zone to look for labour opportunities both domestic and casual work. The urban areas include Moroto, Kotido, Abim, Kaabong, Soroti, Mbale, Busia, Lira, Kitgum and Kampala.

Increased collection and sale of firewood - In bad years, poorer households will engage more in this environmentally destructive practice in order to get more cash needed to purchase food. Household members, for instance, double the number of days spent collecting firewood, and people go deeper into the bush to get the firewood as the nearby sources get depleted. This is not a sustainable strategy in the long run.

Increased brewing - This strategy is common among the better-off households who will brew more beer for sale in bad years in order to get more cash. They also brew more beer to be used as a form of payment to the poorer households for casual agricultural labour activities done on their farms during bad years and also during the hunger period if money is not available.

Increased wild food collection - In bad years, poorer and to some extent middle households will collect more wild fruits and hunt more game than in normal years in order to get more food to enable them survive through the tough times. However, wild fruit availability is rainfall dependent and thereby limited during drought.

Treatment of livestock - During times of disease outbreaks, March through September, better-off households sometimes buy drugs for treating, de-worming or vaccinating their livestock. The government and development agencies also provide free livestock drugs and vaccinations to all wealth groups in the zone.

Increased livestock sales - Households from all groups sell more livestock in bad years. This is meant to increase income to purchase more food and other essential items, but it is also a strategy to reduce the herd size so as to reduce pressure on grazing land and also avoid mass loss of livestock to diseases and drought.

Livestock migration - During drought, all types of livestock move to far off places in neighbouring districts or livelihood zones considered to be dry grazing areas in search of pasture and water. This at times leads to problems such as livestock diseases due to concentration of many livestock from different areas as well as conflicts over grazing land and water.

Peace meetings and ritual sacrifice- Isolated cases of cattle thefts and conflicts over pasture, water, land and

livestock are a common occurrence in Karamoja especially during the drought period. The government has been actively promoting peace meetings among the warring communities in order to unite the communities as well as to find solutions that will prevent such occurrences in the future. Cattle are also slaughtered as a sign of sacrificial offerings to the gods as well as a meal to be shared by the warring communities as a symbol of peace and cessation of hostility.

Key Parameters for Monitoring

The key parameters listed in the table below are food and income sources that make a substantial contribution to the household economy in the Central Sorghum and Livestock Livelihood Zone. These should be monitored to indicate potential losses or gains to local household economies, either through on-going monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the **expenditure** side, including staple and non-staple food items.

Item	Key Parameter – Quantity	Key Parameter – Price
Crops	• Sorghum • Maize • Millet	• Maize prices (producer) • Millet prices (producer)
Livestock production	• Cow milk yields • Cattle herd sizes • Shoat herd sizes	• Cow milk prices • Meat prices • Cattle prices • Shoat prices
Other food and cash income	• Firewood • Charcoal • Grass availability • Brewing inputs availability • Agricultural labour available • Domestic work available • Remittances • Wild foods	• Firewood prices • Charcoal price • Grass price • Beer prices • Agricultural daily rates • Domestic labour rates
Expenditure	• Staple food items • Non-staple food items	• Staple food prices (esp. sorghum) • Non-staple prices

Programme Implications

The longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. All of these suggestions require further detailed feasibility studies.

Crop production: All wealth groups suggested interventions related to crop production including timely support with seeds (drought resistant), provision of basic agricultural tools, oxen and ox-ploughs. It was also suggested that basic training on agronomy and improved agricultural extension services be provided to farmers. Since the zone

experiences prolonged dry spells that negatively impact crops, there were requests for provision of irrigation facilities.

Restocking: Cattle raids and livestock thefts are a common problem in the zone. Livestock diseases have also significantly reduced herd sizes for all wealth groups. There is a need to assist households in restocking, especially the poorer groups who do not have money to invest in livestock.

Veterinary drugs and extension services: Livestock rearing is an important economic activity in this zone. Livestock diseases are a chronic problem especially in the rainy season. The government and some development agencies are engaged in the provision of animal health services but more needs to be done to help prevent disease outbreaks. More affordable livestock drugs and improved veterinary services are also needed.

Water and sanitation: Access to water in some areas is a problem, especially in the dry season. Investment in the construction of water sources including dams, pans and boreholes was called for. Most households in the zone lack toilet facilities and use the bush. There have been outbreaks of Hepatitis E resulting from fecal contamination. Development agencies could introduce and encourage the use of pit latrines.

Social services: Improved health care facilities are necessary in this zone. In some areas health centres are available but lack enough qualified personnel and drugs. There is also need for educational support to all wealth groups in the zone.

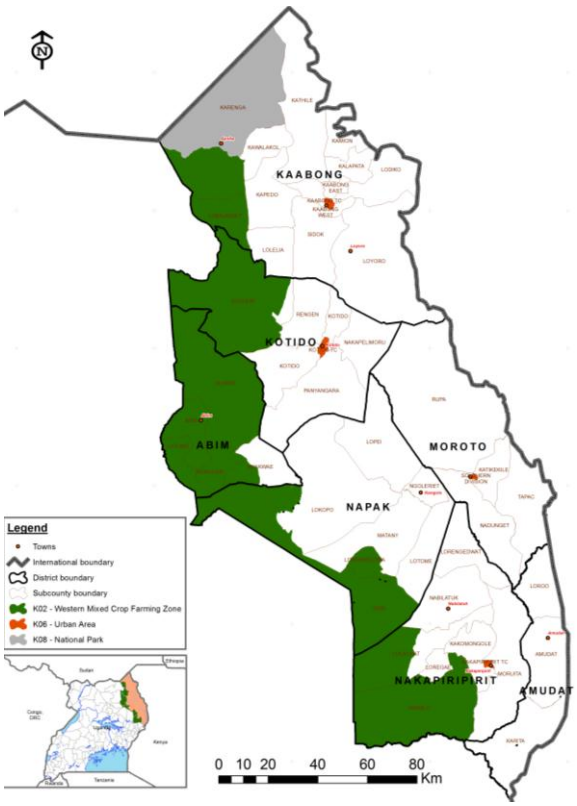
Alternative Livelihood Support: Poorer households obtain most of their income from firewood and charcoal sales which has a detrimental effect on the local environment. The government, development agencies and the private sector need to introduce new skills to the local population to enable them to engage in alternative non-damaging income generating activities.

Karamoja Livelihood Baseline Profile

D Western Mixed Crop Farming Livelihood Zone

Zone Description

The *Western Mixed Crop Farming Livelihood Zone*[24] extends along the western edge of Karamoja Region, starting from Nakapiripirit in the south and including parts of Napak, Abim, Kotido districts in the centre and reaching into part of Kaabong district in the north. This zone has a population of 268,520[25].



The topography consists of lowland plains, undulating hills (such as Labwor Hills in Abim and Nyangea Hills in Kaabong), and mountains (e.g. Napak Mountains). The vegetation is mainly shrub savannah with generally open and spotted shrubs of natural and herbaceous vegetation.

There are abundant swamps, especially in Nakapiripirit District where people go to fish in the dry season. Natural resources in this zone include fish, grasslands and wild foods such as tamarind, shea nut, *balanites* and game. Soils are broadly categorized as *plinthosols* and *vertisols* of sandy, black clay, loamy and alluvial types in the plains.

The average annual rainfall ranges between 700 – 1,000 mm. There is one long rainy season lasting from March/April to October, with an intermittent dry spell typically occurring during June/July.

The dry season occurs from November to February. Compared to the rest of the region, the zone has a high crop production potential due to fertile soils and higher rainfall amounts. These ecological and topographic characteristics have shaped the type of livelihood options available to communities in the zone.

The main economic activities are crop and livestock production supplemented with sales of natural resource products. Households are generally able to meet their food needs without outside assistance (taking into account both crop and livestock production) and food aid is only distributed very occasionally, with the exception of the school feeding program which exists in all areas of Karamoja Region. A diversity of crops are grown for consumption

[24] Field work for the current profile was undertaken January-February 2014. The information presented refers to July 2012 – June 2013 which was an average a year. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for at least five years (i.e. until at least 2018). All prices referred to in the document are for the reference year.

[25] Uganda Bureau of Statistics, 2013 Population Projection

and sale including sorghum, maize, millet, cowpeas, pigeon peas, groundnuts, beans, sweet potatoes, cassava, sunflower and sesame (*simsim*). A variety of cucurbits (cucumber, water melon and pumpkins) are grown on a small scale. Middle and better off households prepare their land using ox-ploughs while poorer wealth groups use hand hoes. Weeding and harvesting require the most labour and the better-off and middle wealth groups pay the poorer households for these activities in-kind or cash. These activities are mainly done by women and youth.

The most important input for crop production – seeds - are usually saved from own production or bought in small amounts from the market. As with the rest of Karamoja Region, it is not typical for farmers in this zone to apply manure or fertilisers. Other factors affecting crop production are poor agronomic practices like untimely planting, ineffective weeding, poor pest and disease management, poor spacing, poor land preparation, delayed harvesting (crops are left to dry completely in the gardens) and variable weather conditions.

The main pests and diseases affecting crops in this zone are aphids, honey dew disease in short cycle sorghum; smut, stalk borer and northern leaf blight in sorghum and maize; groundnut rosette in groundnuts and bean fly in beans. Aphids can be controlled by planting early in the season and using resistant sorghum varieties available in the market at a cost. Smuts, stalk borer and northern leaf blight can be controlled by planting treated seeds that can be bought from the market. However, the cost (unaffordable for most households) and limited availability of such seeds constrain their use locally. Groundnut rosette is controlled by planting at recommended spacing and spraying with insecticide and this advice is freely available from the district extension staff. However, inadequate staffing limits access to extension services.

Cattle and shoats are the main livestock in this zone, along with plough oxen. Livestock graze freely on grass/browse and crop residues. The main sources of water for livestock in the wet season are minor rivers and water ponds. Livestock are watered at boreholes and dams during the dry season. Livestock in this zone do not migrate in the dry season (unlike in other parts of Karamoja) or in a bad year. Rather, livestock from the Central Sorghum and Livestock Zone may migrate *into* this zone. Boys and young men are responsible for looking after the livestock. Cows and goats are both milked for household consumption, but goat milk is usually consumed only by those tending the animals in the grazing areas. Some of the milk produced is sold in the many trading centres in the zone. Typically, bullocks and heifers are sold at 2 – 3 years. Oxen and milking cows are generally replaced from within the herd. This is typical across all wealth groups. Shoats are slaughtered mainly in the lean season from April to June.

The main parasites and diseases affecting livestock are ticks, worms, *anaplasmosis*, Contagious bovine pleuropneumonia (CBPP) in cattle and contagious caprine pleuropneumonia (CPPP) in goats. There are also *tse tse* flies in areas bordering Kidepo Valley National Park in Kaabong District and game reserves in Nakapiripirit and Napak districts. CBPP and CPPP can be controlled by vaccination and this treatment is available from the Ministry of Agriculture, Animal Industry and Fisheries through the district local governments at a subsidised fee or on a cost recovery basis. *Anaplasmosis* can be managed by routinely spraying animals to control ticks and clinical treatment by private practitioners such as community animal health workers (CAHWs) at a cost. Livestock deworming is provided by CAHWs at a cost, NGOs for free or district local governments on a cost recovery basis. The most important inputs for livestock production are therefore, water and drugs such as antibiotics and de-wormers, acaricides, vaccines, and anti-*trypanosomiasis*.

In addition to crop and livestock production, important economic activities include brewing, sale of natural resource products and petty trade. Brewing local beer is done by women typically in the middle and better off wealth groups using sorghum and maize and sold within the zone at trading centres and villages. This activity takes place throughout the year but peaks from September to February. Natural resource products sold include charcoal, firewood and building and construction materials like poles, bamboo, bricks, thatching grass and stone aggregates. Generally, men are responsible for collection, preparation and sale of charcoal and building and construction materials except grass collection and sale, which is done by women and girls. Collection and sale of firewood is also the responsibility of women and girls, mainly in the very poor and poor wealth groups. These products are collected

and prepared in the nearby grassland and hills and sold in trading centres and markets mainly from January to July. Petty trade is mostly done by men in better off wealth group throughout the year using retail stalls/shops in trading centres and at various weekly markets in the zone.

Boreholes are the main source of water for human consumption. Although this water is free, households contribute a small fee for borehole maintenance. Conflict occasionally occurs in localized areas and arises from cattle rustling by raiders who come from outside the zone (but within Karamoja Region). The main credit facilities available to households are village savings and loan associations (VSLAs) formed by pooling resources in the communities. Association members make a monthly saving contribution and can take out loans which are repaid in monthly instalments at an interest rate of 10% per annum. VSLAs are not common in most villages and, notably, it is the middle and better-off wealth groups who participate in these savings groups.

Markets

This zone is accessed by dirt roads which are in fair condition in wet and dry season. The fair road conditions and improved security make market access relatively good in the Western Mixed Crop Livelihood Zone.

Livestock and crops are the main commodities sold by households in the zone. Households also purchase staple food along with a range of household items. Weekly livestock markets are organised at the sub-county levels. Cattle and shoats are purchased by traders who take them to the Elgon region to the south, Teso in south west, and Lango and Kitgum to the west. A small number of the livestock sold remains within the zone or are taken outside the zone but within Karamoja. Livestock sales are largely from January to June.

The main crops sold are sorghum, maize and cowpeas. These commodities are sold at harvest to traders in trading centres or produce dealers at weekly markets within the zone who in turn bulk for resale later in the year when households purchase food. The main grains purchased are sorghum and maize from wholesalers within the zone. Additional grains are brought in by traders from Elgon, Lango, Acholi and Teso sub-regions.

Much of the total casual labour (80%) performed by people from this zone is undertaken in the local rural area, with the rest undertaken in local towns (15%) and outside Karamoja Region (5%).

Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Western Mixed Crop Farming Livelihood Zone* the reference year started with the harvest of July 2012 through to the beginning of the next harvest in June 2013. During community leader interviews, key informants were asked to rank the last five years in terms of seasonal performance with '1' indicating a poor season and '5' an excellent season. As shown in the table below, the average ranking for production in the production year of 2012 (which corresponds to crop production during the reference year) was '3', indicating an average season. This was due to due to reliable rainfall, improved security, which enabled access to more fields for cultivation, improved access to extension services, and provision of some seeds. There were isolated cases of cattle theft that affected the middle and better-off wealth groups who own cattle. Although goat sales were less than expected in the reference year because of good crop harvest, cattle deaths were high due to poor management of parasites and diseases.

Year	Rank	Event – TIMELINE
2013	**2**	Dry spell from May to June, livestock disease, water logging in low-lying areas in July and August, below average crop harvests.
2012	**3**	Crop diseases and pests e.g. sorghum smuts, and livestock diseases and parasites
2011	**3**	Water logging in low lying areas, wild animals in areas bordering wildlife protected areas, insecurity due to cattle rustling
2010	**3**	Water logging in low lying, wild animals in areas bordering wildlife protected areas, insecurity due to cattle rustling
2009	**3**	Water logging in low lying, wild animals in areas bordering wildlife protected areas, insecurity due to cattle rustling

5 = an excellent season for household food security (e.g. due to good rains, good prices, good crop yields, etc)

4 = a good season or above average season for household food security

3 = an average season in terms of household food security

2 = a below average season for household food security

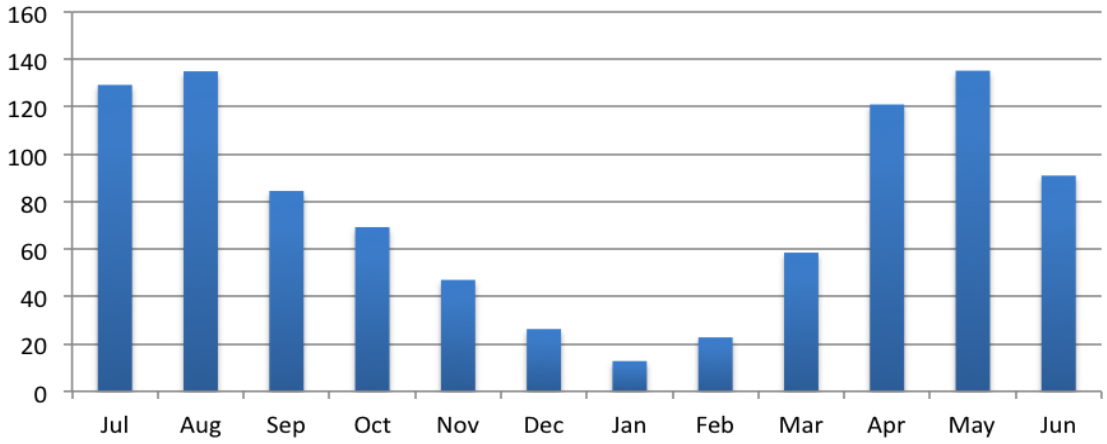
1 = a poor season (e.g. due to drought, flooding, livestock disease, pest attack) for household food security

Seasonal Calendar for Reference Year

Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Rainy season												
Cattle conceptions												
Cattle births												
Cattle milk peak												
Shoat conceptions												
Shoats birth												
Shoats milk												
Livestock sales												
Sorghum	W	W	H	H	H	H	H	LP	LP/P	P	P	P/W
Maize	CG/H	H	H					LP	LP/P	P	W	CG
Beans	P	W	H	H							LP	P
Groundnuts	W/H	H	H						LP	LP/P	P/W	W
Simsim (sesame)	LP/P	LP/P/W	W	W/H	H							
Cowpeas	LP	LP/P	W	H								
Lean (hunger) season												
Peak staple prices												
Labour migration												
Agricultural labour												
Firewood peak												
Charcoal peak												
Brewing												
Malaria												
Diarrhoea												
Wild foods												

LP = land preparation P = planting W = weeding CG = consumption green H = harvesting

Average monthly rainfall, long term mean (mm) Source: USGS/ FEWS NET



The seasonal calendar shows how access to household food and income in this livelihood zone changes over the year. The rainy season, referred to locally as *naporo*, starts in March and ends in October. The dry season (*akamu*) is from November to February. Land preparation starts in February so that fields are ready for planting when the rains commence. Most short cycle crops take three to four months to mature but planting is staggered throughout the season. Finger millet is dry planted in February before the rains begin and harvested in July. Maize, short cycle sorghum and groundnuts are planted starting March to May and harvested from July to September. Meanwhile beans, simsim and cowpeas are planted July/August and harvested from September to November. The long cycle sorghum (*kabir*) is planted March to May and harvested November to January. The consumption year begins in July when households start consuming crops green from the field.

The same crops planted in pure stand are sometimes intercropped. For instance sorghum, groundnuts, *simsim*, millet, maize, sweet potatoes and cassava may be in pure stands but also intercropped: *simsim* with millet; sweet potatoes with beans; sorghum with pigeon peas; groundnuts with cowpeas; maize with beans; and cassava with

beans in the early stages.

There is no regular seasonal pattern of migration of livestock, not even in a bad year as there is usually adequate pasture and water for livestock. In the harvest season there is some labour migration *into* this zone from the *Central Sorghum Livestock Livelihood Zone*. Typically labour migration occurs from January to March to neighbouring Acholi, Teso and Lango sub-regions. However, in a bad year people migrate for a longer period starting in August and lasting until February/March.

The majority of self-employment activities like charcoal burning, firewood sales and brewing are done during the dry season; firewood sales continue throughout the lean season.

Wealth Breakdown

	Percentage of households (by wife)	Wealth Groups Characteristics				
		HH size	Number of wives	Land area cultivated (acres) per wife	Large stock and ploughs per homestead (man plus wives)	Small stock per homestead (man plus wives)
Very poor	33%	6	1	0.75	0	0
Poor	32%	6.5	1	1.5	1.5 cattle	3
Middle	22%	7	2	3	15 cattle, 1.5 oxen, 0.5 ploughs	26
Better off	13%	7	3	4	25.5 cattle, 2 oxen, 1.5 ploughs	48
	0% 10% 20% 30% 40% % of households					

Note: All results are the mid-point of a range.

The table above summarizes the basic characteristics of different wealth groups. The bar charts on the left represent the percentage of *households*, meaning the wife and those eating from the same pot in her hut or huts, (as opposed to *population* – see more on this below) that fall into each wealth category. In this livelihood zone men can have more than one wife. The household sizes in the chart above refer to the household maintained by each wife; so, for instance, a wife in a better off homestead (meaning the man plus his wives) may have 7 members living in her hut or huts, but be part of a larger homestead with 3 wives. The area cultivated is per wife. The asset information (i.e. livestock and ploughs owned) refers to the homestead, so a better off man with 3 wives typically owns around 25 cattle, 48 shoats, 2 oxen, and 1 - 2 ploughs.

With the exception of Nakapiripirit District, land for crop production is readily available and the ability to put more land under cultivation is the limiting factor. Therefore, the main wealth determinant in this zone is the acreage *cultivated* with more land cultivated as you move up the wealth spectrum. Poor households do not have oxen or resources to hire labour which would enable them to open up and cultivate more land. They are limited to the area that is possible to cultivate by hand using only family labour. Middle and better off households have ox-ploughs, sufficient household labour and the resources to hire additional labour, which allows them to cultivate more land. Poor households can, and do, borrow oxen or ox-ploughs from other wealth groups but only late in the season when the middle and better-off have finished ploughing their fields. They can also pool together their cows or bulls with ox-

ploughs from other wealth groups to form a plough unit. Seeds can be obtained through labour exchange or cash, which is then used to purchase seeds from the market. In Nakapiripirit, where access to land is more likely to be a limiting factor, the poor can borrow land from the middle and better-off wealth groups at no cost. Better off households also rent land from any household in any wealth group who has land available and pay cash (normally about 50,000 UGX per acre per year).

Improvements in security have enabled households to start restocking their herds. However, poor households lack money to purchase livestock and livestock drugs, relying solely on natural herd reproduction - a slower path of growth. Wealthier households may also loan livestock to poorer households for a two to three year period, at the end of which they are entitled to retain a young animal.

As mentioned above, the bar charts in the table show the percentage of households that make up the population in this livelihood zone. Around 65% of households fall into the very poor and poor groups combined. Middle and better off households combined make up around 35% of the zone. Given that the number of people living in each household increases slightly with wealth, the percentage of the *population* that falls into each wealth group is slightly different, as detailed in the table to the right.

	Wealth Breakdown	
	% homesteads	**% pop**
Very poor	33%	30%
Poor	32%	32%
Middle	22%	24%
Better off	13%	14%
Note: Results are the mid-point of a range		

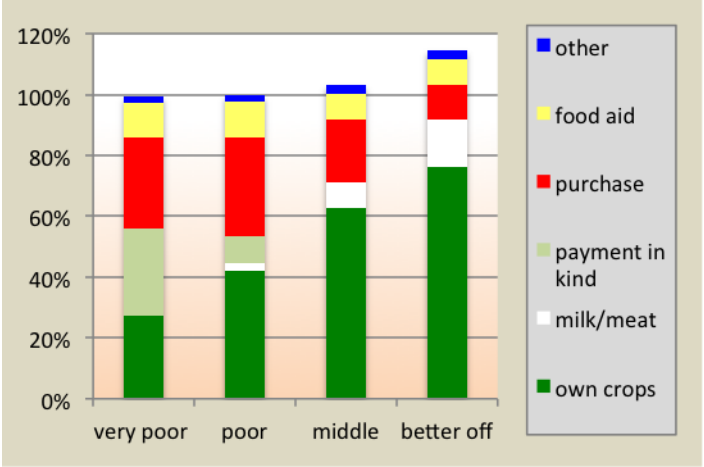
Sources of Food

The graph to the right presents sources of food for households in different wealth groups in the *Western Mixed Crop Farming Livelihood Zone* for the period July 2012– June 2013. June represents the start of the consumption year because it is when crop consumption starts green.

Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.

The contribution of own production to household food consumption increases significantly as you move up the wealth spectrum, ranging from 27% for very poor to 76% for better off households. This reflects the fact that better off households cultivate larger areas. The main crops consumed and purchased across all wealth groups are sorghum, maize, cowpeas and beans. The production chart to the right details the typical production amounts, by crop, obtained by different wealth groups.

Milk forms a component of middle and better off (and to a much lesser extent poor) household food income, providing between 10-15% of annual calorie requirements. The table below provides details on where this milk comes from.



In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.

CROP PRODUCTION	Very poor	Poor	Middle	Better off
Maize (kg)	60	125	375	500
Sorghum (kg)	150	300	600	600
Finger millet (kg)	30	30	100	100
Cowpeas (kg)	17.5	52.5	52.5	100
Beans (kg)		35	70	150
Groundnuts	20	20	40	80
Sesame (kg)	17.5	17.5	17.5	35
Sunflower	10	20	60	80
Note: All results are the mid-point of a range				

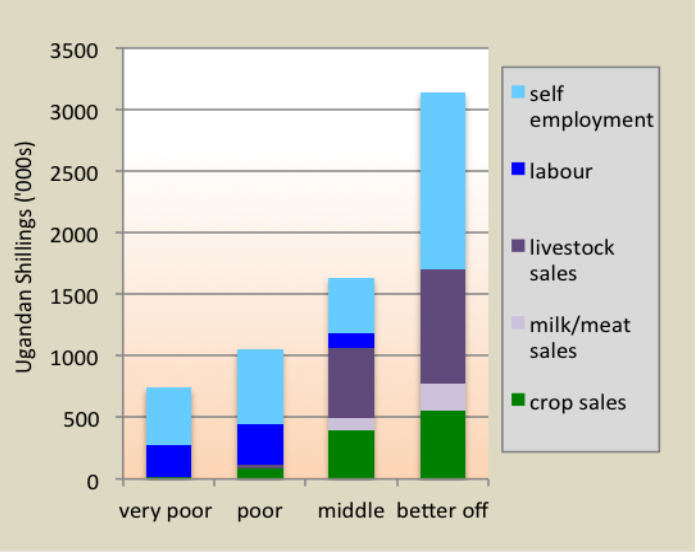
MILK PRODUCTION	Very poor	Poor	Middle	Better off
Cow milk (annual)	**NOTE: All results are the mid-point of a range**			
Number of milking animals	0	0.5	2	3
High-yield lactation period (days)	---	90	90	90
High-yield daily milk per animal (litres)	---	2.5	2.5	2.5
High-yield sub-total production (litres)		113	450	675
Low-yield lactation period (days)	---	75	75	75
Low-yield daily milk per animal (litres)	---	1	1	1
Low-yield sub-total production (litres)	0	37.5	150	225
TOTAL COW MILK PRODUCTION (litres)	**0**	**150.5**	**600**	**900**
Shoat milk				
Number of milking animals	0	2	3	4
Lactation period (days)	---	45	45	45
Daily milk per animal (litres)	---	.5	.5	.5
TOTAL GOAT MILK PRODUCTION (litres)	**0**	**45**	**68**	**90**

All households purchase some of their annual food, but very poor and poor depend on the market most, buying around a third of their food requirements. These households also obtain some of their food as payment in kind in exchange for harvesting sorghum for the middle and better-off households.

Sources of Cash Income

The graph presents cash income sources by wealth group for the reference year July 2012 – June 2013. The table below details total cash income by household and per person in the reference year.

The two main sources of cash income for very poor and poor households are labour and self-employment. Agricultural labour is the main source of employment in this zone; better off and middle households pay poorer households to help with land preparation, planting, weeding and harvesting. This is a significant source of income for poor households, contributing 322,800 UGX, or 31% of their annual cash income. It is also important for very poor households, who have little else to rely on to generate cash.



The graph provides a breakdown of total annual cash income in

Uganda Shillings (UGX) according to income source.

However, the most important income source for all but middle households is self-employment, which includes sales of firewood, charcoal, bricks, building poles, bamboo, thatching grass, and stone aggregates. Poor and better off households earn UGX 608,400 and UGX 1,440,000 from these activities respectively. Better off households earn more because they also brew and conduct petty trade in addition to these activities and are have the money to hire labour to make more bricks than the poor. The poor cannot brew as much as the better off because they do not produce enough sorghum and maize to set aside for brewing whilst meeting their food needs, nor do they have the money to purchase the cereals from the market. The market for the products generated by these self-employment activities is mainly the trading centres dotting the main roads and towns in the zone. Some products are exported; for instance, bamboo goes westwards towards Acholi destined for South Sudan; grass for thatching goes to Kotido in the *Central Sorghum Livestock Zone*; charcoal and firewood head to Acholi, Lango, Teso and Elgon sub-regions. Trucks from these areas bring food to markets in the zone and return filled with these local commodities.

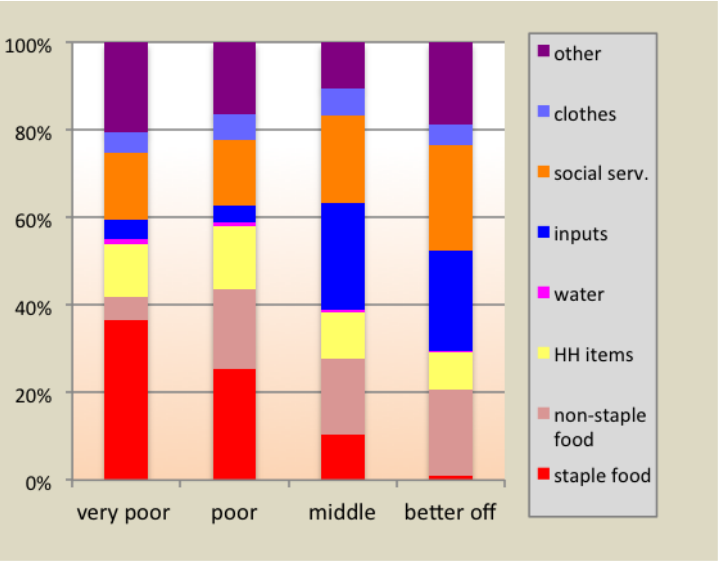
Livestock sales are important for middle and better off households. Poor households sold 0-1 shoats compared to better off households who sold one head of cattle and 2-3 shoats. Better off households also get a better price for their shoats than the poor because they sell bigger animals at a time when livestock prices are higher. Poor households sell smaller livestock out of necessity, usually at times when livestock prices are lower.

Crop sales are a smaller component of cash income. The main crops sold by poor households are sorghum, maize and cowpeas, which contributed 83,000 UGX, or 8% of annual cash income. Better off households sold groundnuts, maize and sorghum, earning 552,250 UGX, equivalent to 18% of their cash income.

INCOME SUMMARY TABLE				
Wealth group	**Very poor**	**Poor**	**Middle**	**Better off**
Annual income per household (UGX)	739,820	1,049,200	1,629,250	3,139,750
Average annual income per person [26]	UGX 123,303 (US$ 49)	UGX 161,415 (US$ 65)	UGX 232,750 (US$ 93)	UGX 448,536 (US$ 179)

Expenditure Patterns

The graph to the right presents expenditure patterns for the reference year July 2012 through June 2013. While total expenditure increases with wealth, the expenditure breakdown by percent in this graph demonstrates the relative amount of income spent on different categories.



The graph provides a breakdown of total annual cash expenditure according to category of expenditure.

The proportion of expenditure on food is higher for the poorer wealth groups than for the middle and better off. The poorer households spend about 40% of their income on food, with over 35% of this spent on staples, while most of what the better off spend on food is devoted to improving and diversifying their diet, rather than on purchasing essential staple food.

Non staple expenditures by better off households are on things like sugar, meat and cooking oil, which are beyond the means of poorer households. The non-staples purchased by poor households are limited to items such as cassava and beans.

Even in an average year, the very poor and poor cannot afford to purchase livestock to rebuild their herds and expenditure on inputs is limited to seeds and hand hoes. Middle and better off households spend significantly more, about 25% of available income, on inputs such as veterinary drugs, seeds, hand hoes, additional livestock, labour, ploughing or renting land.

Hazards

The main chronic hazards in this zone are crop pests and diseases and livestock parasites and diseases. Drought is intermittent, occurring at least once every three years.

Crop pests and disease can significantly reduce crop production. Common pests include northern leaf blight, smut and stalk borer that affect maize and sorghum, groundnut rosette, bean fly, aphids, maize streak virus, and honey dew in short-cycle sorghum.

[26]The average exchange rate from July 2012 – June 2013 was US$1 = UGX 2500.

Livestock parasites and diseases affect livestock productivity by reducing milk production, body condition and income from livestock sales. Common parasites include worms and ticks. Some diseases like CBPP, *anaplasmosis* and CPPP have become endemic.

Drought occurs periodically and has greater impact on crop production than livestock productivity. It reduces access to food and income from own production and payment in kind for agricultural labour for the poorer households.

Response Strategies

In a bad year, households try to meet their food needs by **reducing their expenditure on non-essential items** such as grinding, utensils, clothing, transport, community obligations, savings contribution, mobile phone charging and credit, local beer and tobacco. This expenditure is switched to the purchase of staples. They also **sell less of the crop harvest** and consume more of their production. Also, poorer households receive food gifts from wealthier households. Middle and better off households do not buy livestock to restock in a bad year.

Households try to increase income by **expanding existing options**. Poorer households will attempt to increase the amount of agricultural labour they do and their collection and sales of wild foods and natural products like firewood, building and construction materials, and charcoal. Labour migration out of the zone to neighbouring districts of Pader, Kitgum, Lira and Soroti will increase for a longer period than normal. They will also increase consumption of wild foods. Relatives also increase the frequency and amounts of remittances sent to family members in the zone.

Households also turn to other **strategies not used in the reference year** to meet their basic needs. These strategies include engagement in domestic and construction work.

Key Parameters for Monitoring

The key parameters listed in the table below are things that make a substantial contribution to household food and income sources in the *Western Mixed Crop Farming Livelihood Zone*. These things should be monitored to indicate potential losses or gains to local household economies, either through on-going monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the expenditure side, including sorghum, maize and bean prices.

Item	Key Parameter – Quantity	Key Parameter – Price
Crops	• Sorghum • Maize • Finger millet • Beans • Groundnuts • Sunflower	• Sorghum (producer price) • Maize (producer price) • Finger millet (producer price) • Beans (producer price) • Groundnuts (producer price)
Livestock production	• Cattle (change in herd size) • Cow milk yield • Shoats (change in herd size)	• Cattle price • Price of milk • Shoat prices
Other food and cash income	• Cultivation labour availability • Harvest labour availability • Weeding labour • Firewood • Charcoal • Grass • Pole • Brewing	• Agricultural wage rate • Firewood price • Charcoal price • Grass price • Pole price • Beer price

Programme Implications

The longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. All of these suggestions require further detailed feasibility studies.

Agricultural inputs: All wealth groups identified this as the most important area for livelihood improvement. These include provision of improved seeds, tools, animal traction, and provision of tractors (for middle and better-off). These would increase acreage under crop production and consequently food and income for households.

Restocking – The poorer households mentioned the need to restock shoats while middle and better off households emphasized cattle. This has the potential to improve livelihood security.

Livestock health services: All wealth groups interviewed stressed the need to improve access to veterinary drugs and services. The current system is inadequate leading to a high prevalence of diseases and has made it difficult to keep other types of livestock such as poultry and pigs due to New Castle disease and African swine fever, respectively. Livestock diseases directly reduce productivity and income that households can obtain from the sale of livestock and milk. Thus, investment in livestock health services is likely to translate into improved livelihoods.

Alternative income creation – Poorer households obtain most of their income from sales of firewood, charcoal and building materials. Interviewees expressed the need for income diversification through training in alternative income generating activities. Although specific activities were not identified, there was mention of setting up youth or women's groups to engage in small businesses. This could be combined with setting up VSLAs and training in business and financial management that respondents also identified as important.

School facilities: Most households highlighted the importance of having increased access to secondary and tertiary education facilities. The lack of or inadequate facilities provides an opportunity for improvement or provision of such services.

Investment in human health services: Poor and better off households emphasized the need to invest in improving access to health services and the provision of mosquito nets. The health services are inadequate in this zone.

Provision of *tse tse* fly traps: This is especially critical for communities close to wildlife protected areas in Napak, Nakapirpirit and Kaabong districts. Some types of wildlife are hosts to *tse tse* flies which are a potential health hazard as they cause *trypanosomiasis* (*nagana*) in livestock and sleeping sickness in humans.

Marketing infrastructure: Improvements in marketing infrastructure would help increase the prices households could obtain for their crops.

Provision of community irrigation systems: There are various low cost irrigation systems that households can use to improve crop production especially of vegetables. Respondents want transfer of such technology to enable them to increase their income from off-season production of vegetables for the market.

Annex: Wild food consumed in the Western Mixed Crop Farming Livelihood Zone

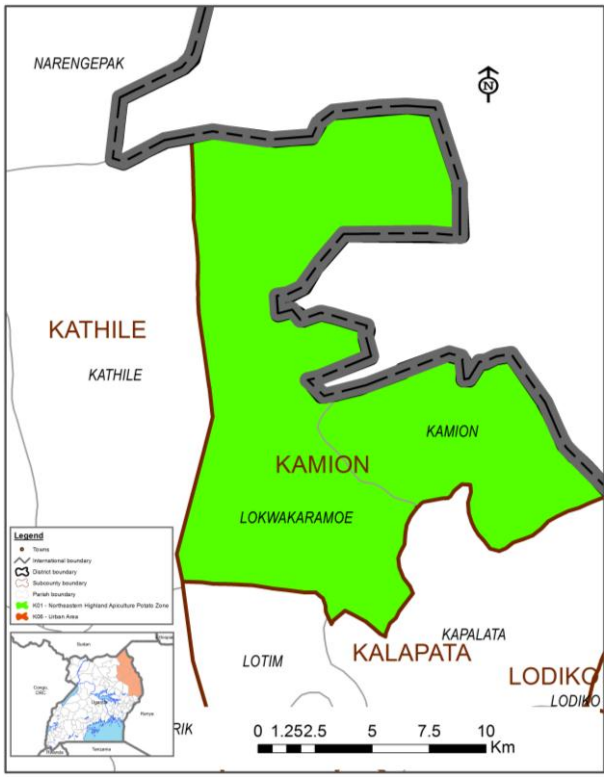
Food	**Parts eaten**
Obatho and *Omodo* (yams)	Tubers
Okuku (beans)	Seeds
Oyoda (vegetables)	Leaves
Owi	Leaves
Tamarind	Fruit
Shea nut	Fruit and seeds (oil)
White ants	
Termites	
Game	
Balanites (desert dates)	Leaves and seeds
Mangoes	Fruit
Mud fish	
Cherry tomatoes	Fruit

Karamoja Region Livelihood Baseline Profile

E Northeastern Highland Apiculture Livelihood Zone

Zone Description

The *Northeastern Highland Apiculture Livelihood*[27] *Zone* is a small zone located in Kamion sub-county, northeast of Kaabong District along the mountains of Losolia, Morungole and Dodoth hills. Bordering Kenya and surrounded by the *Central Sorghum and Livestock Livelihood Zone*, this highland area has a mountainous topography characterized by undulating hills. The vegetation is forest with bush shrubs (scrub). The main geographical features are Mt. Morungole, the Usake River, the Kaabong River, and Timu and Morungole forests. Natural resources include game, wild foods, and gold in Morungole. The main ethnic group in this zone is the Ik and the zone's population is around 21,938[28].



The nearest township is Kalapata, just outside the zone. The main roads that run through the zone are the Kalapata to South Sudan road and the Kalapata to Oropoi to Kenya road. Annual rainfall ranges between 500 and 700 mm. There is one rainy season from March to October, with a reduction in rains in June. Temperatures are warm at 25 – 30^{o}C. The soils are fertile laterites.

These characteristics have shaped the livelihood strategies employed by the communities in this zone. Household economies in this zone are based on agriculture and honey production with a small amount of livestock production. Households grow maize, sorghum, finger millet, beans, cowpeas, sesame *(simsim)*, and sunflower. Of these, the most important crops for both consumption and sale are maize, sorghum and finger millet. Crop production potential in this zone is high, but food deficits occur one out of every three years. Agriculture is primarily rain-fed, but limited irrigation is done in isolated areas using water from the Usake River to grow vegetables all year round. Land is prepared by hand with

[27] Fieldwork for the current profile was undertaken in January and February of 2014. The information presented in this profile refers to the reference year, which started July 2012 and ended June 2013. Provided there are no fundamental and rapid shifts in the economy, the information in this profile is expected to remain valid for approximately five years (i.e. until 2017/2018). All prices referred to in the document are for the reference year.

[28] Uganda Bureau of Statistics, 2013 Population Projection

hoes. Land preparation and weeding require the most intense labour inputs, and for these activities better off households hire men, women and youth from very poor and poor households to work for them.

The main pests and diseases affecting crop production are aphids, which attack beans, honey dew in sorghum, sorghum midge, smuts, stalk borer and northern leaf blight. Honey dew can be controlled by planting early in the season and using resistant varieties which can be bought from the market. Smuts, stalk borer and northern leaf blight that affect sorghum and maize can be controlled by using clean (treated) seeds and practising crop rotation. Nonetheless, availability and access to resistant varieties and clean seeds remains a challenge because they are unaffordable to most, and retailers are few and only found in Kaabong town, a distance of more than 20 km from Kalapata. Although farmers can obtain advice on best agronomic practices at no cost from the extension staff associated with the district local government and non-governmental organisations (NGOs) involved in agriculture, this is limited by low staffing levels and few NGOs operating in the zone.

Seeds, a critical agricultural input, are mostly sourced from recycled seed saved by farmers from their own production, but they are also purchased at a price from the market or obtained free from some NGOs. The main factors affecting crop production are similar to other agricultural zones in Karamoja and include poor agronomic practices like late planting, ineffective weeding, poor pest and disease control, poor spacing, poor land preparation, delayed harvesting (whilst waiting for the crop to dry and leading to substantial field losses as a result of grain falling to the ground and being eaten by birds), and unpredictable weather conditions.

This zone is well known for its apiaries. All wealth groups produce honey, which provides a major source of household income. Traditional beehives are used, made of hollow tree trunks. Harvesting honey is the responsibility of men and is done during the rainy season.

Households own limited numbers of livestock in this zone; better off households are the only ones to own cattle, and even then in very small numbers; shoats are owned but not by very poor households. Shoats, the main livestock, range freely, feeding on grass and browsing on bushes and shrubs. Livestock are not fed on purchased fodder. The main sources of water for livestock during the wet season are bore holes, minor and major rivers and seasonal pools. In the dry season, major rivers and boreholes provide the water.

Households in the *Northeastern Highland Apiculture Livelihood Zone* generate the least total income (both food and cash) of any zone in Karamoja – around half that of the *Southeastern Cattle and Maize Livelihood Zone*. Production totals are a fraction of those in similar cropping zones (e.g. the *Western Mixed Crop* zone) because middle and better-off households use only hand hoes for land preparation, severely restricting the acreage planted. This zone produces a variety of market vegetables such as tomatoes, cabbage, kale, okra, potatoes, and onions.

Markets

Market access in this zone is relatively poor because of the poor road network. Local dirt feeder roads are impassable during the rainy season when culvert bridges can be swept away or break, cutting off the zone. Generally, the livelihood zone is more accessible during the dry season, albeit with slow transport.

Small-scale traders operate from trading centres dotted along the main routes, with at least one in each parish. Farmers sell crops that they harvest, such as maize, sorghum, finger millet and beans, to the small-scale traders, usually within the zone. During the lean season, when their own stocks have run out, households buy sorghum and maize brought in from outside the zone. The sorghum is brought in from Soroti, Amuria or Abim through Kotido and Kaabong to Kalapata, the closest trading centre for households in this zone. Maize comes from farther south in Kapchorwa and Mbale through Soroti, Amuria, Abim, Kotido, and Kaabong to Kalapata. Traders in the livelihood zone then take the commodities to other smaller trading centres.

Honey is bought by local traders from within the zone who then sell it on to other traders and processors in Kaabong, from where it may be sold on to Kotido, Abim, Soroti and finally to Mbale. From Abim, some the honey is taken to Lira and Acholi. When they can, farmers take the honey directly to Kaabong where they obtain better prices. Honey is mainly traded during the rainy season from April to September when production is at its peak. Some stored honey may be traded during the dry season.

Shoats are the main livestock sold; farmers prefer to take them directly to Kaabong to sell in order to get higher prices. From here, traders take them to other markets in Kotido, Abim, Soroti, Kitgum and onwards to South Sudan. Livestock are mainly sold during the lean season from February to June.

People generally find labour opportunities locally; however, around 40% of casual labour is found outside the zone, in Kalapata and Kaabong in the *Central Sorghum and Livestock Livelihood Zone* and Karenga in the *Western Mixed Crop Farming Livelihood Zone*. People go to these locations every year from February to June but their time away is further extended in bad years. There is no labour migration from other areas into this zone.

Timeline and Reference Year

The baseline assessment refers to a very specific time period called the reference year. In the *Northeastern Highland Apiculture Livelihood Zone* the reference year started with the harvest of July 2012 through to the beginning of the next harvest in June 2013. During community leader interviews, key informants were asked to rank the last five years in terms of seasonal performance with '1' indicating a poor season and '5' an excellent season. As shown in the table below, the average ranking for the production year of 2012 (which corresponds to crop production during the reference year) was '3', indicating an average season. This was due to well-distributed but average rainfall. Although wild fires and animals destroyed some gardens, as a general statement average crop production was achieved.

Year	Rank	Event – TIMELINE
2013	**3**	Water logging in lowlands, moderate incidence of crop pests and diseases, Wild fires occurred, even rainfall distribution, and average crop harvests were realized
2012	**3**	Water logging in lowlands, high incidence of crop pests and disease, Wild animals destroyed gardens; some households received a few shoats from the National Agriculture Advisory Services (NAADS), average crop harvests.
2011	**2-3**	Insecurity, wild animals and wild fires destroyed crops
2010	**3-4**	Low crop pests and diseases, insecurity, good crop harvests
2009	**1**	Drought and insecurity

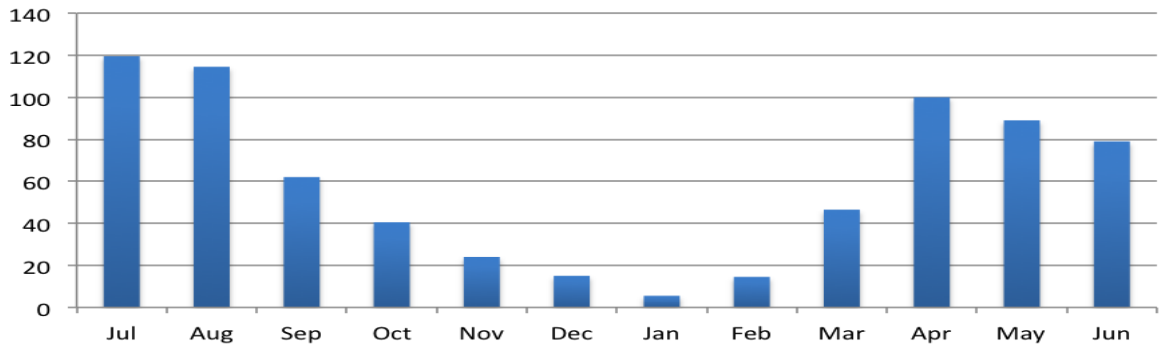
5 = an excellent season for household food security (e.g. due to good rains, good prices, good crop yields, etc)
4 = a good season or above average season for household food security
3 = an average season in terms of household food security
2 = a below average season for household food security
1 = a poor season (e.g. due to drought, flooding, livestock disease, pest attack) for household food security

Seasonal Calendar for Reference Year

Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Rainy season												
Milk production												
Livestock sales												
Livestock diseases												
Sorghum		CG	H	H			LP	LP	P	P	W	W
Maize	H	H	H	H				LP	LP/P	P	W	W/CG
Beans	H							LP	LP/P	P	W	CG/H
Millet	H	H					LP	LP	P	P	W	W/H
Groundnuts	W	H	H	H				LP	LP	P	P/W	W
Simsim (sesame)	P	W	W	H	H						LP	LP
Cowpeas	P	W	H	H				LP	LP/P	P	W/H	W/H
Cassava	W/H	H	H	H	H	H	H	LP/H	LP/H	P/H	P/H	W/H
Irish potatoes	H	H							LP	P	P/W	W
Green vegetables	CG	CG	CG						LP	LP	P	P
Sunflower	W	CG/H	H					LP	LP/P	P	P	W
Honey	H	H	H							H	H	H
Lean (hunger) season												
Food prices												
Labour migration												
Agricultural labour												
Gold panning												
Festivals												
Brewing												
Malaria												
Crossborder trade												
Construction work												

LP = land preparation P = planting W = weeding CG = consumption green H = harvesting

Average monthly rainfall, long term mean (mm) Source: USGS/ FEWS NET

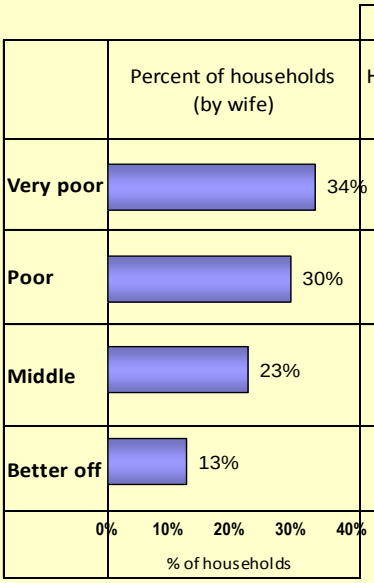


In the *Northeastern Highland Apiculture Livelihood Zone*, the rainy season occurs between March and October and the dry season is from November to February. Short cycle crops like cowpeas and vegetables are planted in March/April and harvested in July; sorghum, a long cycle staple, is planted in March/April and harvested in October/November. Sorghum and millet are grown in pure stands while intercropping of maize, beans, cowpeas, groundnuts and sunflower are common. The consumption year begins in July with

green consumption and harvesting of some staples like maize, millet and beans. The main harvest of staple crops ends in October.

There is no livestock migration out of this zone but in a bad year livestock migrate into this zone from the *Central Sorghum and Livestock Livelihood Zone*. In a normal year poorer household members migrate from February to June to neighbouring areas in search of agricultural labour opportunities, traveling to other livelihood zones in Karamoja, to Turkana in Kenya, and even to South Sudan. The labour migration pattern is the same in a bad year but more people go and they leave as early as October.

Wealth Breakdown



	Percent of households (by wife)	Wealth Groups Characteristics: HH size (per wife)	Number of wives	Livestock holdings (per homestead)	Beehives (per homestead)	Land cultivated per wife (acres)
Very poor	34%	6	1	3 hens	3	0.25
Poor	30%	6	1	3 goats, 7 hens	6	0.5
Middle	23%	7	1.5	6 goats, 18 hens	12	1.5
Better off	13%	8	2	5 cattle, 26 goats, 36 chicken	60	1.5

Note: All results are the mid-point of a range.

The table above summarizes the basic characteristics of different wealth groups. The bar charts on the left represent the percentage of *households*, meaning the wife and those eating from the same pot in her hut or huts (as opposed to *population* – see more on this below) that fall into each wealth category. In this livelihood zone men can have more than one wife. The household sizes in the chart above refer to the household maintained by each wife; so, for instance, a wife in a better off homestead may have 8 members living in her hut or huts, but be part of a larger homestead with 2 wives. The area cultivated is per wife. The asset information (i.e. livestock and beehives owned) refers to the homestead (man plus wives), so a better off man with 2 wives typically owns around 5 cattle, 26 shoats, 36 chickens and 60 beehives.

The main determinants of wealth in this zone are land area cultivated and number of beehives owned. Poorer wealth groups cultivate smaller areas of land and have fewer beehives than better off households. All wealth groups grow similar crops, but the total amount of production is higher for better off households since they are planting larger areas. The main constraints to crop production across all wealth groups are limited capacity to till more land given the exclusive reliance on manual labour, inability to afford agricultural inputs such as seeds and tools, prevalence of crop pests and diseases, and water logging in low-lying areas. Better off households, like other wealth groups, overcome these constraints by forming farming groups to help with land preparation and weeding as well as pooling resources to purchase seeds at a more favourable price from the main town in Kaabong. Better off households also pay for labour to assist them with farming activities.

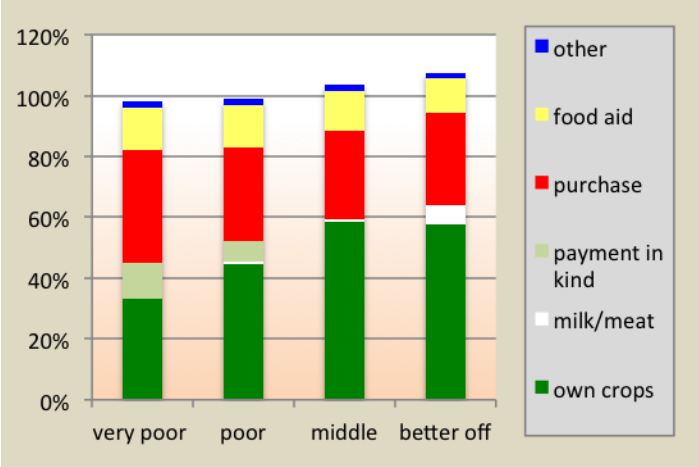
Bee keeping is critically important for households in this zone, but its contribution to local livelihoods is limited by reliance on traditional production techniques, lack of protective gear and equipment for honey harvesting, poor market access (better markets in Kaabong are far away, roads are poor and transportation means are limited); and prolonged dry spells, which affect nectar-producing plants, thereby reducing honey production. These constraints are overcome by having a collection centre for honey where buyers purchase honey in bulk to take for processing and packaging, training on how to improve the shape of traditional beehives to increase production and better bee keeping practices and harvest and storage methods.

As mentioned above, the bar charts in the table show the percentage of *households* that make up the population in this livelihood zone. The majority of households fall into the poorer categories (approximately 64% of households are in the 'very poor' and 'poor' groups combined), and the middle and better off households combined make 36% of the zone. The number of wives and children increases as we move up the wealth spectrum, but not by very much – certainly not by as much as in neighbouring livelihood zones – so the percentage of the *population* that falls into each wealth group does not change substantially, with around 41% of the *population* falling into the middle and better-off categories and around 59% of the population in the very poor and poor wealth groups.

	Wealth Breakdown	
	% households	% pop
Very poor	34%	31%
Poor	30%	28%
Middle	23%	25%
Better off	13%	16%
Note: Results are the mid-point of a range		

Sources of Food

The graph to the right presents the sources of food for households in different wealth groups in the *Northeastern Highland Apiculture Livelihood Zone* for the period July 2012– June 2013. July represents the start of the consumption year because it is when green consumption begins. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.



In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcals per person per day.

The contribution of own crop production to household annual food intake is higher for wealthier households than the poor at 58% and 45%, respectively. The main crops consumed are sorghum, maize, millet and beans although better off households consume more maize than poor households.

Payment in kind for agricultural labour is only important for very poor and poor households. Casual labour can be paid either in cash or with one can of maize or sorghum (3.5 kg) per man-day worked.

CROP PRODUCTION	Very poor	Poor	Middle	Better off
Maize (kg)	120	180	400	425
Sorghum (kg)	145	200	340	350
Finger millet (kg)	110	140	140	275
Beans (kg)	35	35	80	165
Groundnuts	10	10	12	20
Sesame (kg)	15	15	30	30
Note: All results are the mid-point of a range				

Only better off households are able to rely to any meaningful extent on milk. Middle and poor households obtain minimal amounts of milk from their shoats, but it does not translate into a significant contribution to annual food income.

The food aid component of the graph represents mainly school feeding and occasional food-for-work programmes. These are not targeted and all wealth groups benefit. It is worth noting that without school feeding, very poor households, who are barely able to meet their minimum food needs even in an average year, would likely be facing a deficit. The contribution of purchase is fairly similar across the wealth groups but is slightly less important for households at the better off end of the spectrum.

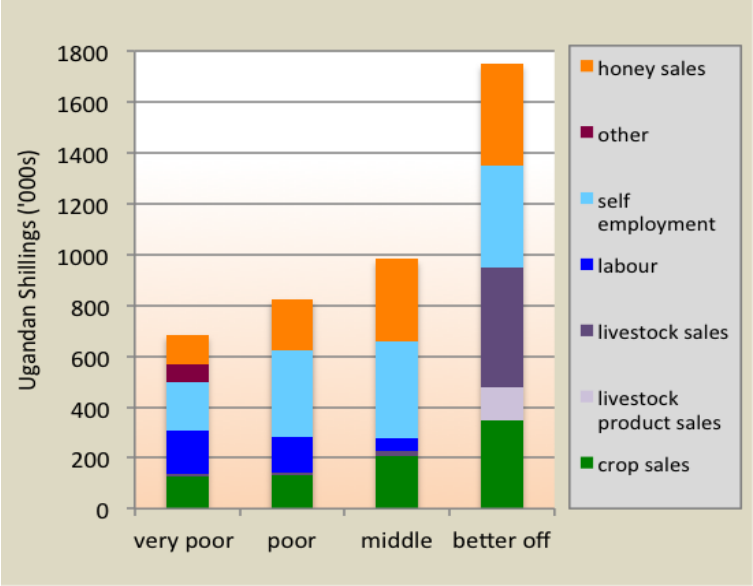
Wild food consumption (included in 'other') is common across all wealth groups. These foods include game, tubers, vegetables, fruit, nuts and leaves of trees and shrubs. A list of selected wild foods found in this zone is provided in the annex to this profile.

Sources of Cash Income

The graph presents cash income sources by wealth group for the reference year July 2012 – June 2013.

The most important sources of cash income across all wealth groups are self-employment and honey sales. Self-employment includes sales of firewood, charcoal, thatching grass, and building materials as well as brewing. These activities contribute 340,000 UGX or 41% of cash for poor households compared to 405,000 UGX or 23% of annual cash income for better off households. Honey sales earn better off households around 400,000 UGX, twice as much as poor households garner from this activity.

All wealth groups sell part of their harvest to generate cash income. Poor households sell mainly millet, maize, sorghum, beans and vegetables. Better off households sell beans, maize, sorghum, and millet. In addition, better off households sell some of their livestock, which poor households are unable to do.



The graph provides a breakdown of total annual cash income in Uganda Shillings (UGX) according to income source.

HONEY INCOME	Very poor	Poor	Middle	Better off
Amount collected (kg)	30	60	80	100
Amount sold (kg)	23	40	65	80
Price (UGX) per kg	5000	5000	5000	5000
ANNUAL INCOME	115,000	200,000	325,000	400,000

Note: All results are the mid-point of a range

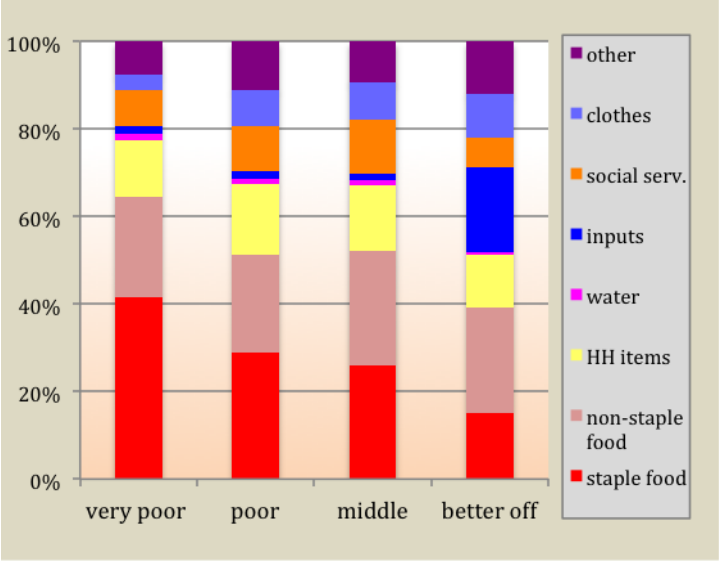
INCOME SUMMARY TABLE				
Wealth group	**Very poor**	**Poor**	**Middle**	**Better off**

Annual income per household (UGX)	683,000	823,500	981,750	1,751,500
Average annual income per person [29]	UGX 113,833 (US$ 46)	UGX 137,250 (US$ 55)	UGX 140,250 (US$ 56)	UGX 218,938 (US$ 88)

Expenditure Patterns

The graph to the right presents expenditure patterns for the reference year July 2012 – June 2013. While total expenditure increases with wealth, the expenditure breakdown in this graph shows the relative amount of income spent on different categories.

Expenditure on food (staple and non-staple), as a proportion of total cash income, is higher for poorer groups than it is for better off households. It comprises over 60% of annual expenditure for very poor households and less than 40% for better off households. The main staple foods purchased are sorghum and maize. Better off households spend far more on inputs in cash terms because in addition to seeds, they also pay for labour and livestock drugs.



The graph provides a breakdown of total annual cash expenditure according to category of expenditure.

Hazards

The chronic hazards affecting livelihoods in the *Northeastern Highland Apiculture Livelihood Zone* are drought, wild animals and fires, and crop pests and diseases. Water logging occurs periodically, once every three years.

The occurrence of drought means reduced rainfall which results in reduced crop and honey production. Drought reduces the abundance and output of nectar-producing plants, thereby limiting honey production. This has multiple negative effects: on food and income from own production, payment in kind for agricultural labour for the poorer households and income from honey sales.

Wild animals and fires destroy crops in the gardens. Communities build grass thatched granaries in the gardens to store their produce. These too are destroyed in the event of a wildfire, resulting in serious losses. Wildfires can also destroy beehives and reduce the quality and quantity of honey.

Common crop pests and diseases are similar to those in other agricultural zones and include northern leaf

[29]The average exchange rate from July 2012 to June 2013 was US$1 = UGX 2500.

blight, smut and stalk borer that affect maize and sorghum, groundnut rosette, bean fly, aphids, maize streak virus, and honey dew in sorghum. All of these pests reduce crop yields.

Water logging occurs in low-lying areas, resulting in poor crop growth and reduced yields.

Response Strategies

Households try to meet their basic needs by **reducing their expenditure on non-essential items** such as grinding, utensils, clothing, festivals, local beer and tobacco. This expenditure is then switched to the purchase of staples. They also **sell less of the crop harvest** and consume more of their production. Also, poorer households receive food gifts from the wealthier households.

Households **expand existing options** to try to increase food and cash income. Poorer households will increase agricultural labour, sales of wild foods and natural products like firewood, building materials and charcoal; they will also migrate for a longer period than normal to seek employment. In addition, they will try to intensify brewing, livestock sales and the consumption of wild foods.

Households also turn to other **strategies not used in the reference year** to meet their basic needs. These strategies include engagement in domestic and construction work in trading centres.

Key Parameters for Monitoring

The key parameters listed in the table below are things that make a substantial contribution to household food and income sources in the *Northeastern Highland Apiculture Livelihood Zone*. These should be monitored to indicate potential losses or gains to local household economies, either through on-going monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the expenditure side, including sorghum, maize and beans.

Item	Key Parameter – Quantity	Key Parameter – Price
Crops	• Green consumption • Maize, sorghum, millet, beans	• Maize (producer price) • Millet (producer price)
Livestock production	• Cow milk yields • Cattle herd sizes • Shoats herd sizes	• Milk price • Cattle • Shoats
Other food and cash income	• Honey • Wild foods • Agricultural labour • Brewing inputs • Building materials	• Honey • Wild foods • Wage rates • Beer prices • Building material prices

Programme Implications

The longer-term programme implications suggested below include those that were highlighted by the wealth group interviewees themselves and those made by the assessment team following detailed discussions and observations in the field. All of these suggestions require further detailed feasibility studies.

Improve education: Respondents highlighted the need to improve education by increasing the number of teachers in schools, providing lighting and including boarding facilities in nearby schools as pupils and students walk long distances to get to school.

Improve access to water: Improved access to water could have knock-on benefits in terms of freeing up time currently spent collecting water and making it available for other productive activities. This could be done by developing nearby water sources or boreholes, increasing access to safe water and reducing the long distances travelled to and from water sources.

Improve road and communication access: The conditions of roads in this zone deteriorate in the rainy season, greatly hampering movement. Mobile telephone service is very patchy and hinders communication within and outside the zone. Improvement of the road and communication network would improve access to markets.

Support to livestock and crop production: Representatives identified the lack of tools, quality seeds and support to farmer groups as factors limiting crop production. Restocking with shoats would likely enhance household incomes. Better off and middle households can be supported to increase acreage under cultivation by providing them with access to and training around animal traction. These interventions can be combined with an improvement in the delivery of extension services, which are seriously inadequate. Investment in these areas would greatly improve production and ultimately livelihoods.

Support to honey production: Bee keeping is an important income source but communities rely on traditional beehives, which have very low levels of productivity. Investment in modern beehives, better harvest methods using protective gear, and development of the honey value chain would translate into increased household incomes and improved welfare.

Improve access to health services by adding a maternity ward to existing health units and fencing health centres to provide security.

Annex: Wild food consumed in the *Northeastern Highland Apiculture Livelihood Zone*

Ik	**Ngakarimojong**	**Parts eaten**
Ror	*Athiwat*	Seeds
Zog	*Etoler*	Seeds
zom	*Ebisinayi*	Leaves and fruit
Nyedwoe	*Edwel*	Leaves
Turunet	*Akamunai*	Seeds
Barat	*Ebul*	Seeds
Lang	*Alam*	Seeds
Mos	*Epongai*	Seeds
Nyokotit	*Ekooti*	Seeds
Eperu	*Eperu (tamarinds)*	Fruit
Ragan	*Aboyo*	Tubers
Esutei		Tubers
Ekarat		Fruit
Imongo		Leaves and fruit
Nyeneni		Fruit and nuts
Nyethola		Leaves and seeds
Gomoi	*Ngiru*	Seeds
White ants		
Termites		
Game		