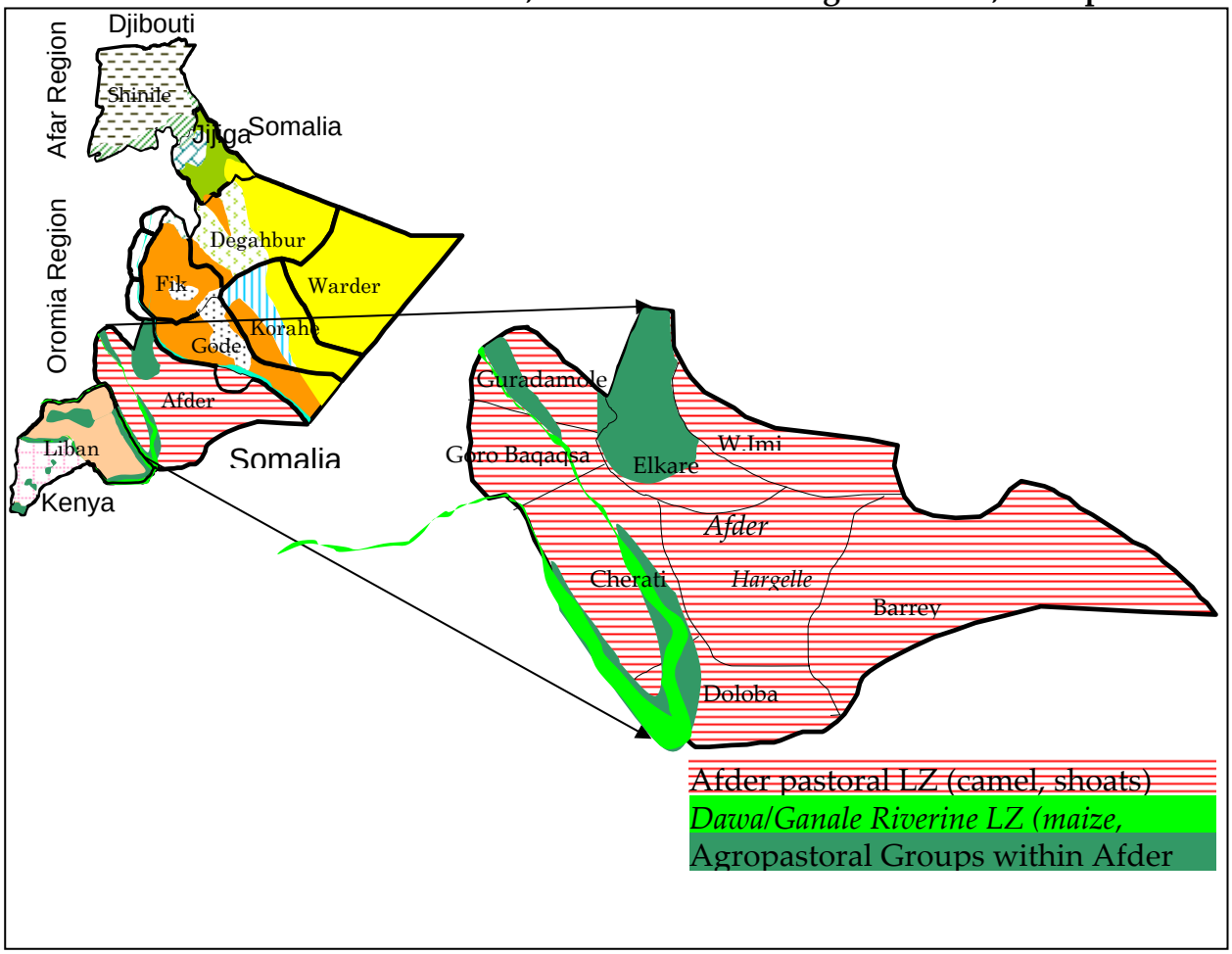
Afder Pastoral Livelihood Zone

(Camel, Sheep and Goats)

Afder Administrative Zone, Somali National Regional State, Ethiopia



An HEA Baseline Study
By SC-UK, DPPB and Partners
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Table of Contents

Figures, Tables & Maps

Terms and Acronyms

ACF	Action Contra le Faim
Aroos	Contribution to wedding
Deyr	Rainy season between October and December
DPPB/D	Disaster Prevention and Preparedness Bureau/Department
ECHO	European Commission Humanitarian Office
EWS	Early Warning System
LZ	Livelihood Zone
FS/EW	Food Security Monitoring/Early Warning
Gu	Rainy season between early April and June
Hagaa	Dry season between July and September
Horoweyn	Herd animals strong enough to migrate long distances
Irmansi	gift of an animal in milk, usually to a poor relative (until it dries up)
Jar	She-goat
Jilaal/Qoraxeed	Hot dry season between late December and March
Kaliil	Most difficult time of year: start of main rains (before pasture replenished)
Kaalmo	Support to those who are starting up and who have had problems or to those who are in difficulty
Nugul	Weaker or more vulnerable herd animals that do not migrate far
OFDA	USAID Office for Foreign Disaster Assistance
OWDA	Ogaden Welfare and Development Association
OWS	Ogaden Welfare Society
PCAE	Pastoralist Concern Association Ethiopia
SC-UK	Save the Children-UK
SC-USA	Save the Children-USA
SNRS	Somali National Regional State
TOT	Terms of Trade
WFP	UN-World Food Programme
Zakat	Religious gift (Obligation) by rich to poor (e.g. 10% of rainfall harvest)

1. Executive Summary

The Pastoral LZ in Afder (camel, shoats, and cattle) extends from the Shabelle River through to Liben zone. It has links with the agro-pastoral communities in the same area for grain purchase and camel milk sales. Livestock are traded within the zone and to a limited extent outside the zone. Migration patterns in normal years are within Afder zone. The households are reliant on their own livestock for much of their livelihood support but because herd sizes for the poor are small/unsustainable they meet some of their needs with income from self-employment (mainly bush product collection and sale). Few families engaged in labour activities for income (i.e. employment by other households) in a "normal" year.

Salt farming in the zone has become more popular in the last couple of years as the closure of the Ethio-Eritrea border during and since the war has forced up the price of salt and there is now a good market within Ethiopia. This salt trade has provided an important safety net for the poorest families. One or two male members of the household have been able to work in the salt 'farms' during the dry season or undertake other activities among the growing urban populations around the salt farms and other trading centres.

The drought of 1999/2000 severely affected many pastoralists with mass migration to far distances. The poor environmental conditions combined with the livestock ban, and the requirement to send men and livestock to support the war effort against Eritrea. Before that the El Nino flooding created the best conditions for livestock and the benefits were felt for 2 or more seasons after. Between 1992/3 and 2001/2, there have been 3 very good years, 4 very poor years and 3 average or below average. The "normal" year used for this study was considered to be from the *Gu* of 1998 through to the *Jilaal/jilaal/qorahxeed* of 1999 (April 1998 through to March 1999).

The mainstay of the economy is livestock. While shoats are more numerous camel are key to the survival of the pastoral economy. Cattle were more important in the past but are increasingly less favoured due to difficult conditions. Relationships between the wealth groups are key to survival – *irmansi*[1] or lending of milking animals during good years is an important part of the symbiotic relationship between rich and poor. All groups purchase staple to supplement milk and ghee from their herds, with staple purchase inversely related to wealth and milk consumption. The livestock import embargo imposed on the Horn of Africa countries by the Gulf Arab States, negatively affected the economy.

Sales of livestock and livestock products is an important activity for all groups, particularly the middle and better off. Milk sales also increases with wealth. Bush products are collected and sold only by the poor, and all wealth groups reportedly collect gums and resins since it is an activity which household members can do

[1] irmansi is the system of lending milking animals to poorer relatives. The animal is usually returned to the owner in a drought (milk production will have virtually ceased so no benefit can be gained; also the household is unlikely to be able to care for the animal)

(particularly children) while going about their normal livelihood activities. The market for gums and resins was particularly good at the time of the survey – October 2001.

The season affects livelihood activities. Herds in general are split according to strength – those which are fit and can move long distances (the horoweyn) do so in the dry season, leaving behind those which are vulnerable (nugul). Camels are herded farther from the main base during the dry season, to return in the wet season. Cattle herds are generally not split in the same way. Most are taken away during the wet season to protect the dry season grazing areas closer to home and water points. The most difficult time of year (Kaliil) is at the start of the main rains, before pasture has had time to replenish, while crop prices are still high and when livestock are weak and suffer most disease. Interestingly, terms of trade are most favourable for pastoralists at the start of the dry season. At this time, when livestock condition is best and milk production is still high, the price of staple is lowest since agricultural communities have just harvested their crops. Dry season activities include sale of gums and resins and bush products (straw, poles).

Major risk factors include animal diseases, severe drought, high price of staple foods (grain, sugar), insecurity which reduces access to grazing areas, decline in livestock market, border closure, livestock ban in Gulf States, decline in market for gums and resins, and decline in market for salt

Coping strategies include, migration to distant places with animals; "attaching" small herds to larger herds; increasing dry season income by bush products and gums collection and sale; increased livestock sales; consuming a lower proportion of milk products and selling more; reduced spending on non-essential items (e.g. clothes); seeking (more) remittances; splitting the household (in extreme times): e.g. migration to salt producing areas for labour (man) and to urban areas for self-employment activities (women and children), and with migrating livestock (men).

2. Introduction

2.1 Purpose of the study

In the past there has been a chronic scarcity of socio-economic baseline information in Somali Region, which has made it very difficult for decision makers (Government, aid agencies and donors) to make decision on both short-term and long-term interventions. On occasions, such as the 1999/2000 drought, this inability to make quick decisions has had catastrophic consequences for the people of the Region. In an attempt to prevent such occurrences in the future, a project aimed at improving the Food Security Monitoring and Early Warning (FS/EW) capacity of the Region was established. This project is a joint effort by Save the Children–UK (SC-UK) and the Disaster Prevention and Preparedness Bureau (DPPB) of Somali National Regional State (SNRS), Ethiopia[2]. The objective of the pilot phase of the project was to collect baseline information on livelihoods and develop a workable model for food security monitoring that will be built into government structures throughout the Region in Phase II

This report is one of 13 other Household Economy baseline assessment reports that have been produced by the project, during the periods of September-October 2001 and January-March 2002. Participating organisations in these baseline assessments included: DPPB (together with all DPPD offices), SC-UK, WFP, SC-USA, ACF, HCS, PCAE, OWS, OWDA and Al-Najah Charity. The baseline exercise comprised of classroom training, three weeks of fieldwork and one week of analysis and write-up.

Based on a reference or typical year, baseline reports were compiled for households belonging to the specific Livelihood Zone (LZ). The reports provide both qualitative and quantitative information on the normal mode of survival and the vulnerabilities of the different livelihood groups found in the Region, as well as information on how they respond to crises. These reports supply decision makers with useful information to make informed decisions, which will facilitate timely and appropriate responses and prevent possible disasters. The information also sheds light on longer-term food security issues and can therefore help in the planning of development initiatives.

2.2 Methodology

The Household Economy Approach (HEA) has been used as the assessment and analysis tool for the baseline studies. This Approach provides a rapid food security assessment technique and has been used by SC-UK for a number of years in parts of Africa and Asia. For a brief introduction to the Household Economy Approach please refer to Appendix

2 The Food Security Monitoring and Early Warning (FS/EW) Project, in Somali Region, Ethiopia, is a joint undertaking by Save the Children – UK and the Regional Disaster Prevention and Preparedness Bureau. USAID/OFDA and ECHO fund the pilot phase (Year 1) of the project. Additional financial support was received from SC-Canada and WFP. Partners in the baseline exercise included: WFP, ACF, SC-USA, HCS, PCAE, Al-Nejah Charity, OWDA, LVIA, and the Government Bureau of Livestock Environment and Crop Development.

9.1. For further details refer to "The Household Economy Approach: A resource manual for practitioners" by John Seaman, Paul Clarke, Tanya Boudreau, and Julius Holt.

Livelihood Zone (LZ) Definition

Central to the Household Economy Approach is the concept of Livelihood Zones (LZ). Different populations live by very different means depending on their ecological environment, their assets, culture, skills etc. Some may depend primarily on livestock or fishing, others on agricultural production. Because of rainfall, soil type or marketing possibilities, some areas will be suitable for cash crops (such as cotton or tobacco) and others will produce only cereal staples. As a result of these different circumstances different population groups will adopt different approaches for survival. A group or population that obtains its food and income sources form a broadly similar combination of means and that have similar response to shocks is known as a Livelihood Zone (LZ).

3. Background

3.1 Afder Administrative Zone

Afder Zone is one of the nine zones in the Somali National Region State of Ethiopia and it is located in the south west of the region. The zone borders Somalia to the east, Gode zone to the north-east, Liben zone in the west and Fiq zone to the north. Afder consists of eight districts: Harghelle (capital), El-Karre, Goro Bagagsa, Gura damole, Dollo Bay, Charati, Barey and West Imey.

3.2 Agro Ecology, Geology, & Water

Soil/Vegetation
There are two distinct agro-ecological areas in Afder zone: the "highland" area (Gora-damole, Goro-bagagsa and parts of El Karre) and semi-arid lowlands (Barey, Harghelle, Dolo-Bay, Charati, and West Imey). The typical vegetation coverage of the zone is classified as open shrub and grassland areas (lowland semi-arid areas) and thick vegetative (thorny) bush (highland areas). The zone has three rivers running through: (Ganale and Shabelle are permanent; the Wayb is seasonal). The mainstay of the economy of Afder zone is traditional livestock rearing or pastoralism.

Wild foods
Wild foods exist and are consumed by children and herders in normal years as they look after livestock. In Afder zone there are several types of wild food which can be exploited for consumption. These include *mareer, gomoosha, dhafarur, hohob, gob.* Hunting is rarely practised because it is considered shameful.

Gums and resins
Gum, incense and myrrh are collected and sold throughout the pastoral area during the dry season. The area is rich with these products in a normal and bad year. The importance is explored under Household Economy section.

3.3 History

Afder zone is one of the most peaceful zones in the region although in the last ten years there have been territorial disputes between populations along the border of Oromia and Somali regions in the west of the zone.

Salt Mining in Afder Zone
Afder zone is rich in minerals. The name "Afder" comes from the name of the hill near the salt plain around God-usbo, which is the main salt-producing area. While salt has been farmed for many years in this area the price improved when the country's access to seaports and the usual importation channels was cut-off during the Ethio-Eritrean war in 1999. Salt mining has consequently increased in popularity.

The importance of salt is second to livestock production in the Gud-usbo area with most people from the surrounding area depending on salt in many ways. Ownership of salt farms is either private or co-operative. More farms are co-operatively-owned and this

ownership system carries both advantages and disadvantages. The co-operatives are run by a committee and chairman. Before the increase in the price of salt there was no cost attached to staking out a farm, particularly if the individual had relationships with local elders. Now, however, it costs around 3000 birr[3] to purchase the land to farm salt. "middle" and "better-off" individuals are able to pay this money, and they will receive land of about 25m x 50m. They have to dig the well from where the salty water is drawn. The water is poured over the plastic-covered salt-producing area. After several days the water evaporates and the salt remains. This is then cleaned and piled to dry.

Initial investment includes the cost of hand tools (shovel, spades, pick-axe, rakes, empty bags, jerricans and flat wood (for gathering up salt) and running costs after that include the cost of labour. Salt farms are owned by people from the local area. From one farm 30 *quintal*[4] can be produced each week when conditions are optimal. The price per quintal in the dry season is 10 birr ($1,20), and in the wet season – when salt production ceases – the price increases to 15 birr. The main market is the Ethiopian highlands.

During the wet season sales continue from salt stocks and the farm owners continue with other business opportunities (petty trading, animal rearing), or they might move to join their relatives in remote areas during the rainy season where conditions are better at this time.

Demand for salt has increased because of the afore-mentioned closure of port access, and also because improvements in the road network have meant that trucks can now come from both Gode and Negele. Transportation is facilitated by the good security in Afder zone which gives unhindered access to the area. The main constraint is the local road which goes to the salt plain – more than 30 trucks pass along this road each day and it requires improvement. Development of the Gode-Hargelle road brought considerable improvement to salt production: before the road improvement the journey (around 210km) took two days to drive; now it takes only 3-4 hours. Growth in the salt trade has led to a growth in God-usbo town.

Labourers come from Kelafo, Bakool (Somalia), young men living in the area and members of the "poor" pastoral households who have been forced to split because of difficult times. Labourers can currently earn up to 3-4 birr per day (SoSh 8,000 - $0.4). This amount might be sufficient for most individuals to cover their daily needs but is not enough to allow much to be sent back to the family.

Gud-usbo area has a problem with access to potable water – concentrations of salt in the water makes it too salty for consumption. This means that water has to be purchased at high cost: One 20-litre jerry-can of brackish water (collected from the river around 30km away) costs 6 birr (nearly $1). Development interventions need to start with water for human consumption. Access to health care is another problem for the people in the growing urban population.

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[3] At the current time approximately 8.5 birr = $1

[4] 1 *quintal* = 100kg

3.4 *Population*

Social structure

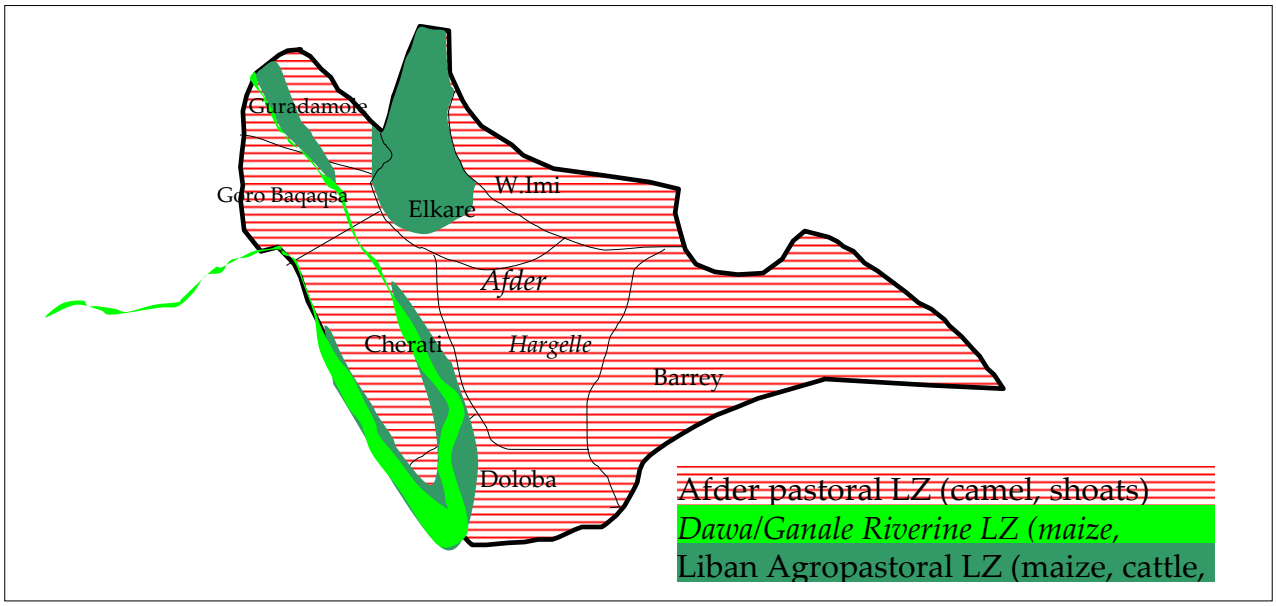
Afder is one of the nine zones of the Somali National Regional State of Ethiopia. The inhabitants of the Zone are almost entirely ethnic Somali peoples, most of whom are of the Ogaden clan. Almost all the sub-clans that live in the Zone, except some riverine groups practice pastoralism.

3.5 *Livelihood Zones in the Administrative District*

See earlier definition of a Livelihood Zone.

There are several Livelihood Zones in Afder zone.

- **The Pastoral Livelihood Zone** (65-75% of the population) - the subject of this report
- **Agro-pastoral Livelihood Zone (rainfed).** Populations are found near the banks of the rivers and in other specific higher areas like parts of Elkare and Guradamole districts (20-30% of the population). These communities rely more on cattle and less on camels and cultivate sorghum.
- **Urban** (5-10% of the zonal population) Populations are focused on providing services to traders as well as pastoralist visitors to the urban area. Income generating activities for the "poor" include transportation of commodities, water and firewood sales and shoe shining (young boys).



Map 1 – Afder Pastoral LZ in relation to the other LZ in the Afder Administrative zone

4. Food Economies

4.1 Afder Pastoral Livelihood Zone

Location/Coverage

The pastoral Livelihood Zone extends from the Shabelle river in the east of the zone through to Liben zone. To the south lies Bakool region of Somalia, to the west lies Liben zone, to the east lies the Shabelle river and Gode zone, to the north lies Oromia region.

Population

Family structure

Households are largely monogamous. This is more related to the clan culture rather than to economics. Wealthy men, however, are likely to have more than one wife. Family structure is complex and variable. Sometimes an old man with married sons will divide out his livestock assets to each married son and the livestock will be under the son's control. He might even continue to assist his son with food and clothing when he sells a large animal. Sometimes, however, the old father will let his sons use the animals but will retain control over them until his death. In extreme circumstances this might result in serious disagreement between father and son. In summary, control over and access to resources within the larger family is variable and depends both on the clan culture as well as individual relationships[5]. Certainly it is clear that assistance from the "better-off" to the "poor" is often within the same extended family: the wealthier relative might be the father, the poorer relative his son who is starting out with few assets.

Responsibilities within the household

Among the Afder pastoralists - like in other pastoral economies - responsibilities of different members of the household are clearly divided.

- Men are responsible for the large livestock (camels) and move with them in the dry season between areas with browse and sustainable water farther from the home settlement. Elder sons will move with the cattle in the wet season away from permanent water sources near the home to areas with seasonal water sources and grazing. The father is key in decision-making – particularly issues relating to pastoral dynamics, known as *hajaysi.*
- Women are involved in daily home-maintenance activities and managing and milking small livestock in and around the home settlements. They are also responsible for daily water collection.
- Young children have various responsibilities. Girls are brought up to assist their mothers, and in most cases not sent to school. Boys attend Koranic school when they are young for several years. Children often collect wild foods, gums and resins from trees.

Links with other LZ

The pastoral LZ has important links with other zones. Supply of cereal comes from agro-pastoral and riverine areas which is brought to the main markets. Livestock and livestock products are traded in urban centres and essential supplies purchased. The main markets of the zone for both livestock sales, grain and non-food purchase are currently Cherati, Dolo-Addow and West Imey within SNRS, and Mandera and El Berde (in Kenya and Somalia respectively).

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[5] See IM Lewis: *A pastoral democracy* and other anthropological literature

4.2 Historical Timeline

The historical timeline (shown in the following table) charts out events over the last 10 years (1992/3-2001). It is based on the Somali calendar, which starts with the onset of the *deyr* rainfall and ends the following *hagaa*. The timeline considers factors, which are important to pastoralists, namely: livestock condition, pasture/browse, rainfall and market access (including terms of trade). It is clear that the idea of a "normal", "average" or "frequently occurring" year is difficult to find in pastoral societies. Over the last 10 years there have been as many good years as there have been bad years, but there are very few which are ranked overall as "average".

Selection of the Reference Year

Household food economy analysis considers many different ways of recalling years. There are "traditional" years, "production" years and "consumption" years and the "reference" year.

In coming up with Historical timelines, the *deyr* season (which starts in October) is used as the start of the Somali traditional year. The traditional Somali year therefore spans across two Gregorian calendar years, starting with the *deyr* (October) and ending with the *hagaa* (September).

In Somali communities in Afder zone respondents recalled years according to the traditional Somali system. Under this system each year has a name, which is the same as a day in the week, and the system has a cycle of 7 years. There are also local names for seasons, which recall specific events or conditions. These are usually when conditions are extreme (see table 1). Some respondents argued that the year starts with the *deyr* season, and some argued that it starts with *zakat*, which is related to the lunar calendar and therefore shifts gradually. The historical timeline was discussed starting with the *deyr* season. The traditional Somali year therefore covers two gregorian calendar years, starting with the *deyr*.

The "production year" includes the main and secondary rains. The production year in the lowland areas of SNRS includes the main *gu* rains and the secondary *deyr rains*. The year therefore coincides with the gregorian calendar year since both rains fall within one calendar year.

Household food economy analysis ranks years using the traditional system of recall (the *deyr* season followed by the *gu* season for each traditional year) – since this is how people recall the past – but focuses on a "consumption year" for discussions with communities on how they lived during the year. This year is taken as the "reference year". It runs for 12 months from the time of major food production (the *gu* rains) through to just before the following *gu* rains (i.e. the end of the long, dry *jilaal/qorahxeed* or *jilaal* season). The "consumption" year therefore covers two Gregorian calendar years. Household economy interviews (with representatives from each wealth group) gather information about a specific year, and this provides a "benchmark" or set of reference values and behaviours against which to compare any other year.

The "reference" year chosen for review is one which is within recent memory (since production and prices will have to be remembered) and which was neither very good nor very bad (extremes can be misleading when we are trying to describe a livelihood system). For convenience we will call this year the "normal" year, but this should not be interpreted necessarily as being either

"frequently-occurring" or "typical" as is often the case in agricultural societies. A "normal" year from a pastoral perspective might be a year where there is adequate rainfall in terms of intensity and distribution, livestock production is adequate in both seasons, animals and milk fetch good prices and grain is not too expensive. There is little migration or little insecurity. It could be argued that this description represents a "good" year than an "average" year. For this reason it is often more useful to talk of a "reference year" which allows us to describe typical households in a particular year.

For information on the Traditional Somali Calendar System please refer to Appendix 9.2.

Through discussions with communities the historical timeline (below) emerged and the Somali year *Khamis* (Thursday) was identified as the "normal" year (not bad and not good). Since the main rains are the *gu* rains and pastoralists are dependent mainly on the *gu* rains, the "consumption year" for household economy discussions ran from the *gu* of 1998 through to *jilaal*/*qorahxeed* 1999) as the normal or reference year. Interviews with households then focused on the *gu* and *deyr* rains of 1998 and it is this period which is henceforth referred to as the "*normal*" year. During this year in Afder pastoralist areas, terms of trade were approximately 1 bag of grain (50kg) for 1 shoat.

Table 1 - Historical Timeline Afder Pastoral LZ

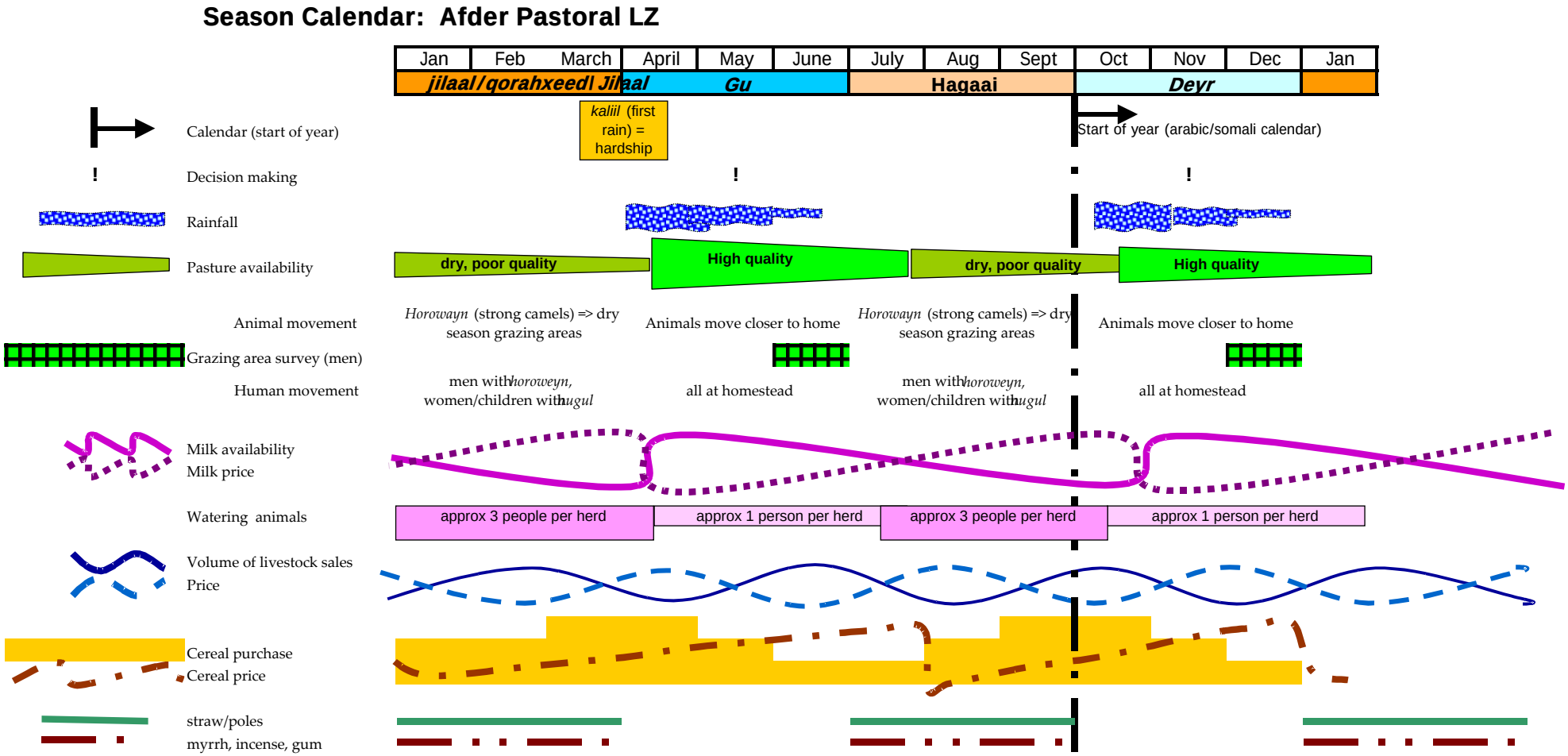
Year	*Year name*	**Deyr**	**Gu**	**Overall ranking**	*Comments*
2000/2001	Sabti *(Saturday)*	*2*	*2*	*2*	Poor rainfall and pasture; out-migration; low TOT; poor market access for livestock
1999/2000	Jimce *(Friday)*	*1*	*2*	*1*	Extremely poor pasture; migration out of zone; livestock diseases; livestock ban; *deyr* rain failure; poor *gu* rains *Fadalacad* (mass migration). Men and livestock sent to war
1998/1999	Khamiis *(Thursday)*	*2*	*3*	*3*	Good rainfall in both seasons, enough pasture; good milk yields and terms of trade; good market access
1997/8	Arbaca *(Wednesday)*	*5*	*3*	*4*	Torrential *deyr* rains, good pasture. Normal *gu* rains. Livestock disease outbreaks: foot and mouth; camel cough; suspected rift valley fever *Deyr Shubba* (flooding) (El Nino)
1996/7	Talada *(Tuesday)*	*1*	*2*	*1*	*Deyr* rainfall failure; very poor *gu* rains; poor market access and very poor pasture availability. Migration within zone.
1995/6	Isniin *(Monday)*	*1*	*3*	*2*	*Deyr* rain failure and poor pasture availability up until the *gu* rains; normal *gu* rains; Migration within zone; limited marketing; livestock disease: camel cough *Duufle* or *xaaxle* (camel cough)
1994/5	Axad *(Sunday)*	*5*	*4*	*4*	Very good *deyr* rains and good *gu* rains; very good pasture availability and high milk yields. No migration; favourable Terms of Trade, good market access *Deyr bes* ("thankyou, we have enough")
1993/4	Sabti *(Saturday)*	*1*	*2*	*1*	*Deyr* rain failure, poor *gu* rains. Poor pasture availability, livestock losses, mass migration, low TOT, no market access Terrritorial conflict: Oromo/Somali
1992/3	*Jimce* (Friday)	*4*	*4*	*4*	Good rainfall in both seasons; good pasture, water availability, Terms of Trade, market access *Shanqara* the sounds of goats (not heard for a while because of *Hurgufa*
1991/2	Khamiis *(Thursday)*	*0*	*0*	*0*	No rainfall in both seasons; no pasture, no animal production, widespread animal diseases and death; migration towards other areas (out of zone). Returnees came back from Somalia. *Hurgufa* ("everything is lost"). Derg regime overthrown

Migration Patterns

Migration in a normal year for livestock (camel, shoats, cattle) is generally within Afder zone. Camels are taken far from the household in the dry season to higher land where grazing is available and permanent water points; for cattle, the movement is opposite: they graze areas further from the village in the wet season – where there are seasonal water sources, and in the dry season they return close to the home base.

4.3 *Seasonal Calendar*

Figure 1 - Seasonal Calendar for Afder Pastoral LZ



4.4 Wealth Breakdown

The dominant livestock species are camels and goats and sheep (shoats). Cattle and shoats are more important in the areas around the Kenya/Somalia border at Dolobay area but this is not typical of the pastoral zone. Wealth among the Afder pastoral LZ is therefore determined by livestock holding, particularly camel and shoats ownership. The table below details the differences in assets and activities among the different wealth groups in the population.

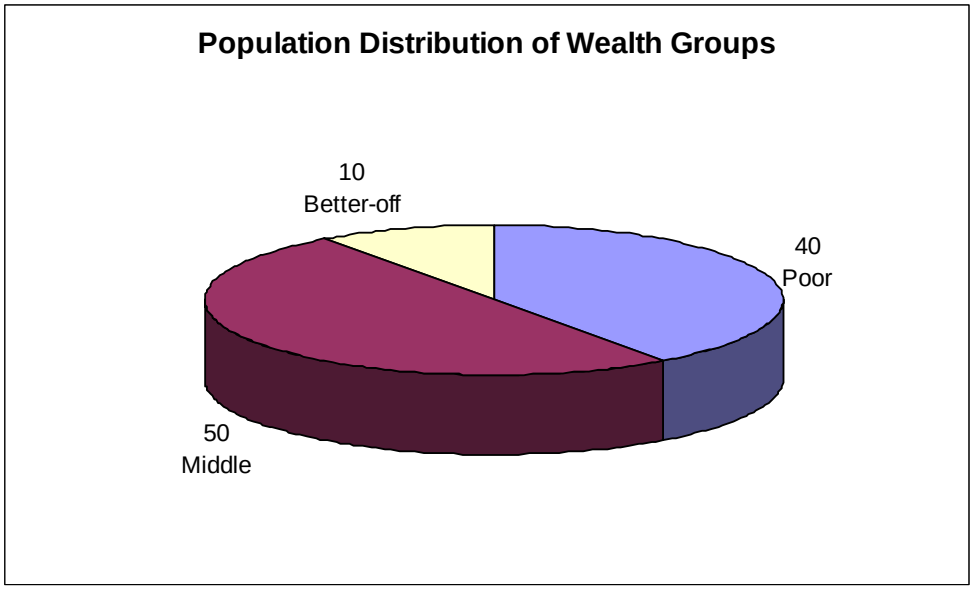


Figure 2 - Wealth Groups in Afder Pastoral LZ

This figure represents the data Poor 40%, Middle 50% and Better-off 10%.

Table 2 - Wealth Characteristics

Wealth Group name & vernacular name	Very Poor	Poor	Middle	Better off
Characteristics				
number of wives		1	1+	1+
Household size		6 - 8	6 – 8	6 - 8
Number of members living away & where				
Number of members from other family(ies)				
Number of members earning income & who (in order of importance)				
LIVESTOCK				
Owned Shoats		25	60	90
Borrowed Shoats				
Female Shoats				
Male Shoats				
Lactating Shoats		4	10	15
Owned Cattle				
Borrowed Cattle				

Wealth Group name & vernacular name	Very Poor	Poor	Middle	Better off
Characteristics				
Female Cattle		4	9	20
Male Cattle		1	3	5
Ox(en)				
Lactating Cow(s)		2	3	4
Owned Camel(s)				
Borrowed Camel(s)				
Female Camel(s)		5	14	40
Male Camel(s)		2	3	5
Lactating Camel(s)		2	3	4
Pack Camel(s)				
Donkey(s)/Ass(s)		1	1-2	1-2
Mule(s)/Horse(s)				

"Poor" Households

Overall, the "poor" are dependent on livestock, with most of their income coming from livestock or livestock products. However, in bad times they are able to increase collection of bush products, gums and resins in a bad year, or migrate to places such as God-usbo for labour in the salt farms or towns.

4.5 Food Sources in the Reference Year

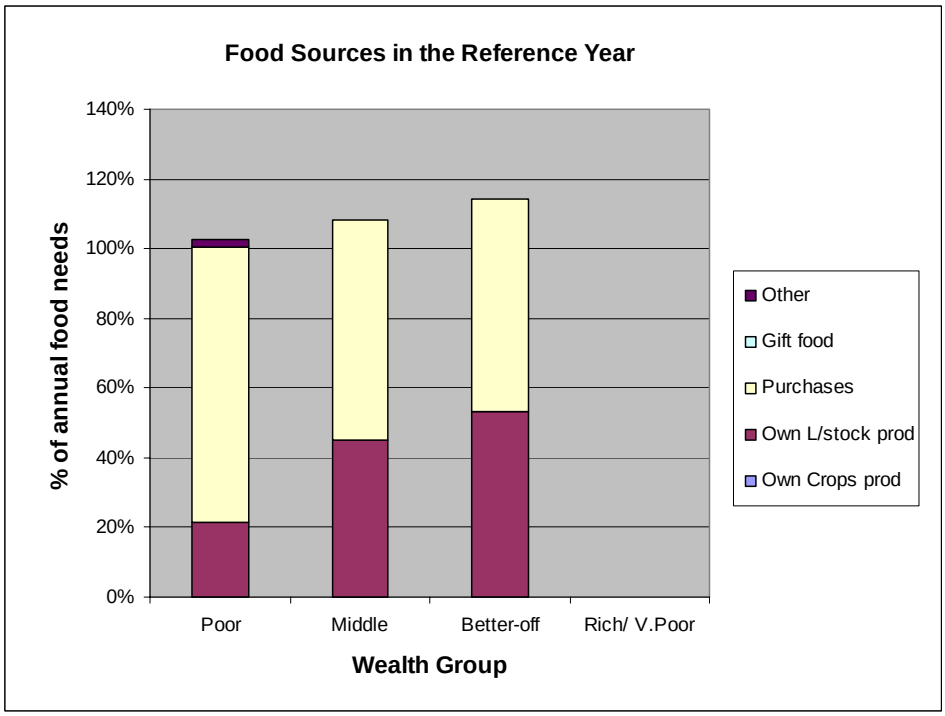


Figure 3 - Food Sources for all Wealth Groups in Afder Pastoral LZ

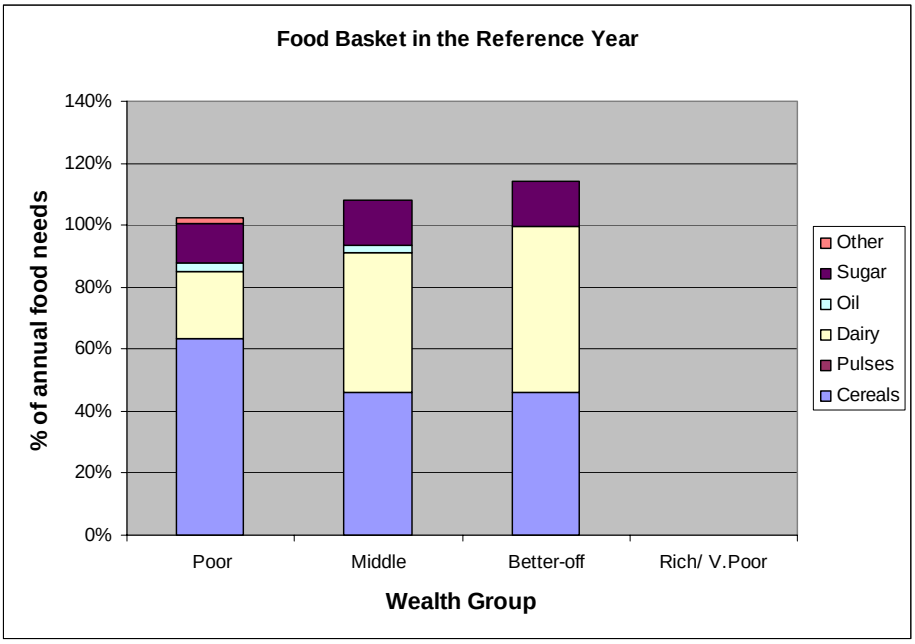


Figure 4 - Food Basket for all Wealth Groups in Afder Pastoral LZ

"Poor" Households

The "poor" have smaller herds than the other wealth groups. The most important food source for the "poor" is purchase. In a normal year they will purchase most of their food needs. Staple food makes up 60-65% and non-staple 15-20% of a household's annual food needs. In the wet seasons the household purchases around 2kg sorghum per day, and in the dry seasons around 2.5-3kg. Sugar purchase is an important food source, and they purchase more in the dry season when grain is scarce (½ kg per day) and less in the wet season (¼ kg). Oil is purchased by tins (*tanak)* (around 1 tin a month) for 4 months of the dry season only. (For the remaining 2 months of the dry season they have butter from their own production; in the wet season the household purchases no oil because the household has milk.)

"Own production" (livestock products) makes up the second most important food source for "poor" households. Camel milk is the most important and the household – with one camel of their own and one borrowed – can produce around 7 litres per day in the wet season and around 4 litres in the dry season. In both seasons approximately half the milk is consumed and half is sold. Households have generally 1 milking cow, which produces around 3 litres per day in the wet season and 1 litre per day during the dry period. During the wet and dry season around 50% is consumed, 40% is sold and 10% goes to make butter. Goat milk production is very little and the quantity too little to make ghee. The "poor" have around 4 milking goats, and of the total daily milk production (800 ml in the wet season and 400ml in the dry season) 2/3 is consumed and 1/3 sold. Milk production contributes 20-25% of food sources.

Wild foods contribute a small amount of food consumed (around 0-5%). Wild foods consumed include *mareer*, *gomoosha*, *dhafarur*, *hohob*, and *gob*. *Hohob* and *mareer* are sweet and the whole household consumes them. *Mareer* is available from the end of *deyr*

through to the middle of *hagaa.* The others are available during the early months of the dry seasons.

Households might receive a shoat given by the wealthier groups as *zakat*, but these are usually sold.

The "middle" Wealth Group
Food sources for the "middle" are also dominated by food purchase. Staple purchase includes sorghum and the "middle" purchases around 1kg per day in the wet season and around 2.5kg in the dry season when milk is scarcer. Sugar is bought daily (around ½ kg in the wet and dry season). A small amount of oil is purchased for 4 months of the dry season.

The "middle" group has around 3 milking camels, 10 milking goats and 3 milking cows. Camel milk makes up 21% of food needs; cows' milk around 13% and goat milk around 1%. Ghee is made from cow and goat milk and contributes around 6% of food needs. Meat consumption (slaughter) is insignificant.

The Better off Wealth Group
The "better-off" group's food sources are dominated by milk production. Of 6 milking camels they give out 2 milking animals and of 5 milking cows they give out one to a poorer relative as irmansi. These animals are milked by the "poor" for as long as they have milk and as long as the agreement holds.

More than 50% of a "better-off" household's food needs are met by milk and ghee consumption. Staple food purchase constitutes around 40-50% and non-staple food makes up around 15% of food needs.

4.6 Income Sources in the Reference Year

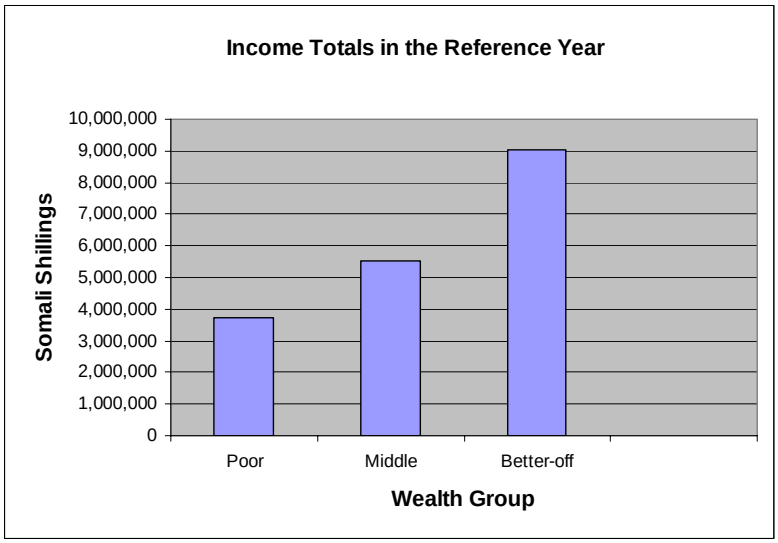


Figure 5 - Income Totals for all Wealth Groups in Afder Pastoral LZ

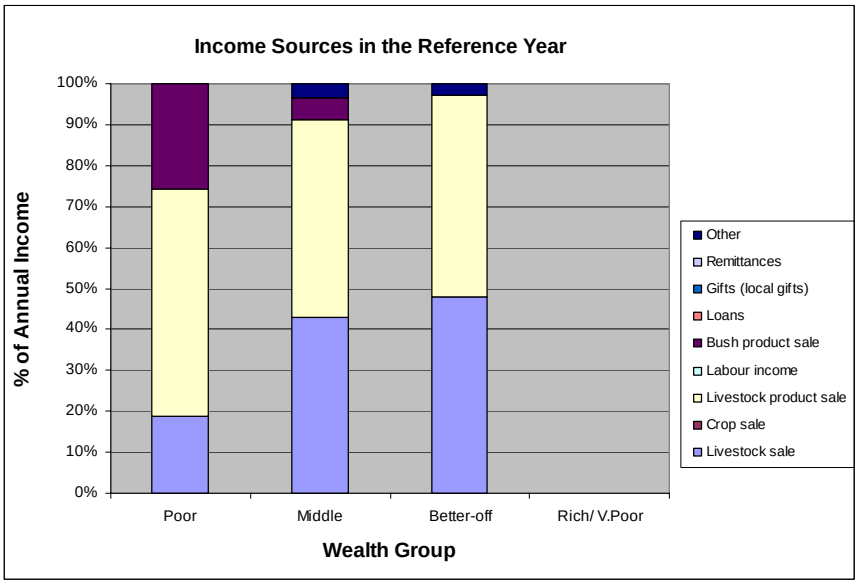


Figure 6 - Income Sources for all Wealth Groups in Afder Pastoral LZ

"Poor" Households
Total income for the "poor" is around SoSh 3.7m[6].

Milk sales make up the greatest proportion (50-60%) of total income, with more than SoSh 2 million from this source. Camel milk provides around 1.6 million, cows milk around SoSh 300,000 and goat milk around SoSh 150,000.

Livestock sales are the second most important income source contributing around SoSh 700,000 (15-20% of total income). A goat or sheep is the pastoralists' "cash" and they sell a shoat whenever they need to buy something. Camels are sold by the "poor" group only when there is a major problem or celebration (marriage, death, drought etc.) A typical "poor" household in a normal year sells 4-5 shoats and 1 medium-sized ox.

Gums and resins are important dry season income sources, and Afder is the richest Zone in the Region for these products (incense, myrrh, gum) in the region with myrrh earning the most. Livestock herders are the main collectors of gums and resins. Total income received is around SoSh 600,000 or around 15-20% of total income. These products are sold to small villages along roads and traders purchase and export mainly outside the region (Somalia, highlands of Ethiopia) and the market is fairly stable. Gums and resins are used as perfumes, medicines and for religious purposes.

Bush products contribute around SoSh 400,000 which is around 10% of total income. Bush products include poles, logs and thatching grass. The activity is done only in dry periods and is used for house and shade construction. A typical household collects and sells around 10 poles per month, and 2 camel-loads of thatching grass per month, each for a period of 6 months. Thatching grass comes from the interior, far from main towns. Bundles are accumulated along the main roads for sale and transportation to main centres.

[6] Exchange rate in reference year = $1=SoSh 15,000

Around large towns "poor" households might earn some money from selling water and other self-employment activities during the dry period, but this is not common for the majority of "poor" pastoralists in a "normal" year.

In bad years young men migrate to God-usbo salt production area for labour in the dry season.

The "middle" Wealth Group
Total income for the "middle" group is around SoSh 5.5m.

Sale of livestock products is the main source of income for the "middle", contributing around SoSh 2.9m or 50-55%. Sale of live animals is the second source, contributing around 2.4m (around 40-45%). A typical family might sell around 9 shoats, 2 oxen and 1 camel in a normal year. Gums and resins are a minor source of income, contributing around SoSh 300,000 or 5% of their total income.

Flexibility
The "middle" group has a "flexibility" of around SoSh 400,000 or 7% of income. This might be used to purchase additional livestock or make some other investment, given out as a loan, additional gifts, or spent on "luxury" items.

The Better off Wealth Group
Total income is around SoSh 9 million (US$ 600-650)

Livestock products are the most important income source, with milk, ghee and skins making up more than 50% of income. The next most important is livestock sales which makes up around 45-50% of income (around 10 shoats, 2 ox and 2 camels might be sold in a normal year). Incense, gums and resins are not important income sources in a normal year but might be collected in small quantities to give around 5% of annual income.

4.7 Expenditure Patterns in the Reference Year

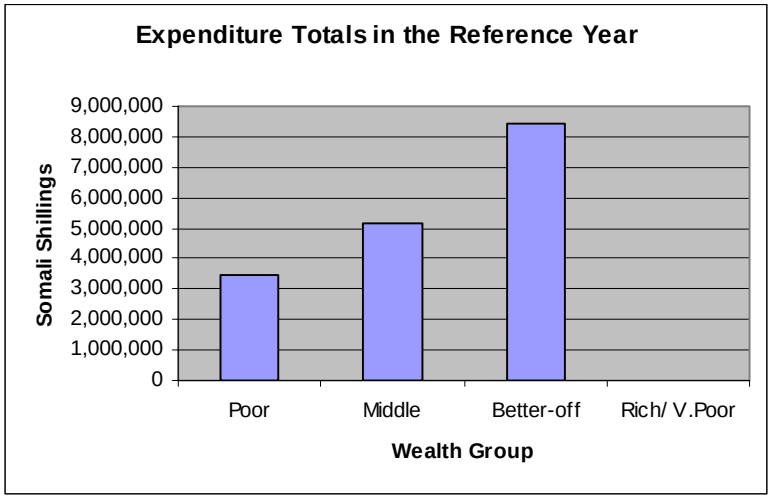


Figure 7 - Expenditure Totals for all Wealth Groups in Afder Pastoral LZ

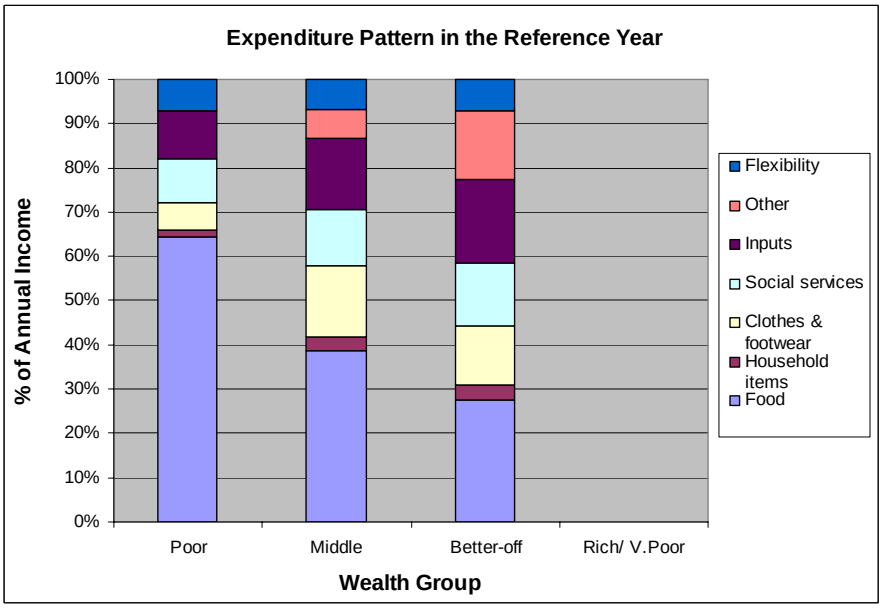


Figure 8 - Expenditure Pattern for all Wealth Groups in Afder Pastoral LZ

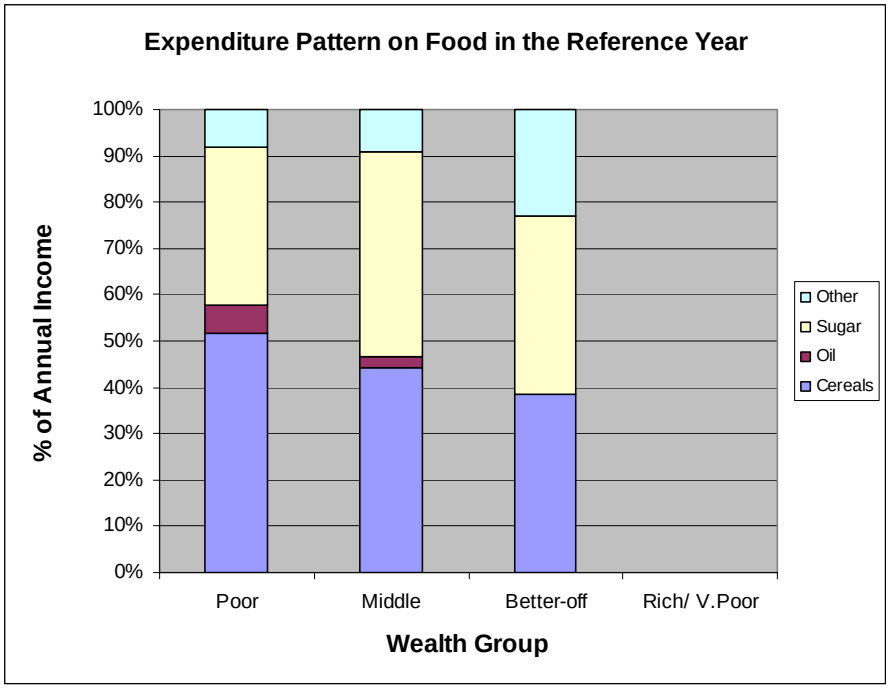


Figure 9 - Proportional Expenditure on Food for all Wealth Groups in Afder Pastoral LZ

"Poor" Households

The "poor" spend most of their income (around 60-70%) on food purchase (around 33% on staple food and 30% on non-staple food).

Inputs include livestock drugs and tools (e.g. axe, spear, knife) and takes up around 10% of income.

Social services spending totals around 400,000 (10% of income) and includes health, education and clan tax. Education costs include 2 shoats per child per year for koranic education. Health spending is equivalent to 2 shoats (for traditional treatments and medicines) and clan tax includes contributions for social welfare assistance for the needy and is around 1 shoat per year.

Household items purchased include soap and clothes and is equivalent to around SoSh 300,000 (5-10% of income).

The remainder of their income is spent on other "non-essential" items, or invested in livestock or other assets, and is around SoSh 300,000 or 5-10% of the total income.

The "middle" Wealth Group

The "middle" group purchases around 13 bags of grain (25-30% of income). Non-staple expenditure includes sugar, tea, salt, oil and meat and takes up 30-35% of income. Household items expenditure includes soap, clothes and kerosene (around 25-30% of income). Inputs include livestock drugs and tools and comes to around SoSh.900,000 (around 20-25%). Social services include health costs, Koranic education, and clan tax and makes up 15-20% of income). Gifts are the smallest category of spending. Gifts

include *zakat* (2 goats), *aroos* (contribution to wedding) and *kaalmo* (support to those who are starting up and who have had problems or to those who are in difficulty).

The Better off Wealth Group
Staple purchase constitutes 17% of income and is around 13 bags.

Non-staple purchase makes up 22% of income and includes meat, sugar, tea and salt. Social services expenditure includes spending on health, education and clan tax and makes up 12% of total income. Household items take up 19% of total expenditure and include clothing, soap, and kerosene. Inputs make up 12% and include livestock drugs and tools. Gifts make up 12% and include *zakat* (3 goats and 1 small bull), *kaalmo*, *aroos*, *kaalo* (total SoSh 1.1m). Restocking might be done with spare cash and might be 5 shoats. Additional flexibility is around SoSh 1million.

4.8 Current Situation (October 2001)

Districts visited for the study included Harghelle, Barey, Dolobay. The observations recorded below relate to those areas.

Livestock assets
Asset levels were discussed with villages and the following findings obtained. Herd sizes have reduced, but this is as much because of sales (the major reason for the decline in shoat numbers) as disease/death. Cattle have suffered most in the drought but some will have been sold before their condition deteriorated too much. The "better-off" in particular will have been able to save a larger proportion of their herd since they will have been able to migrate further, will have sold earlier, and will have preserved their productive livestock. The table below should be compared to table 4.

Table 3 - Current livestock assets

Livestock	**"Poor"**	**"Middle"**	**"Better-off"**
Camel	4-5	5-10	50-60
Shoats	15-20	50-60	80-120
Cattle	3-6	6-10	20-30
Donkey	1	1-2	2

Drought
Although rains have started in most parts of the district the drought situation in the zone is severe. The last *Gu* rains were very short in duration and unevenly distributed. There are some areas within the zone that did not receive any rain and some, which have not received rain for several years.

The team did not witness any groups but there has been some in-migration from Gedo and Bakool regions of Somalia through Afder towards Imey, Fik, Gode borders in the higher land.

Pasture and browse availability
In the districts visited the pasture condition is also poor. There are areas with dry pasture and browse, but due to lack of water the pasture is left under-utilised. Cattle have been very much affected by the lack of sufficient pasture.

Location of animals
At the moment animals have migrated to Imey and Gode zones closer to rivers. Most camel herds have migrated to higher land around Gorobaqaqsa and Guradamole in Afder zone where more browse is available. Cattle are in higher land in Afder zone where there is still some pasture and limited water availability.

Livestock condition
All domesticated livestock were relatively weak. Cattle and shoats are the worst affected and weak cattle; shoats and even camel were seen in all villages visited.

Water availability
Apart from Dolobay, water availability is not good. Most of the herders have moved their herds to main water points. Water rationing was going on in some parts of the district and water trucking.

Cross Border Trade
Cross border trade with Somalia and Kenya is important in this zone. The livestock ban and border closures have affected this market. Commodities now traded are different (livestock used to move to Somalia through Ceel Berde). Now livestock is no longer being sold in large numbers across the border (partly because of the ban; partly because of poor body condition), and clothes and other items are being brought in this direction.

Devaluation of the Somali Shilling
The devaluation of the Somali shilling has been reported as having affected people in this region since reportedly the items which are being sold (bush products) have not increased in price to the same extent as the products that they need to buy. No evidence was found to that effect; rather it seems that the price of gums and resins has remained stable in real terms. It is difficult to compare grain price to "normal" but certainly the difficult situation is indicated by the absence of local sorghum on the market. The price of other grains and flour being sold (corn soya blend flour, wheat grain etc.) is relatively cheaper than normal.

Security Situation
No security problems were encountered during the visit in any location. The zone is peaceful.

5. Vulnerabilities, Risks & Coping

Vulnerabilities and Risks

- Disease outbreaks: resulting in high morbidity and mortality[7]
- Conflict over land/resources: rare nowadays, but this can result in unexpected and forced migration
- Degradation of natural resources; Overgrazing (excessive animal numbers)
- Border closure: loss of marketing opportunities across the border. Before the ban strong he- and she-goats (known as jar) were exported to Imey, Degahabur, for Berbera, Bossasso, Somalia and Kenya. At the time of writing of this report (early 2002), Abu Dhabi started importing animals (around 10% of pre-ban volume), and other animals are being sold to traders from Mandera and Garissa, and in Somalia Ceel Berde and Mogadishu for slaughter.
- Confiscation of livestock by border authorities (customs) because the borders are officially closed. Trading is therefore a risky business for pastoralists and reduces their prospects for maximising income, as it is safer to sell locally at lower prices.

Risk Minimizing Strategies

Definitions: Risk minimisation strategies are employed by households in order to reduce their vulnerability to specific risks. While their exposure to a risk such as drought can be argued to be similar for all households in a given environment their ability to cope and consequently their vulnerability to the risk is often variable. It is variable because of the household's efforts to minimize risk. These strategies are essentially employed *before* a "shock" occurs in order to avoid being affected by the shock. Coping strategies, on the other hand, are employed *after* the "shock" has hit, in mitigation of the adverse effects. An understanding of risk minimisation therefore enables us to identify areas where interventions can strengthen and improve resilience of households. Risk minimisation strategies are numerous. While some idea of risk minimisation is given here, it is identified as an area worth further exploration.

In Afder zone households employ a number of risk minimisation strategies. These include the following:

Livestock Management and Protection of grazing areas

Animals are often prevented from mating at times, which would result in delivery in times of environmental stress. This is done by tying an object to distract mating around the male animal's abdomen. Splitting herds is important in maximising access to natural resources. Camel herds are split into two groups: the *nugul* (vulnerable) herd and the *horowayn* (strong animals) who are able to move longer distances. Cattle are managed

[7] Major animal diseases in Afdher zone includes: A) viral disease: e.g. foot and mouth (*Abeb*), camel pox (*Furuqa Geela*); B) bacterial disease: pasteurelosis, black quarter fever (*Gerba gooye*), Anthrax (*kud)*, Contagious bovine pleuropneumonia (CCBP or *sambabka geela*), contagious caprine pleuropneumonia (CCPP), tuberculosis (*feero)*; C) protozoal disease: Trypanosomiasis (*gol* or *dhuka'an)*; D) ecto parasites/endoparasites (ticks (hard and soft) *shilin)*, mangemites (*cadho)*, helminthics *gooryaan)*. Finally wild animals can transmit rabies.

differently. In the wet season cattle will be taken farther from the home base and its permanent water sources, and will graze in areas where seasonal (wet season) water sources (ponds etc.) and pasture are found.

Fodder for livestock is a priority and pastoralists often cut fodder in bulk and store it: for instance, the man will go out and cut the pods of acacia trees. These he will feed to the *nugul* animals. Likewise he might cut and store straw near the homestead for later use.

Food storage
Storage of food for human consumption is not normally possible since storage facilities are not usually accessible but in recent times lockable and guarded store rooms have been built to house relief supplies. Those who are able to buy food in large amounts have been able to take advantage of such stores and they pay rent to store their food until they need it.

Coping Strategies
Coping strategies[8] are employed during times of stress in order to get by. They are not normally extreme and involve some hardship. Most of the strategies listed below are employed by the "poor" groups, and in severe times by the wealthier groups. The wealthy groups have their own particular coping strategies. One of these is the taking back of *irmansi* animals (the milking animal loaned to the "poor" household). In practice the animal is likely to be dry at this stage so it is not the withdrawal of a *benefit* as such, but rather the protection of the animal. They are more able to access credit and loans from traders.

Coping strategies employed in this zone include the following:

Maximising income generation
A priority for pastoralists will be to expand their income from dry season activities. Income will tend to remain the same as a normal year: while the price will reduce, the household will make more efforts to collect and sell the products (more members will be involved in the activity for more days in the period; and they will travel to farther places). In this area the easiest options for expansion of income include increased collection and sale of gums and resins, and poles and thatching grass for house construction/repair. Gums and resins are collected in a normal year by the "poor" and to a lesser extent the better off groups. But in bad years all households make double efforts to collect gums and even the "better-off" do so. The market is relatively stable and is mainly from outside Somali region (highland Ethiopia, Somalia, as well as for local use). Gums are not affected very much by local drought except that the price will reduce as more households sell to the same market. Children are normally those most occupied in this activity.

[8] Coping strategies lie along a continuum ranging from those which are employed in normal times ("normal coping" - with minimal adverse consequences for the household) to those which are detrimental to individuals or to the household in the short- or long-term. Further along this continuum lie "distress" and "adaptive" strategies.

Protecting animal assets, sending children with the animals
The "poor" will add their small numbers of livestock to "better-off" households' herds and move the strong ones with them to far grazing reserves. A child might go along and will benefit from being able to consume milk of other families' animals and will be one less mouth to feed at home. Households will slaughter young, weak offspring to protect the mother.

Exploiting wild foods
Wild foods reduce in a bad year. Of the wild foods which are available in a normal year (*mareer, gomoosha, dhafarur, hohob, gob)* only *gob* remains. Gob grows along streams and rivers and sometimes in towns as a shade tree, and is a sweet-tasting seed with flesh which is nutritious as a snack mainly for children. Few people resort to hunting wild animals but this is considered a shameful activity and few will admit to it and it is unlikely to make a significant contribution to a household's survival.

Increased livestock sales and sales of livestock products
Households will sell extra livestock in order to generate additional income. They will first sell male animals, then female, and finally, the final resort is the pack animal. (Female animals do not normally fetch good prices since buyers are suspicious that they might be poor milkers). They will probably switch to selling a higher proportion of milk since it will increase in value.

Change in food consumption
Decreasing food consumption occurs through reducing the number of meals and consuming less per meal. Often families will purchase more sugar (which does not usually change in price) and will consume a sugar-water solution which will satisfy them at a lower cost than if cereal were purchased and cooked. Cheaper foods will be purchased (oil and meat will not be eaten and a cheaper cereal (often relief foods will be available at a cheaper price such as maize, beans, wheat or wheat flour).

Reducing spending on non-essential items
Families will reduce their spending on "luxury" items, for instance, clothes. Health expenditure will reduce although it is likely that traditional or religious health treatments will be used: reading the koran will involve slaughter of a shoat, and the provision of tea etc. for the koran. Some spending will be postponed – for instance clan contributions for supporting needy cases – and the koranic school will cease as families move to far places with their animals. Instead of buying tea households will use local products (e.g. bark from *hagaar*, and *galol* trees) which has a similar taste.

Seeking remittances
Hosueholds will make efforts to contact relatives locally and overseas to request assistance.

Splitting the household
In severe times the household will split and the man will probably go to work in a place such as God-usbo (salt farms) and his wife and children will migrate to live with

relatives in a nearby town and undertake labour or self-employment activities (water selling, carrying, shoe shining etc.). A man who migrates to God-usbo will work every day of the week and can earn barely enough for his own upkeep. For instance, the current daily wage is SoSh 8,000 per day which is equivalent to around 40 US cents. This is just enough for his own survival. Such men are likely to do this work during the dry period until the next rains.

6. Indicators to monitor

- Rainfall status – distributions, sufficiency;
- migration pattern, who, from where and magnitude;
- Coping strategies–degree of resorting to (bush product collection, sale of pack/breeding stock, etc)
- Market prices - cereals, livestock, bush products - and terms of trade.
- Human and livestock diseases
- Nutrition status – change in food habits, sizes of meals, etc,
- Environmental changes

7. Recommendations

7.1 Recommendations

The following recommendations were derived from discussions with communities and from a "brainstorming" session with the team after the analysis. Each recommendation requires close consideration, research and comparison with past experience in this and other contexts and, of course, extensive dialogue with the community

- Establish/manage community/private grazing areas and enclosures
- Cemented *birkads* / wells in dry season reserves where pasture is available but no water. To be located and managed by communities
- Good health – accessibility of livestock health facilities – pharmacies, para-vet training, scouts
- Pasture reseeding programmes using aerial means – alfalfa
- EWS with information on pasture availability, prices
- Infrastructural improvement
- Water catchment for when rains cause flooding – run-off water is currently wasted
- Livestock marketing: opening of the Somali/Ethiopia and Kenyan borders for free trade.
- Working towards the lifting of the livestock ban and take measures to avoid further bans.
- Improving access to grain (Grain banks, Market support, and improvement of roads)
- In emergency: slaughter slabs and emergency livestock purchase with favourable prices and meat drying facility
- Contingency planning

8. References

SC (SAVE THE CHILDREN) UK (2000) *The Household Economy Approach: a resource manual for practitioners.* Save the Children, London.

Famine Early Warning Systems Network; Update on Tanzania
http://www.fews.net/current/updates/ visited 11/2003

9. Appendices

9.1 HEA Methodology

The Household Economy Approach[9]

The Household Economy Approach helps to provide a detailed picture of the many ways that households meet their food and income needs in a 'normal' year and the many strategies they employ to lessen the consequences of crises (selling or consuming assets, migration for employment, eating wild foods, etc.). It therefore provides a picture of the household economy and its relationship to markets and employment opportunities.

produce a coherent picture about how people live and the options open to them in a normal year
identify the types of risk which households are vulnerable to
give an estimate of the likely effect of a 'shock/hazard' on household income
explore the extent to which coping strategies can cover a household's deficit
identify which population groups are most at risk of not coping with change
predict the likely impact of a range of intervention options and identify the most effective in reducing short-term and long-term vulnerability

HEA is useful for answering the question "what constraints prevent households from prospering", or "what will be the effect of a "shock" or combination of shocks, on the economy of various types of households in different Livelihood Zones?" It provides analysis that can be used both for prediction and to make more informed interventions. The approach is reproducible and incorporates sufficient mechanisms to cross-check information internally for users to be confident of the validity of findings and subsequent recommendations. It can be used in a rapid or a comprehensive form, depending on the question of study, time and money available.

This approach is participatory in nature and does not follow conventional statistical sampling methodology. The method employs RRA tools such as seasonal calendar, time line, normal year, proportional piling, pair wise ranking and so on. Interviews focus on groups that represent specific Livelihood Zones. Within this zone interviews are held with representative key informants and wealth groups (socio-economic groups). The approach is based on the understanding that it is the quality of the information collected that is important rather than the number of interviews conducted. However, every attempt is made to ensure that the information collected is representative. Thus site selection is done in coordination with technical officials at Regional, Zonal and District levels.

A typical Household economy baseline assessment includes the following steps:

[9] For any additional questions please contact Suleiman Mohammed the Early Warning and technical coordinator for Save the Children's food security project in Jijiga, Ethiopia. Telephone +251 5 752775/6/7 or send an email to ewtc.jijiga@telecom.net.et. Alternatively visit the Save the Children (UK) website www.savethechildren.org.uk/foodsecurity .

Step 1: Identifying Livelihood Zones (LZ)s and populations

The first step therefore is to identify population groups within which most households obtain their food and cash by broadly similar combinations of means (known as a livelihood zone, food economy area, group or zone). A Livelihood Zone may be at one extreme a refugee camp and at the other a large part of a country.

Step 2: Identifying Wealth Groups and a 'reference' year.

As it is not possible to investigate and generalise across all households, we gain insights into the lives of representatives from the major wealth groups identified by key informants; usually the 'rich', 'middle', 'poor' and 'very poor'. A profile is developed of the distribution of wealth which will relate to land and/ or livestock holdings, household labour availability, income generating activities, asset ownership and so on. These characteristics are identified by the community themselves and thus vary per LZ.

This profile usually portrays the household economy in a 'reference' year. While in reality years vary. In order to allow for comparisons to be made when conditions are significantly different, a 'reference' year is chosen which is relatively 'normal' or 'typical'. This reference year is also referred to as the 'baseline' year[10].

Step 3: Describing Household access to food and cash income

Within each LZ we need to understand how typical households access their food and other income and how this varies for each wealth group. This information is obtained by interviewing groups of women or men from each wealth group who identify the various options households employ to secure access to food. These will explore all possible sources of food. In order to purchase food and other basic needs such as health & education, income is derived from various sources, and all are explored. Information is also gathered on all household expenditure.

For each of these three areas, food production, cash income & expenditure, the information is displayed in graphs which illustrate the current situation and show us the options available to each wealth group. Estimates are made of the extent to which a household can expand each option in times of stress. All these interviews are about the previously identified 'reference year'.

Multiple interviews are conducted and information is triangulated to ensure internal and external consistency. For instance, payment for labour reported by labourers should tally with payment rates given by employers.

Step 4: Understanding links to markets

Most households in most parts of the world depend in some way on the marketplace to obtain some of their food. The 'better-off' may increase the value of their crops by specialising production or selling when their value is highest, the poor may be obliged to sell crops directly after harvest and purchase later using income from employment.

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[10] The term "baseline" is used differently than how it is understood in monitoring longitudinal change. It is, rather, a set of reference information which can be compared with similar information gathered at a future time.

Without an understanding of 'normal' links between households and markets in procuring both food and cash income it is not possible to understand options open in times of crisis. The interviews clarify which markets are of greatest importance and therefore where observed price changes (e.g. staple food prices) or reduced access (e.g. due to hostility) will have greatest impact on households in a given LZ.

Step 5: Clarifying risk-minimising strategies and potential coping strategies
Poor households are constantly aware of the risks to their livelihoods and income and to a large degree anticipate and prepare for this. When broadly predictable, (such as in semi-arid areas where rainfall and crop production alter greatly from year to year) successful strategies will include storing crops and accumulating livestock in years of surplus production, and increasing use of wild foods and selling livestock and other assets in shortfall years. In years of extreme 'shock' other strategies may be available such as sending members of the household to fish, to find employment further a field, to increase the collection of firewood or claiming customary kinship support. As most of these are an extension of the usual coping mechanisms of the poor, interviewees are able to identify the options most likely to be pursued first.

Understanding these options is crucial to understanding how households will manage in a given change and what kind of support is necessary for them to access their food and cash income.

9.2 Note on Somali Traditional Calendar

Somali communities, mark their traditional years by giving them names that correspond to the days of the week; years are known as Monday year, followed by Tuesday year, etc, and after the seventh year (i.e. Sunday), the cycle begins again with Monday. Years with the same name would be differentiated by a nickname related to a major event (droughts, floods, war, regime change, epidemics, etc), that took place during particular year; for example *Arbaca Shuba* (meaning the "Pouring Wednesday") referred to the el-nino year of 1997/98, which was a Wednesday year. Whereas year names are the same across all Somali groups, nicknames may be different in the different agro-ecologies and geographic locations, as events affecting them will be different.

In coming up with Historical timelines, the *deyr* season (which starts in October) is used as the start of the Somali traditional year. The traditional Somali year therefore spans across two Gregorian calendar years, starting with the *deyr* (October) and ending with the *hagaa* (Septmber)

The Somalis use two types of calendar years (i.e. two ways of counting years). It is very important for researches studying production, seasonal related areas among the Somali, to distinguish these two calendar types because the Somali community uses them for different purposes[11].

1. The *nairus* or *naurus* calendar: This calendar is related to the movement of the sun and other celestial bodies and therefore is used to determine seasonal patterns. The calendar year is kept orally with incredible accuracy and followed closely by the rural communities, particularly pastoralists, as it determines when to expect rainfall, and whether or not to move livestock to different location. This type of year is exactly the same as the Gregorian year (i.e. has 365 days) but does not start with January. The beginning of the year is marked by 'the positioning of some star(s) into specific locations in the sky', known as *kalawereega nairuuska*. This usually coincides with start of the *deyr* rainy season for most Somali groups and is marked in a variety of ways by some rural communities. The *nairus* year is divided into four main seasons in the most Somali inhabited areas – *deyr*, *jilaal*, *gu*, and *hagaa*. *Deyr* and *gu* are rainy seasons while *hagaa* and *jilaal* are dry seasons.

   The number of days in each of the seasons in the *nairus* year are numbered, each about 90, although with some seasons (like the *hagaa*) being a few shorter and others slightly longer. The total number of days would then fit in exactly with the Gregorian calendar days. Therefore the start of the seasons is normally easily identified with a specific Gregorian date like *Gu* (the main rains) starts around 12-14 April in most of the Somali inhabited areas (except the *karan* belt). Similarly the other seasons start at specific dates (*hagaa* in July, *deyr* in October, and *Jilaal* in January).

[11] The order in which the season will appear in the assessment will depend on how a given community identifies their 'consumption' year. Therefore a reference year could start in the *jilaal* season followed by the *gu, hagaa & deyr* or in the *gu* followed by the *hagaa, deyr & jilaal* etc.

There are parts of the Somali inhabited areas that have slightly different seasonal patterns, but still use the *nairus* system to keep track of the seasons. These are the northern part of Somali Region (Jijiga and Shinile Zones), the northwestern part of Somalia (mainly Woqooyi Galbeed, Awdal and parts of Sanaag Regions) and Djibouti. These areas do not receive *deyr* rains but instead receive *gu* (or *diraa'*) and *karan* rains.

2. The Islamic Calendar (Lunar Calendar) – This calendar uses the moon's movements instead of the sun's movement. The number of months is 12 but the year is normally around 355 days. This calendar started with the migration of Prophet Mohamed and his followers from Mecca to Madina, which marked a turning point in the history of the Islamic faith, and is therefore known as *Hijriya* (Migration) calendar. The Somali have local names for each of the Islamic months 'or moons' (but this names differ slightly among the different geographic locations) and they use these months for all religious obligations, rites and worship – like fasting, *zakat*[12] payment, *Hajj*[13], etc.

[12] *Zakat* is the obligatory payment by wealthier Muslims to poorer ones, once their wealth (usually savings or assets) reaches a specific threshold known as *nisaab. Zakat* is 2.5% of savings; 10% or rainfed crop harvest; 5% of irrigated crop harvest; one shoat for every the first 5 camels owned, etc.

[13] *Hajj* is a compulsory pilgrimage to the *Ka'ba* (the first house of worship established by prophet Abraham), at least once in a lifetime for Muslim individuals who can afford the journey while still being able to maintain their families.

9.3 List of Kebeles in Afder Pastoral Livelihood Zone

District: West Imey

S/N	Name Of Kabales	LZ	Distance From The Distirct	Direction To W/Imey	Water Pionts
1	Gudeelsha (West Imey)	Riverine	-		Shabele river (tap-water)
2	Suufley	Riverine	9	Northwest	Shabele river
3	Bullishe	Riverine	13	Northwest	Shabele river
4	Gobeyse	Riverine	20	Northwest	Shabele river
5	Mulday	Riverine	27	Northwest	Shabele river
6	Masale	Pastoral	23	Northwest	Streams
7	Hargeisa	Pastoral	60	West	Streams
8	Busle	Pastoral	45	West	Streams
9	Dib u-guur	Riverine	28	East	Shabele river
10	Qudhacle	Pastoral	28	West	Streams
11	Kurooftu	Pastoral	25	Southwest	Streams
12	Billow	Pastoral	32	South	Streams
13	Guraate	Riverine	36	East	Shabele river
14	Dawin	Riverine	9	East	Shabele river
15	Dobey/Jiiq	Riverine	35	East	Shabele river
16	Bara siibo	Riverine	45	East	Shabele river
17	Majabe	Riverine	38	East	Shabele river
18	Abba-qoro	Riverine	70	East	Shabele river
19	Arre san	Riverine	76	East	Shabele river
20	Gol balayo	Riverine	82	East	Shabele river
21	Hasawe yar	Riverine	88	East	Shabele river
22	Mufdah	Riverine	75	East	Shabele river
23	Hadhunle	Riverine	15	East	Shabele river
24	Burda-xoor	Riverine	42	East	Shabele river
25	Kab xanle	Riverine	40	East	Shabele-river

Human Health

- Common human diseases are Malaria, Pneumonia, TB, Urinary Tract Infection and Diarrhea.

Health Services in the District

- There is one clinic in W.Imey town and two health posts in Jiiq and Abaqorrow kabales

Education

- The district has one intermediate school(grade 1-8) located in West Imey and three primary schools in Jiiq(grade 1-6),Abaqorrow(grade 1-6) and Suufle(grade 1-4) kabales
- There are also three other primary schools which were built by the local communities of Abaqorrow, Dawin, and Xadhunle kabales.

DISTRICT: Hargelle

S/N	Name of kabales	Distance from the district	LZ	Direction to the district	Main water suorce
1	Ciid-dheere	33	A/P	West	Weyb river
2	Raarey	31	A/P	West	Weyb river
3	Fadhi-wayn	30	A/P	West	Weyb river
4	Kood	30	A/P	West	Weyb river
5	Xayir	30	A/P	West	Weyb river
6	Sur sur	30	A/P	West	Weyb river
7	Kuuyo	30	A/P	West	Weyb river
8	SogSog	30	A/P	West	Weyb river
9	Dab-Dheere	30	A/P	West	Weyb river
10	Buulo-Qallooc	30	A/P	Southwest	Weyb river
11	Gumar	30	A/P	Southwest	Weyb river
12	Banka	33	A/P	Southwest	Weyb river
13	Dhirin-dhir	30	A/P	South	Weyb river
14	Idhadhami	40	A/P	South	Weyb river
15	Dawacaale	35	A/P	South	Weyb river
16	Yooco	22	A/P	South	Weyb river
17	Dhadhafay	40	P	Southeast	Streams
18	God cusbo	28	P	Southeast	Streams
19	Qaboobe	40	P	East	Streams(7km)
20	Darsalam	40	P	East	HDW
21	Allan	35	P	East	Streams
22	Baar-geel	45	P	East	Streams
23	Libaax-jiifa	40	P	East	Streams
24	Dhuun-ku-nuug	45	P	East	Streams
25	Fashuuq	81	P	East	1Birka
26	Afcade	104	P	East	2Birkas
27	Dharaye	142	P	East	Birka & HDW
28	Garbo-xamudh	172	P	Northeast	Streams
29	Sariiro	180	P	Northeast	Streams
30	Anqalaal	55	P	Northeast	HDW
31	Wagad	40	P	Northeast	Streams, HDW
32	Jinbac	30	P	North	1Birka
33	Malka-dhuur	33	P	North	Streams,1Birka
34	Af-Bilaawe	30	P	North	Streams
35	Ganbadh	28	P	North	Streams
36	Lanqayr	7	P	Southeast	Streams
37	Qardag	23	P	Northeast	Streams
38	Hargelle area	5	P	NEWS	Streams

<u>Education</u>

Schools

-Hargele (grade1-10) newly built by scf-USA -

-God Usbo(grade1-8) -Bargele(1-4)

-Daraye(grade1-4) -Iid-dere(under Constraction)

-Afade(grade1-4) -Dab-dere(undr conistaction)

- There are also 4 primary (grade 1-4) schools located in Sogsog, Baargeel, Ciid dheere and Dab dheere kabales built by SC-USA.

Health

There is one clinic with four health staff : 2 junior lab technician, 1 junior clinical nurse and 1 junior midwife in Hargele; one health post with two Primary Health Workers(PHW) in God-usbo; one health post with one PHW in Sogsog, and_one health post with two PHW in Daraye kabales.

Unfortunately, the biggest referral hospital of the region is found in Hargele town but it has never gone functional due to lack of manpower, equipments and water

Human diseases

The most dominant **human diseases** in the district include Malaria, TB, UTI, Pneumenia, and Diarrhea.

Livestock diseases: Trypanosomas, "Dukan," "Shinbir, Black leg, & "Dhuuqa".

District: Charati.

S/n	Name of the kabale	LZ	Direction to district	Kabale distance to the district	Main water source.
1.	Ayan Badan	A/P	S	40	Weyb river.
2.	Bali	A/P	S	27	Shallow well with trough & ring& Weyb river.
3.	Ban Dere	A/P	SW	85	Shallow well with trough & Ganale river.
4.	Bar Dumay	P	W	35	Shallow well with trough
5.	Dangi	A/p	NW	25	Weyb river.
6.	Darasalam	A/P	N	15	
7.	Dibato	A/p	NW	60	Weyb river.
8.	Diinta	A/P	SE	55	Weyb river
9.	Dukanle	P	W	100	Six ponds & Ganale river.
10.	El-Dub	P	W	70	one pond
11.	Garas Barwaqo	A/P	S	60	Weyb river.
12.	Gerare	A/P	S	50	Shallow well & Weyb river
13.	Guro	P	NW	90	Weyb river
14.	Habal Alan	P	W	46	Five ponds
15.	Har Arbo	P	W	80	Two ponds
16.	Hawl Wadag	A/P	S	15	shallow well
17.	Hayir	A/P	SE	40	Weyb river
18.	Hilo Abshir	A/P	M	30	Weyb river.
19.	Hodan/Bo'o	A/P	S	35	Weyb river
20.	Il Gudud	P	SW	60	
21.	Janale	P	S	50	Shallow well along animal.
22.	Jarati-4	urban	-	-	Two shallow with ring and with pumps & Weyb river.
23.	Karari	A/P	N	25	Weyb river.
24.	Kor Dir	A/P	S	9	Weyb river
25.	Masago Badan	A/P	SE	20	Weyb river
26.	Muk Dere	A/P	SE	50	Weyb river
27.	Shubal Cad	A/P	SE	25	Two shallow well with ring & trough.
28.	Tofiq	A/P	S	22	shallow not utilised
29.	Yabow	P	SW	90	Ganale river.
30.	Yaheen Bar	A/P	N	31	Weyb river

Common human diseases

The common human diseases of the district are malaria, dysentery, hepatics, pneumonia, TB(glandular and pulmonary), gonorrhea, rheumatoid, confictiwtes, skin disease…

livestock diseases.

"kudka",dukan, shimber, bilharzias, dabar jabiye, mouth disease, tuma, pastoraliases, etc are most seen diseases.

Animals reared.

According to their importance, camels, goats, sheep, cattle, and donkeys are animals most reared in the area.

Crop
Maize and sorghum.

District: Gorobaqaqsa

S/n	Name of the kabale	LZ	Direction to district	Kabale distance to the district	Main water source.
1	Gorobaqaqsa			-	Borehole (unfinished),pond
2	Asha addo	P	South	7	
3	Baqaqsa	P	East	7	Weyb river
4	Abshun	P	Northeast	15	Streams,Weyb river
5	Dawlalay	P	Northeast	20	Streams
6	Habal alan	P	Southeast	22	Streams
7	Hagar moqor	P	South	28	Birka
8	Da'a koro	P	Southeast	30	Streams
9	Koyo	P	South	12	Birka
10	Haro Arbo	P	South	50	Streams
11	Daayerey	P	West	16	Streams
12	Hogi	P	Southwest	25	Streams
13	Hagar weyne	P	Southwest	32	these three kabales share on borehole
14	Waq jiro	P	West	32	
15	Harjedo	P	West	55	
16	Haroanno	P	West	60	Streams
17	Tuur	P	Northwest	40	Streams
18	Hargadab	P	North	35	Borehole (unfinished),pond
19	Tuulo gudeys	P	West	43	Streams
20	Hara bolayo	P	North	53	Streams
21	Haramuumo	P	North	68	Streams
22	Kayranso	P	Northeast	55	pond
23	Bardaki	P	North	42	Streams
24	Kabigary	P	Northeast	35	Streams
25	Kurawe	P	East	35	Streams
26	Kilawa	P	North	21	Streams
27	Dhaly	P	North	30	Streams
28	Habali	P	west	12	Streams

NB

Weyb river passes in the north and east direction of the district. For instance, it is 22 kms away from Gorobaqaqsa town.

Common livestock diseases in Gorobaqaqsa district

"Dhukan", "Dhabar jabiye","Shinbir" and internal and external parasires

Common **Human Diseases** include: Malaria, Dysentry, Pneumonia, TB, and Anemea.

District: Guredamole

S/n	Kabale name	LZ	Kabale distance to district	Main Water Points
1	Qundi	A/P	75	Mana River
2	Gobeys	A/P	160	Mana River
3	Dhaqata	A/P	153	Dagata Stream Water
4	Biyoole	A/P	105	Mana River
5	Buur-Qore	A/P	140	Mana River
6	Tilan-Tule	A/P	205	Mana River
7	Gari	A/P	86	Mana River
8	Tutow	A/P	40	Totow Hole Water
9	Samaye	A/P	77	Sameye Stream Water
10	Funal Kosi	A/P	30	Wabara Water Hole.
11	Urgow	A/P	20	Badesa Hole Water
12	Habron	A/P	7	Habron Gole Water
13	Hokultu	A/P	35	Hokultu Hole Water
14	Addeley	A/P	13	Dumal River
15	Yadi	A/P	16	Dumal River
16	Leedi	A/P	135	Mana River
17	Haro-Dibe	A/P	3	Laan Gano
18	Galo-Elo	A/P	80	Gadiir
19	Buur-Abled	A/P	70	Gadir
20	Gabro	A/P	149	Mana Stream Water
21	Galmey	A/P	135	Awro Tributary
22	Eel-Gari	A/P	80	Xararey Trubitary
23	Seley	A/P	155	Joley Tributary.
24	Qabo-Somane	A/P	88	Baar Tribuytar
25	Goni		50	Goni Stream Water

Animal disease

those disease which repeatedly attack the animals are internal parasitism, trypanosomiasis, foot-mouth disease, CCPP, black leg, heart water, brucellosis, "cado"(mange), bovine posturaliasis, etc. those diseases are mostly seen during the start of rain.

Human disease

Among the human diseases are malaria (the most serious), anemia, pneumonia, dysentery, typhoid, STD, TB, scopes, and contagious.

Animals reared

According to their importance, camels, goats, sheep, cattle, and donkeys are animals most reared in the area.

Crop Maize

District: El kare

S/n	Name of the kabele	LZ	Direction to the district	Kabale distance from the district	Major water points of the kabales.
1.	Elkari	town		-	Elkari spring water
2.	Masno	A/P	South	10	Streams of Masno tributary
3.	Goni	A/P	South	11	Wagbey tributary
4.	Galole	A/P	North	8	Wagbey tributary
5.	Eres	A/P	Southeast	10	Wagbey tributary
6.	Dati	A/P	Southeast	15	Wagbey tributary
7.	Burado	A/P	East	16	Wagbey tributary
8.	Egal	A/P	East	30	Nashale seasonal river
9.	Dareyo	A/P	North	20	Danyeraley seasonal river
10.	Dalbalar	P	West	25	Dagero
11.	Dagere	A/P	Northwest	22	Anole
12.	Elmara	A/P	South	13	Ceelmara
13.	Jabsa	A/P	South	25	Eelmara
14.	Biyo-cade	P	Northwest	25	Biyo cad
15.	Elood	A/P	Northwest	40	Goha iyo mason
16.	Darojarro	A/P	North	50	Jaroora
17.	Las bar	A/P	Northeast	60	Las bar-salty wells
18.	El baar	A/P	Northeast	70	Cel bar-salty
19.	El dere	A/P	Northwest	65	Eel dere-salty
20.	Adamo	A/P	North	75	Adamo-salty
21.	Bubayo	A/P	North	35	Jarora
22.	Badawi	A/P	Northeast	35	Nashale
23.	Shakisa	A/P	West	63	Shakisa
24.	Danbari	A/P	West	65	Danbari
25.	Tuli	A/P	West	62	Dandari
26.	Jarora	A/P	North	45	Goha
27.	Oda'	A/P	West	40	Goha
28.	Hawda	A/P	Northwest	68	Hawda
29.	Sedale	A/P	West	75	Sedale
30.	Baraad	A/P	West	56	
31.	Denduba	A/P	West	79	Danduba
32.	Heelmadow	A/P	West	62	Helmadaw
33.	Hado jaro	A/P	Southwest	72	Hel madaw
34.	Maja	P	Southwest	68	Hada jaro
35.	Maqar	P	West	55	Anole
36.	Bila	P	West	50	Goha
37.	Galey	P	Southwest	50	Anole
38.	Unka	P	Northeast	81	Unka shallow wells
39.	Tawley	P	East	35	Wagabay shallow wells
40.	Eel-waq	P	Northeast	50	Eel waq-shallow well
41.	Jaray	P	Southeast	44	River
42.	surmi	P	East	70	Surmi shallow well.

NB: * unless specified all the water points in Elkare district are seasonal rivers and tributaries.

Human diseases

STD, UTI, TB, pneumonia, and skin diseases are common in the district.

Animals reared & crops produced.

Cattle shoot, camel, and donkeys are animals of the district.

Maize and sorghum are widely cultivated crops in the district.

District: Barey

s/n	Kabale name	distance	direction	LZ	major water points
1	Masale	35	W	A/P	Hand-dug wells(HDW)
2	Kaba tira	18	NW	P	Stream
3	Dhanow	25	NW	P	Stream
4	Gariilay	60	W	P	HDW
5	Qansaxle	50	W	P	Streams
6	Bartuuyo	43	SW	P	Streams
7	Dhunkad	37	W	P	No water point
8	Baal casaale	130	W	P	Streams
9	Dhana-cadiin	30	W	A/P	HDW
10	Ganbadh	38	S	P	Stream
11	Igaraw	18	SW	A/P	HDW
12	Sir-sire	25	S	A/P	HDW
13	Ceel-dhuub	55	S	P	HDW
14	Ceel-xaar	55	E	P	HDW
15	Malayle	30	E	P	HDW, Stream
16	Qudhacle-yare	18	NE	A/P	HDW
17	Siifaan	60	E	P	HDW
18	God-god	80	E	P	HDW-deep
19	Biyo-cad	70	NE	P	HDW-deep
20	Qooxle	100	N	P	HDW
21	Labiile	90	N	P	HDW
22	Lahelaw	130	N	P	HDW
23	Wayd-kaale	55	N	P	Stream
24	Qoryaale	45	N	P	Stream
25	Muldhato	150	N	P	HDW
26	Xiisale	45	N	P	Stream
27	Gaabo	50	NW	P	HDW
28	Ceesaan dhawre	30	N	A/P	Stream
29	Caano-daadis	70	NW	P	HDW
30	Baarey	-	-	-	Boreholes.

Health

In Barey district there is only one clinic in Barey town. No other health service in the rest kabales of the district. The most common human diseases are: TB, Malaria, Diarrhea and Common cold. Dominant livestock diseases in the district include: *Dhukaan*, *Shilin* ,*Qufac*, internal iyo external parasites..

Education

In Barey district, there is only one intermediate school which is found in Barey town. No other school at all in the whole district.

District: Dolo bay

S/n	kebeles name	Distance	Direction	LZ	major water point
1	Dolo-bay	-	-	Agropastoral	Genale river
2	Waladaya	5	N	Agropastoral	Genale river
3	Beermadaw	6	S	Agropastoral	Genale river
4	Dhaywanle	8	W	Agropastoral	Genale river
5	Hinlay	15	NW	Agropastoral	Genale river
6	Shinbiray	25	NW	Agropastoral	Genale river
7	Alooley	22	NW	Agropastoral	Genale river
8	Xamur	27	NW	Agropastoral	Genale river
9	God doofaar	33	NW	Agropastoral	Genale river
10	Handadu	40	NW	Agropastoral	Genale river
11	Laagey	55	NW	Agropastoral	Genale river
12	Darso	80	N	Agropastoral	Stream
13	Elo-gajo	83	N	Agropastoral	Shallow well, Genale
14	Galgudbis	65	N	Agropastoral	
15	Idhadhami	80	N	Agropastoral	
16	Hilo-quraan	55	N	Agropastoral	
17	Hilo-buli	65	N	Agropastoral	
18	Kaalmays	60	N	Agropastoral	
19	Madhar	37	N	Agropastoral	
20	Abdule-rundud	34	N	Agropastoral	
21	Xay dhuure	78	N	Agropastoral	HDW,Genale river
22	Rawraw	75	N	Riverine	Genale river
23	Bukuraale	32	N	Riverine	Genale river
24	Taagane	28	N	Agropastoral	Genale river
25	Qudhacle	25	N	Agropastoral	Genale river
26	Baariko	18	N	Agropastoral	Genale river
27	Gubadle	15	N	Agropastoral	Genale river
28	Malablesamater	30	W	Agropastoral	Genale river
29	Gool	12	S	Agropastoral	
30	Qoraaley	28	E	Agropastoral	
31	Af-caro	40	E	Agropastoral	HDW, Weyb river
32	El-xaar	55	E	Agropastoral	HDW, Weyb river
34	Garba guraja	60	NE	Agropastoral	Streams, Weyb river
35	Allan	70	NE	Agropastoral	Stream, earthdam
36	Karalay	15	south	Agropastoral	Stream

Human disease

Malaria, diarrhea, dysentery, pneumonia, and TB (pulmonary) disease are the most commonly seen disease.

Livestock disease

The predominant and repeatedly seen livestock diseases are anthrax, black leg, pastor aliases (Cattle and sheep), PPR, Foot and mouth disease, camel box. , triphoniosias, and pox diseases (Cattle and sheep).

Crops produced

The district Agropastoralists mainly produce Maize, Sorghum, beans, sesame, onion, banana, pawpaw, orange, mango, and tomatoes.

9.4 Other Information

Animal Herd Dynamics

AFDER DRAFT – needs reviewing and checking with other key informants. Some of the questions were not adequately understood by the interviewer when this exercise was done so the respondents might not have been clear as to the questions.

Camel Herd Management. Length of gestation period: 13 months; Period between calving: 2 years???; Lactation duration: 12 months									
Herd size	# Males			# Females		# births per year per herd	# lactating Females;	# deaths/yr in herd (normal MR)	Normal net herd increase (births-deaths)
	Pack	*Breeding*	*Young*	*Mature*	*Young*				
5	1		1	2	1	1	1	0	1
10	2		1	4	3	2	2	1	1
20	2	1	2	10 8 + 2 old	5 2 young; 3 *aaran*	4	4	1	3
50	4	1	5	30 22 + 8 old	10	10	10	2	8+

Animal herd movement (*nugul* and *horoweyn*)

Herd size	Nugul		Horoweyn		
	Males	Females/young	Males	Females/young	Herder
10	2 2 pack	4 2 milking + 2 young		4 3 + 1 young	Herd too small – join with herds of others
20	2 2 pack	5 2 milking + 2 young 1 pregnant	2 1 *berkap* 1 small	13 (3 pregnant; 2 milking + 2 young 2 old; 4 araan)	1 person to travel with horoweyn
50	2 2 pack	15 2 late pregnant 7 milking +7 young	3 1 *berkap* 2 *araan*	29 7 early pregnant 3 milking +3 young 5 old 11 *araan*	2 people to travel with horoweyn

Cattle						
Herd size	#M	#F	# births/yr/ herd	# lactating F;	# deaths/yr in herd (normal MR)	Normal net herd increase
10	2	8	4	4	1	3
20	4	16	6	6	2	4
50	10	50	15	13	3	12

Goat Herd management. Length of Gestation period (months) _____ Period between kidding: _____ Lactation duration: _____									
Herd size	# M	# F	# births/yr/ herd	# lactating F;	Milk prod. (litres/d; # months)			# deaths/yr in herd (normal mortality rate)	Normal net herd increase (if no sales) and # that can be sustainably sold
Ref into					Jilal 3m	Wet 7m	Hagai 2m		
5									
10									
15									
20									
30									
50									
60									
100									

NB: Indicate what level is the minimum to survive to the next year.

Sheep Herd management. Length of Gestation period (months) _____ Period between lambing _____ Lactation duration: _____									
Herd size	# M	# F	# births/yr/ herd	# lactating F;	Milk prod. (litres/d; # months)			# deaths/yr in herd (normal mortality rate)	Normal net herd increase (if no sales) and # that can be sustainably sold
Ref into					Jilal 3m	Wet 7m	Hagai 2m		
5									
10									
15									
20									
30									
50									
60									
100									

NB: Indicate what level is the minimum to survive to the next year.